

“Know your market first!”

*A market entry strategy in Europe
for the Indonesian company Sutek*

Master thesis
Business Administration
International Management

By
Wouter Oosterwijk

University of Twente
Enschede, The Netherlands
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Supervisory Committee:
Ir. S.J. Maathuis
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Management Summary

PT Sutek Mitra Utama (Sutek) is an Indonesian company, which is exporting cyclized rubber resin to Europe, with the brand name Ripex. In 2001 this company is founded by the Abadinusa Holding. The other companies of the holding manufacture products for the medical industry, while Sutek is producing for the chemical industry. Sutek's partner Resine Italiane failed to promote and sell Ripex in the European market. Therefore Sutek is faced with disappointing sales and is searching for new markets in Europe. The University of Twente was approached to conduct a research for a market entry strategy, in order to increase the sales of Ripex in Europe.

From this research can be concluded that the market for cyclized rubber in Europe is decreasing, due to the environmental regulation on Volatile Organic Compounds (VOC). Therefore Sutek must research if Ripex can meet the VOC regulation. When this is not possible, Sutek should focus on the Asian market and contact Cytec, the producer of the competitive product Alpex, for a contractual agreement. If this does not lead to satisfactory sales, Sutek could search for new applications of Ripex. However this is not recommended, because it is highly uncertain if this will be profitable.

In addition to this the marketing mix of Ripex needs to be adjusted. The product has to be adjusted to the market requirements and also the promotion of Ripex needs to be adjusted. Sutek must show test results of Ripex in different applications in order to get potential buyers interested. Also the Technical Data Sheet and the Health and Safety Data Sheet require adjustments.

The researchers have conducted an internal analysis of Sutek in Indonesia. From this analysis can be concluded Sutek is highly committed to the product. Furthermore Sutek has all the required resources to do international business, but does not have the financial resources to make high investments. The external analysis is split up in two parts. The first part of the external analysis is done by internet research and is not showing many barriers for entering the European market. The information for the second part of external analysis is collected through interviews with potential buyers and distributors. The anti-corrosive and marine paint segment is the most attractive segment for Ripex. From this extensive research can be concluded that there is no market for Ripex in Europe. The current characteristics of Ripex offer no sales potential and for the future the market of cyclized rubber will decrease even more. From the interviews the researchers also obtained evidence that the current marketing mix of Ripex is insufficient.

The main problem is that Sutek does not have a fully developed strategy. Sutek has focussed too much on development of the product without looking at the market. Sutek relied too much on its partner Resine Italiane. The Abadinusa holding is strong in the medical business, but has underestimated what is required for selling a resin to the chemical industry in the European market. Therefore it is necessary to know the market first, before entering it!

Preface

In order to graduate for my study MSc. Business Administration and International Management at the University of Twente I have written this master thesis. The goal of this master thesis is to test the obtained theoretical knowledge of the researchers in a practical case. In the beginning of this year I was approached by Mr. Maathuis of The International Management section of School of Management and Governance at the University of Twente to do an assignment for Sutek. My partner for this assignment was Marinus Kooij.

Mr. Maathuis was contacted by Mr. Tarya, the president of Sutek, with a business assignment for his company Sutek. We were able to execute this assignment well, because of our different backgrounds in Process Engineering (Marinus) and Commercial Management (Wouter), which are complementary to execute the assignment.

In order to meet requirements of the new University's regulations, I present an overview, who executed and elaborated which parts of this thesis assignment. The conclusions were written together and all parts were reviewed by each other.

	Management summary & Preface	Together
Chapter 1.	Research plan	Together
Chapter 2.	Theories and methodology	Together
Chapter 3.	Company and product description of Sutek	Marinus
	Marketing mix	Wouter
Chapter 4.	Internal analysis	Wouter
Chapter 5.	External analysis part 1	Marinus
Chapter 6.	External analysis part 2: Market factors	Wouter
	Competitor analysis	Marinus
Chapter 7.	Entry mode selection	Together
Chapter 8.	Adjustments marketing mix	Wouter
Chapter 9.	Conclusion and recommendations	Together
	Reflections	Separate
	References	Together

We enjoyed doing this assignment, because the subject of the assignment, exploring European markets, is in line with our interests. Next to this it gave us the opportunity to research a company in Indonesia and give us international experience.

We would like to thank all employees of Sutek for their cooperation, especially Mr. Siswantoro for supervising in Indonesia and Mr. Tarya for putting this graduation possibility at our disposal. We also would like to thank the contacted manufacturers and distributors for their cooperation. In addition to this we thank Mr. Maathuis and Prof. de Bruijn for supervising our master thesis. And last but not least many thanks to Heri, who drove us to work everyday and who we had a lot of fun with.

Thank you/ Terima kasih!

Enschede, 23 January 2008

Wouter Oosterwijk

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1. Research Plan

1.1 Introduction

This first chapter is concerned with this research plan. In section 1.2 the background and objective of the research is described and also a short introduction of the company is given. In section 1.3 the problem formulation is presented and the research questions can be found in section 1.4. Furthermore in section 1.5 the research approach is elaborated. In the final section 1.6 the structure of this research can be found.

1.2 Background and objective

This research is executed for the Indonesian company PT. Sutek Mitra Utama, which is abbreviated as Sutek in this research. This company is founded by the Abadinusa Holding in 2001. The Abadinusa Holding has a lot of knowledge and experience in the medical business, because five of its six companies manufacture parts of medical products that are made of natural rubber. The company Sutek however is an exception to this, because Sutek produces the cyclized rubber with the brand name Ripex: a resin made of natural rubber that is used as binder in paints, ink and adhesives.

In 2005 the Abadinusa Holding assigned students of the University Twente to do a research for a joint venture between the Abadinusa Holding and the Dutch company Technomed Europe. As a result of this research the two companies successfully established a joint venture together to produce medical bags and other medical products in Indonesia for the Indonesian home market and the global market.

Due to this relationship between the Abadinusa Holding and the University of Twente, the director of the Abadinusa Holding Mr. Tarya contacted Mr. Maathuis of the University Twente to conduct another research. According to Mr. Tarya Sutek has successfully built a new plant to manufacture Ripex in the city Padalarang in the West Java province of Indonesia. However Sutek's partner Resine Italiane has failed to promote and sell Ripex in the European market. Because Sutek strongly relied on the cooperation with Resine Italiane, Sutek has therefore not been able to make a profit of its product Ripex.

For this reason Mr. Tarya requested Mr. Maathuis to assign two students to research the best way to approach the European market for the product Ripex, in order to increase sales in Europe.

1.3 Problem formulation

From section 1.2 can be seen Sutek has the objective to increase sales of Ripex in Europe. So the purpose of the assignment is to determine what strategy should be implemented to increase the sales of Ripex.

Sutek does not know much of European market. This is caused by the fact that Sutek's two distributors in Europe: KMZ Chemicals Ltd in the UK and Resine Italiane in Italy, do not communicate much market information to Sutek. Because the sales of Ripex are disappointing, Sutek now wants to have a good overview of the European market. For this reason Mr. Tarya requested an analysis of the European market for Ripex, an analysis of their main competitor Alpex and a strategic plan to market Ripex in this region.

Other regions in the world (like the USA) are excluded from this research because of several reasons. First of all due to the size and complexity of the assignment, the focus is on the EU region and other regions are excluded. The EU is a big economy. Next to this the EU is favourable over other regions, because Sutek is already represented in the European market by two agents. Also Sutek's partner is

located in Italy. In addition to this the researchers are students of a University in the Netherlands, so they are more familiar with Europe than any other region in the world. Sutek prefers to have an analysis of the whole European market, with the emphasis European countries other than the UK and Italy. The problem can therefore be formulated as follows:

Which market entry strategy should Sutek follow, in order to significantly increase the sales of Ripex in the European market?

The output of this research is an advice that contains the most suitable market entry strategy for Sutek, in order to penetrate the most attractive market segments of the European market. It also includes what steps Sutek should take in the EU market.

1.4 Research questions

The objective of this research is to answer the problem formulation mentioned in section 1.3. In order to find this answer the outline of the research is based on the “Entry Strategies for International Markets Theory” (Root, 1994 pp 1-5). This theory provides a structure for managers to design and execute international market entry strategies that aim to achieve a continuing, sustainable presence in foreign markets, which can be exporting, investment, licensing, and many contractual arrangements. Below the elements of an International Market Entry Strategy are shown in figure 1.1.

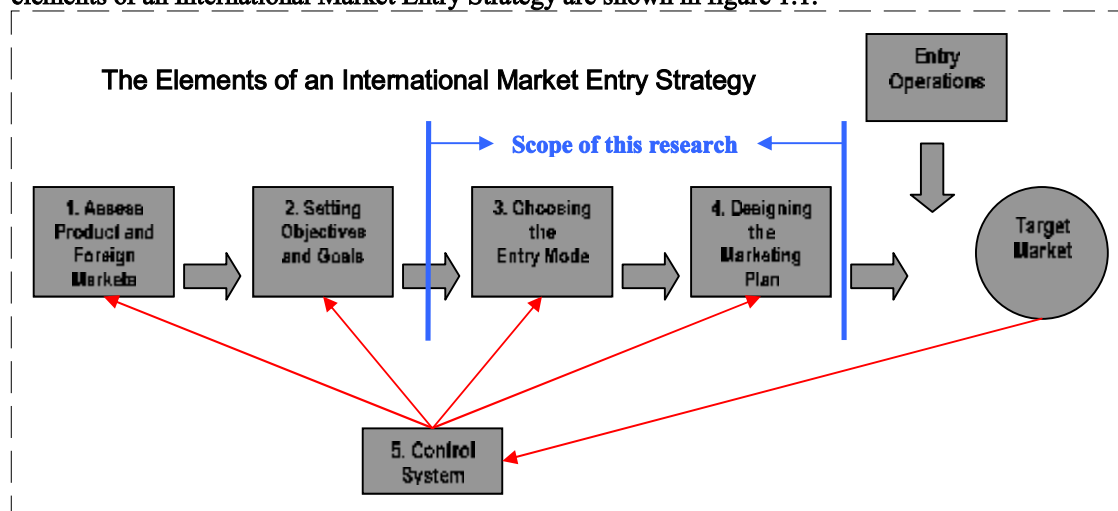


Figure 1.1: The elements of an international market entry strategy (Root, 1994)

The market entry strategy requires decisions on:

1. The choice of a target product/market
2. The objectives and goals in the target market
3. The choice of the market entry mode to enter the target market
4. The marketing plan to penetrate the target market (decisions about price, promotion, and distribution etc.)
5. The control system to monitor performance in the target market.

From figure 1.1 can be seen the international market entry strategy exists of five elements. This research however only concerns element three and four, because Sutek is already selling its product Ripex in the EU market. Sutek requested the researchers to define the most suitable entry mode for Sutek. The fifth element is not included in this research, because this element has to be executed when

significant sales of Ripex have been established. In figure 1.1 this is all is visualized: the scope of this research is in between the two blue lines.

In order to answer to the problem formulation mentioned in section 1.3, five research questions are set up. These five research questions also structure this research, because for every research question a chapter is written. In the final chapter the answers of the five research questions together lead to the answer of the problem formulation.

Since the choice of the entry mode is part of this research, it is logical to appoint one research question to this subject. However before choosing the entry mode, data has to be collected to support this choice. In order to do so, it is necessary to apply a suitable theory that defines the variables that influence the entry mode. Root (1994) has made a model, which describes six types of factors that influence the choice of entry mode. This model is applied in this research and can be seen below in figure 1.2. In this figure, Root makes a distinction between factors internal and external to the company. This distinction of factors is used to set up the research questions in this research.

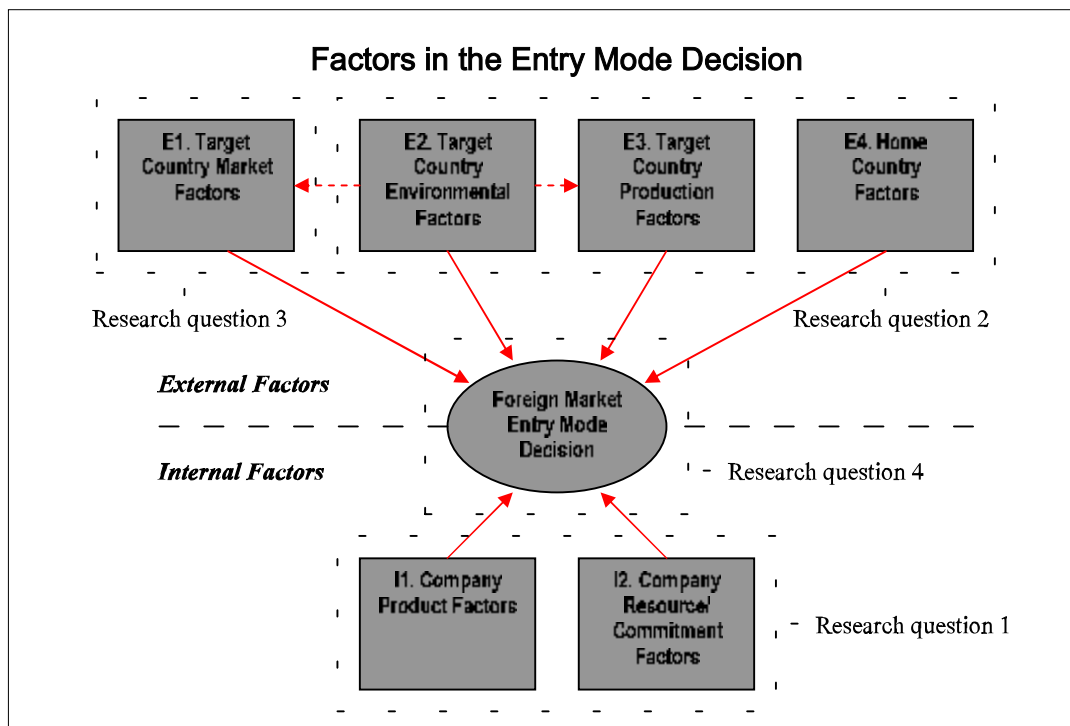


Figure 1.2 Factors in the entry mode decision (Root, 1994)

The first research question in this research is concerned with the analysis of the internal factors, which can be found below the striped line. It deals with the company product factors (I1) and the company resource and commitment factors (I2). It is about what Sutek is able to do and what the quality of Ripex is. The first research question can therefore be described as follows:

1. *How do the product factors and the resource/commitment factors of Sutek influence the entry mode choice?*

The second research question is concerned with the analysis of three of the four external factors, which can be found above the striped line. The factors surrounded by the dotted line are answered in one research question, because the focus in this research is put on the target country market factors. It deals with the environmental and production factors in the target market (E2 & E3), and the home country factors (E4) that influence the entry mode. It is about what opportunities and barriers for Sutek exist to do business in the European market.. The second research question can therefore be described as follows:

2. *How do the opportunities and barriers for Sutek in the European market influence the entry mode choice?*

Only one of the six factors influencing the entry mode has not been dealt with yet, namely the target country market factors (E1). These factors are not included in research question 2, because these factors need more focus compared to the other factors. Sutek indicated that they do not have sufficient knowledge of the market of Ripex in the EU. Therefore Sutek specifically requested the researchers to do an analysis of the EU market and a competitor analysis. So this extra research question is concerned with the analysis of characteristics of the interesting industries in the EU and potential buyers of Ripex. The third research question can therefore be described as follows:

3. *How do the market factors influence the entry mode choice?*

When all internal and external factors are analyzed, a conclusion can be made about the entry mode. The fourth research question can therefore be described as follows:

4. *What is the most suitable market entry mode for Sutek to enter the chosen market segment?*

In the beginning of this section there has been mentioned the scope of this research consists of two elements of the international market entry strategy, namely choosing the entry mode and designing the marketing plan. Since research question one to four are concerned with the analysis of the most suitable entry mode for Sutek in the EU and the factors that influence this, one research question remains for designing the marketing plan. It describes how Sutek can penetrate the target market segment. In this research the word international is added to the marketing plan, because the research focuses on the EU market. The fifth research question can therefore be described as follows:

5. *How should the international marketing plan be designed in order to implement the selected market entry mode successfully?*

These five research questions are important for the structure of this thesis report, because every research question is discussed in a separate chapter. Research question 1 can be found in chapter 4, research question 2 in chapter 5, etc. After discussing these five research questions in the chapters 4 – 8, the researchers are able to conclude this thesis report with an answer to the problem formulation in chapter 9.

1.5 Research approach

This section describes the research approach used for answering each question. This research is a case study, because the research' objective is to increase the sales of one company. For answering the first research question, the data collection consisted of interviews with employees of the company. Sutek is small and therefore not much written data is available. This implies that mainly primary data is used. Even though attempts were made to structure data collection, it appeared the subject was too complex to structure interviews. Due to this all interviews were explorative and in-

depth. The most suitable way to collect the data for this research question was by face-to-face interviews, because only two persons at Sutek were able to cooperate in this research. For answering the second research question the researchers used internet as a source. Secondary data like statistical data was found on the internet. If this data was not sufficient it is complemented with primary data, collected by interviews with Sutek, distributors and potential users in the business. To collect data for the third research question internet is used as a source. The researchers have reviewed websites of European associations and magazines in the relevant segments to collect market information. Furthermore primary data was collected by conducting telephone interviews with distributors and potential users in the business. After this an in-depth research is done for the most interesting market segment. For this research two face-to-face interviews with two experts were conducted, in order to understand this market segment better. To complement this data, telephone interviews with potential buyers and experts in this market segment were conducted, because meeting all the experts face-to-face was too time consuming and too costly for the researchers. For answering research question four and five no new data is collected. The researchers used the data collected for the first three questions.

1.6 Structure of the research

In this section the structure of the research is presented, see figure 1.3. On top is chapter 1 in which the research design is described, followed by chapter 2 in which the theory and methodology are discussed. After this chapter 3 describes the current situation of Sutek and here also the current marketing plan of Sutek is elaborated. The chapters 4-8 discuss the five research questions mentioned in section 1.5. For every research question a separate chapter is made. Chapter 4 concerned with research question 1: the internal analysis.

Chapter 5 is the first part of the external analysis and is concerned with research question 2: the environmental and production factors of the target market and the home country factors. Chapter 6 is the second part of the external analysis and deals with research question 3: the market factors. In Chapter 7 the findings of the chapters 4-6 are summarized and a choice on the entry mode is made. After this in chapter 8 the current marketing plan from chapter 3 is compared to the findings of chapter 4-7. It explains in what way the marketing plan of Sutek has to be changed. This research ends with chapter 9, where the conclusions and recommendations for Sutek of the researchers are given.

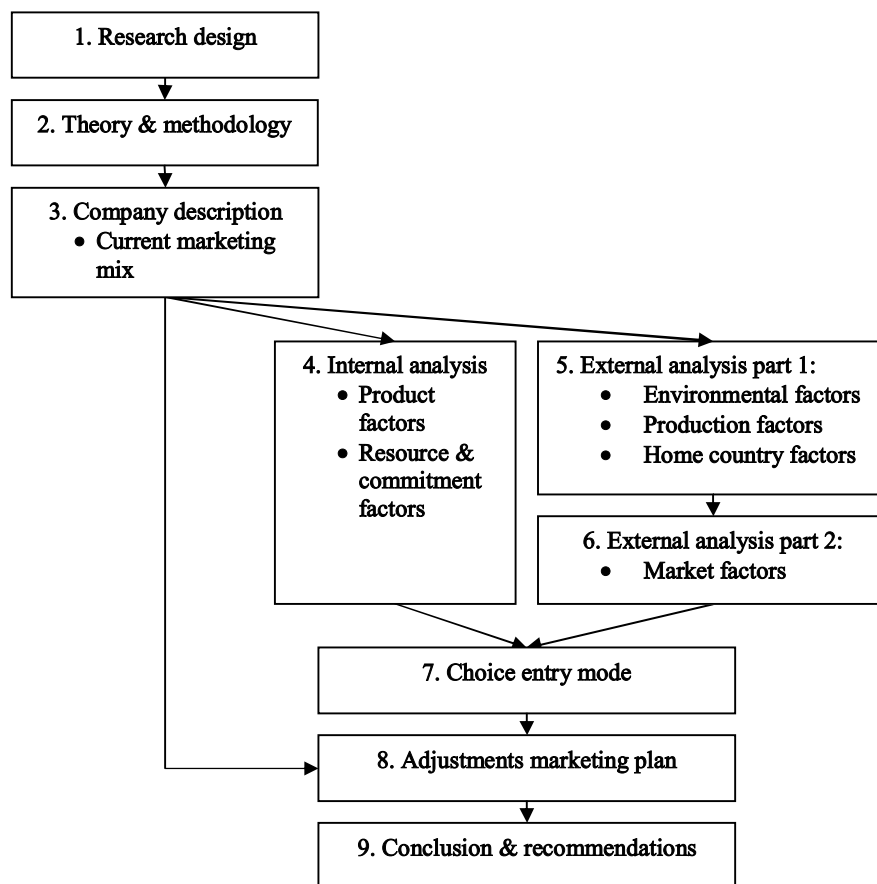


Figure 1.3: Research Structure

2. Theories and Methodology

2.1. Introduction

This chapter focuses on the models and theories used in this research. The research questions presented in section 1.4, that are based on the Root's theory of an international market entry strategy, are used as an outline in this chapter. In sections 2.2, 2.3 and 2.4 the theories and methodology are described that supports respectively the internal analysis, the external analysis part 1 and 2. In section 2.5 and 2.6 the entry mode selection and the international marketing plan are presented. The last section 2.7 discusses the framework that the researchers used to find the answer to the problem formulation in a scientific way.

2.2. Internal Analysis

2.2.1 Internal factors

The first research question is: How do the product factors and the resource/commitment factors of Sutek influence the entry mode choice? Root explains these two factors as follows:

Company product factors

There are four product factors that influence the entry mode, namely: product differentiation, the requirement of pre- and post- purchase services, the technological intensity and requirement of product adaptation (Root, 1994 p13).

Company resource/ commitment factors

Access to resources and the company's commitment to do international business can constrain the types of entry modes a company can choose from. Namely, the more abundant a company's resources in management, capital, technology, production skills, and marketing skills, the more numerous are its entry mode options. Resources must be joined with a willingness of the company to commit them to foreign market development. The higher the degree of commitment, the higher the probability managers select the entry mode for a target country from a wider range of alternative modes (Root, 1994 pp14-15). Because Root does not reveals to what extent these resources and commitment should be apparent, two theories of Johnson and Scholes (2005) are used to support the assessment of the company resource and commitment factors.

To assess the resource factors at Sutek, the theory on the strategic capabilities of Johnson and Scholes (2005) is used. This theory recognizes two capabilities: resources and competences. The organization's resources can be divided by four broad categories: physical, financial, human and intellectual resources. Competences are the activities and processes through which an organization deploys its resources effectively. Thus, how resources are managed, the cooperation between people, their adaptability, their innovatory capacity, the relationship with customers and suppliers and the experience and learning about what works well (Johnson and Scholes, 2005 pp117-121). This theory is used here in order to have an overview of all existing types of resources. Assessing the degree in which these resources at Sutek are abundant or not, allows the selection of the most suitable entry strategy mode of Sutek.

According to Root a company's commitment to international business is revealed by the role a company has accorded to foreign markets in corporate strategy, the status of the international organization and the attitudes of managers (Root, 1994 p15). Unfortunately Sutek does not have a written mission, objectives and strategy and so on, because Sutek is a small company. Thus to get a clear picture of the company's commitment to do international business, the overall company strategy of Sutek is deducted from what the company is doing. To structurally analyze Sutek's strategy the

vocabulary of strategy of Johnson and Scholes (2005) is applied in this research. They identify the following terms as a general guideline in the vocabulary of strategy: mission, vision/strategy intent, goal, objective, strategic capability, strategy, business model and control (Johnson and Scholes, 2005 pp13-14).

Additional literature export success

The entry mode theory of Root is valid for a general situation: thus for any company, in any country, that wants to go abroad to any target country. So in order to obtain a better insight in which factors are important for the specific context of Sutek, also additional literature is used in this research for the specific situation of Sutek. First of all it is important to consider that Sutek operates in the chemical industry. To find out what is important for Sutek, regarding the marketing in the chemical industry, the book *Marketing and Sales in the Chemical Industry* of Jakobi (2002) is used. It discusses the specific factors for marketing chemical products and their major markets and pays attention to what is important in this business to business environment. This book is used as background information for setting up the questions used in the interviews in the external analysis. Next to this it is used for analyzing the marketing mix of Sutek.

It was very likely from the start of this research that the conclusion would advise an export mode as the most suitable entry mode, because Sutek already produces and exports Ripex. The initial idea to produce Ripex in Indonesia of Sutek and Resine Italiane was based on the assumption that this would result in lower production costs. Furthermore the main raw material natural rubber is locally available in Indonesia. In addition to this it is expensive to move production to Europe, now that the plant has already been built in Indonesia. Therefore the researchers did a literature search on export success. Analyzing factors that influence export success according to business literature have been useful, because analyzing these factors at Sutek allowed making improvements of the current marketing mix. It gives insight in what has to be changed in order to have export success, see chapter 8.

Because many articles were found on export success the extra criteria geographical background was added for this literature. Sutek is based in the developing country Indonesia. Because many differences exist between a developing and a developed country, it is therefore also important to review the factors influencing exporting in an Indonesian context. Although no studies in an Indonesian context were found, the findings of the articles of Julian (2003), Moini (1995) and Christensen et al. (1987) are used here, because those three articles review factors that influence export success, from samples of companies from different geographical locations, namely respectively Thailand, Wisconsin and Brazil. The comparison of the studies in export success from two emerging economies (Thailand and Brazil) and one developed economy (Wisconsin) gave the researchers insight in the differences of the factors influencing export success in the different types of economies.

Export success from different geographical backgrounds

Julian (2003) researched the export marketing performance for 151 small and medium-sized enterprises in the national setting of Thailand. Julian (2003) found there are four main factors that influence export success, of which two factors are internal to the company. These factors are the commitment of a company's products/services and product characteristics. This commitment includes the four subjects:

- The level of service and maintenance requirements needed by the product
- The extent to which the product is established within the company
- The extent of resource commitment of the company
- The degree of exposure of the product in the export market

For the product characteristics there are three subjects that require the attention, namely:

- The degree of culture specificity of a product
- The degree of uniqueness of a product in this export market venture
- The extent of the patent a product enjoys

Moini (1995) uses data from a survey of 102 small Wisconsin exporters to identify characteristics that contribute to the success of a firm's export program. According to Moini (1995) the following internal factors influence the export performance positively:

- Firm characteristics
- Competitive advantage
- The willingness to search for new markets

Christensen et al. (1987) researched factors influencing exporting success of 152 Brazilian firms. According to Christensen et al. (1987) export success depends on:

- Firm characteristics
- Export management practices
- Managerial perceptions and attitudes

Export readiness test

To complement the internal analysis the researchers have executed the export readiness test. The export readiness test is a quick test to measure a company's export readiness: it shows if Sutek is ready to do international business. Next to this it gives guidance in fine-tuning certain aspects for European market preparation. This online test is provided by the CBI: an Agency of the Ministry of Foreign Affairs and part of the development cooperation effort of The Netherlands. The CBI promotes imports from developing countries. The test is placed in attachment 9 and consists of 15 questions with subjects like:

- Motivation
- Market information
- Objectives
- Management of resources
- Market entry

Overview factors

An overview of the factors which are analyzed for the internal analysis is presented in table 2.1. Because there is an overlap in the theories the researchers present an overview of which factors they have analyzed.

Factor	Author
Company product factors	Root/Julian
Company resource/ commitment factors	Root/Johnson & Scholes/ Julian
Firm characteristics	Moini/Christensen
Competitive advantage	Moini
The willingness to search for new markets	Moini
Export management practices	Christensen
Managerial perceptions and attitudes	Christensen
Motivation	CBI
Market information	CBI
Objectives	CBI
Market entry	CBI
Management of resources	CBI

Table 2.1 Overview factors internal analysis

2.2.2 Methodology

All the factors mentioned in the theory have been put in a list and converted into relevant questions for Sutek. This resulted eventually in the 'Question list internal factors'. The final elaboration of this question list and interview can be found in attachment 5.

Preparation

In order to be well prepared for the internal analysis, two initial explorative interviews have been conducted. Before departure to Indonesia Mr. Noordermeer was contacted. He is professor of rubber technology at the faculty of Science and Technology at the University Twente and introduced the researcher to natural rubber. The elaboration of this interview can be found in attachment 2. Upon arrival in Indonesia, the researchers had two explorative and unstructured conversations with Mr. Siswantoro of Sutek, in which he explained a lot of the company, the products and the production process. The elaboration of these explorative conversations can be found in attachment 3. These two meetings have been very useful for this research, because it gave the researchers insight in the natural rubber and the product Ripex.

The internal analysis

The elaboration of the question list of the internal analysis contains mainly primary data, because Sutek is a small company that hardly has any written documents. The primary data needed to answer the questions is derived from the preparation and are collected by conducting interviews with company representatives, because it is given preference over other data collection methods for several reasons. The interviews for this research were conducted by meeting the participants face-to-face. This approach was the most suitable option, because this way more information can be obtained. The typology used in this interview was semi-structured, because the interview was structured by pursuing a list of questions derived from the theory, which can be found in attachment 5. In these interviews the researchers also reacted on answers of the interviewees. Furthermore the interview consisted only of open questions and not predefined answers.

The export readiness test is filled in by the president and vice president of Sutek. Next to this the researchers filled in this test with their observations of Sutek. The answers to this test can be found in attachment 9.

2.3 External Analysis part 1

2.3.1 External factors

The second research question is: How do the opportunities and barriers for Sutek in the European market influence the entry mode choice? In order to find an answer to this research question the environmental and production factors in the target market and the home country factors are analyzed. Root (1994) explains these three factors as follows:

Target Country Environmental Factors (E2)

There are many types of environmental factors influence the entry mode selection to the target country. In total eight of these environmental factors are distinguished by Root (1994), namely:

- The type of import policy regarding the import of the product
- The policy regarding foreign investment
- Restrictions of the geographical distance between home and target market
- The type of economy of the target market
- The type of exchange controls
- Exchange rate depreciation or appreciation
- The political risk
- The cultural distance between target and home market

Next to this the PESTEL framework is used (Johnson and Scholes, 2005 pp 65-68), because this model also deals with external factors of a company. Most of the factors of this framework are covered by the theory of Root, but the environmental factor defined by the PESTEL framework is different from Root. The PESTEL framework sees environmental influences as influences from organizations that want to protect the environment, for example by lowering waste disposal, energy consumption etc.

Target country production factors (E3)

Target country production factors are about the quality, quantity and the cost of the production. Root argues there are raw materials, labour, and energy in the target country, as well as the quality and cost of the economic infrastructure.

Home country factors (E4)

Home country factors (E4), like market, production, and environmental factors in the home country also influence the choice of entry. Also the relative production cost of the home country compared to the foreign target market encourage.

Overview

An overview of the factors, analyzed for the first part of the external analysis, is presented in table 2.2.

Factor	Author
Target country environmental factors	Root/ Johnson & Scholes
Target country production factors	Root
Home country factors	Root

Table 2.2 Overview factors external analysis part 1

2.3.2 Methodology

All the factors mentioned in table 2.2 are applied for Sutek and can be found in sections 5.2 – 5.4. In order to analyze these factors, the researchers chose Indonesia as the home country and the EU region as the target country. The EU is seen as one market, because this is a large trade block with common characteristics, regulations and no trade borders.

The target country environmental factors contain mainly secondary data, because it was initially collected by other organisations/ researchers and reused in this research. This data collection was explorative, because a better understanding of the applicable environmental factors was needed. Data is derived from representatives in the business, organisations that provide statistical information about for example the EU economy. The statistical information was found on the internet, while the data coming from companies in the business was collected by telephone calls and emails.

The data in section 5.3 of the target country production factors is only primary data, because it was collected by the researchers themselves in an interview with representatives of Sutek. It was exploratory, because it was necessary to find out it is feasible to produce Ripex in Europe. In order to estimate this as good as possible, a comparison is made between the actual cost price of Ripex and the cost price of Ripex when Sutek would produce it in the EU. Important here was the use of cost price that is qualitative. Next to this also quantitative data was used about the production factors.

The data in section 5.4 of the home country factors is mainly primary data, because it is collected by the researchers by observation. This part of the research was explorative. The purpose of this data collection was to better understand the home country factors.

2.4 External analysis part 2: Market factors

2.4.1 External factor

The third research question is: On which attractive market segments should Sutek focus on? In order to find an answer to this research question the market factors in the target market are researched. Root

(1994) explains this factor as follows: The target country market factors are about the present and projected size of the target country market, the competitive structure and the availability and quality of local marketing infrastructure (Root, 1994 p8).

Sales potential

For this research the assessment of the sales potential for Ripex in the European market is based on Root's preliminary screening (Root, 1994 p8). This consists of a construction of the consumer/user profile of the generic product, because knowing the core of the properties of the consumer of your product makes market estimating for your product more effective (Root, 1994 p33). After this the direct estimates of the market size is made for three market segments. Different sources showed that in this business it is more appropriate to talk about target markets instead of target countries.

To further estimate the sales potential of Ripex in Europe and to select the most attractive market segment, Kotler's segmentation theory is used. He states companies can segment international markets (foreign countries) using one or several variables (Kotler, 1996). They segment on:

- *Geographic location*: grouping countries in regions.
- *Economic factors*: grouping countries by income level or overall economic development.
- *Political and legal*: Type and stability of government, receptivity to foreign firms, monetary regulations, and the amount of bureaucracy.
- *Cultural factors*: grouping markets according to languages, religions, values and attitudes, customs and behavioural patterns.

This segmentation is done to group prospective buyers together into groups that:

1. Have common needs and
2. Will respond similarly to the marketing action.

The groups that result from the segmentation are called market segments: a relatively homogeneous collection of prospective buyers. The segments compared with each other are heterogeneous.

In addition to Kotler the researchers use the segmentation theory of Anderson et al. (1999), because this is applicable in the business-to-business market. Anderson et al. (1999) argue that business managers can use a variety of ways to segment the market. They describe two bases of segmentation, namely:

Conventional	Segment the market on industry, customer size, customer behaviour and geography
Progressive	Segment the market on application, customer capabilities, usage situation and customer profitability to gain more detailed information about customer preferences and requirements

Now the theory about segmentation is described, the application of this theory is elaborated here. In this research the segmentation process is done in four segmentations steps in order to find the most attractive market for Ripex. The first segmentation step was already made by the company and was based on the theory of Kotler (1995), namely geography. The second segmentation step is done by following the progressive base of Anderson et al. (1999), the application of Ripex. The third segmentation step is done by geography and is based on Kotler (1996). The fourth segmentation step is done on the more conventional bases that Anderson et al. describe, namely on industry and geography.

Competitive structure

The second part of the analysis of the target country market factors consists of the competitive structure of the target market. To analyze the competitive structure the framework for competitor analysis of Porter will be applied here, which includes four diagnostic components to a competitor analysis: future goals, current strategy, assumptions and capabilities, see figure 2.1. These four components are analyzed with the objective to predict the competitor's response profile (Porter, 1980 pp47-74).

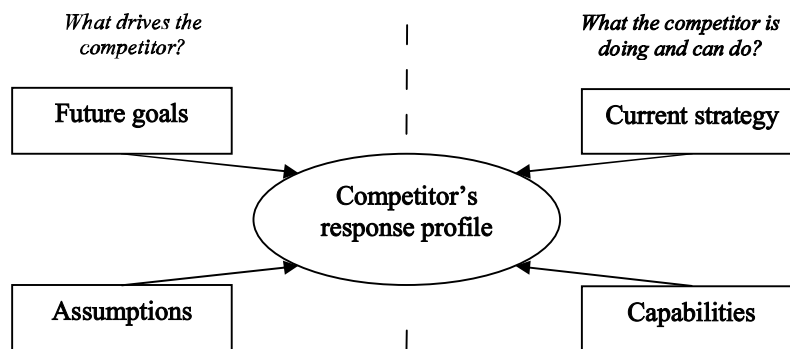


Figure 2.1 The components of a competitor analysis (Porter, 1980)

Knowing the future goals of a firm will allow predictions, whether or not this firm is satisfied with its position and financial results and how it will react to outside events. Assumptions a firm has about itself, the industry and other firms will guide the way this firm behaves and the way it reacts to events. The current strategy contains clues about the selection of target markets, the chosen positioning in these markets and also the use of marketing tools to realize a certain positioning. The capabilities of a firm will determine its ability to react to moves of the competitor and to deal with environmental or industry events. Finally these four components will lead to a profile of how the competitor responds. The goal of this is to predict the strategic changes the competitor might initiate. The following questions can be answered in this profile: Is it satisfied with its current position? What are its probable moves? Where is the competitor most vulnerable? How important is every market segment important for the total position of the competitor? How will the competitor react on different initiatives? (Porter, 1980 pp47-74)

In order to analyze these four components the researchers have reviewed the following aspects of the competitor:

- Mission
- Vision
- Strategy
- Product
- Investments
- Financial figures
- Market information
- Official statements
- Market position
- Size
- R&D activities
- Location
- Quality management
- Acquisitions

Marketing infrastructure

According to Root the availability and quality of local marketing infrastructure also are a part of the target country market factors. Therefore in this research an assessment is made of agents and distributors and local agents.

Additional literature export success

In addition to the factors of Root, also external factors that influence export success have been analyzed in this research. These factors are derived from the same articles that are used in the internal analysis, because these articles also mention external factors that influence export success. After comparing these articles with Root's external factors, it became clear many external factors are the same factors that Root mentions. Only two factors of Julian (2003) have been found to be different from Root's external factors (see section 2.2.1). These two factors important for export performance are:

1. The competition factor consists of four components:
 - The degree of price competitiveness in the export market
 - The extent of price competition in the firm's industry
 - The competitive intensity of this export market
 - The extent of foreign competitors in this export market
2. The export market characteristics consist of four components:
 - The level of sophistication of the marketing infrastructure in the export market
 - The degree of adaptation of the products packaging in this export market venture
 - The extent of government intervention in the export market
 - The degree of adaptation of the product positioning strategy in the export market

Overview

An overview of the factors, which are analyzed for the external analysis part 2 is presented in table 2.3. Because there is an overlap in the theories, the researchers present an overview of which factors they have analyzed.

Factor	Author
Sales potential	Root/ Kotler/ Anderson
Competitive structure	Root/ Porter/ Julian
Marketing infrastructure	Root/ Julian

Table 2.3 Overview factors internal analysis

2.4.2 Methodology

All the factors mentioned in the theory can be found in sections 6.2 – 6.5. In these sections an application of the factors for Sutek is described.

The estimation of the sales potential of Ripex in section 6.2 contains primary and secondary data. The consumer/user profile and the conversations with European industry associations, distributors and manufacturers were all collected by interviews and observations and is therefore primary. The preliminary screening of the market size however, is based on industry information derived from sources on the internet. This is all secondary data, because this data was initially collected by other organisations/researchers and reused in this research. Next to information derived from internet, also data was collected through telephone calls and emails with European industry associations, distributors and manufacturers. Also two face-to-face interviews were conducted. All data collection is explorative, because the objective is to better understand the market for Ripex. Due to this all telephone calls, email and face-to-face interviews with experts in the industry were in depth and semi-structured.

The data in section 6.3 in which the competitive structure for Sutek is described is based on primary and secondary data. The competitor analysis is done by analyzing one competitor. The analysis was in-depth and explorative, because the researchers did not know the main competitor of Sutek. The primary data is collected through telephone calls with the competitor and a former distributor of the competitor. The secondary data is collected by internet research on the competitor's website and using different annual reports.

The data in section 6.4 and 6.5 is derived from section 6.2 and 6.3. For analyzing marketing infrastructure and the factors for export success, no additional data collection was needed, because the researchers could analyze these factors with the data collected in the external analysis part 2.

2.5 Entry mode selection

The fourth research question is: What is the most suitable market entry mode for Sutek to enter the chosen market segment? In order to select the most suitable market entry the theory from Root (1994) is applied again in this section.

2.5.1 Theory

Root argues a company has different options to penetrate a foreign country. It can export its products to the foreign country from a production facility outside that country or it can transfer its resources in technology, human skills and capital to the foreign country. These resources can be combined with local resources. From these two forms of entry Root distinguishes three main entry modes which each have different types (for example for export: direct/indirect by agent/indirect or by branch/subsidiary) (Root, 1994 p6). These entry modes are presented below.

- *Export entry modes*
- *Contractual entry modes*
- *Investment entry modes*

This model in figure 2.2 mentions that first all entry modes have to be reviewed for feasibility with respect to the external and internal factors. Then all feasible entry modes have to be compared and ranked on: profit contribution, risk and non-profit objectives. Eventually the highest ranking mode is the most appropriate one. In this research however not all steps of this model are executed, because it appeared no feasible entry modes exist for Sutek in the EU market. Therefore in the model the steps that are executed in this research are surrounded with a dotted line.

In order to choose the right entry mode the following decision model is used (Root, 1994 p164):

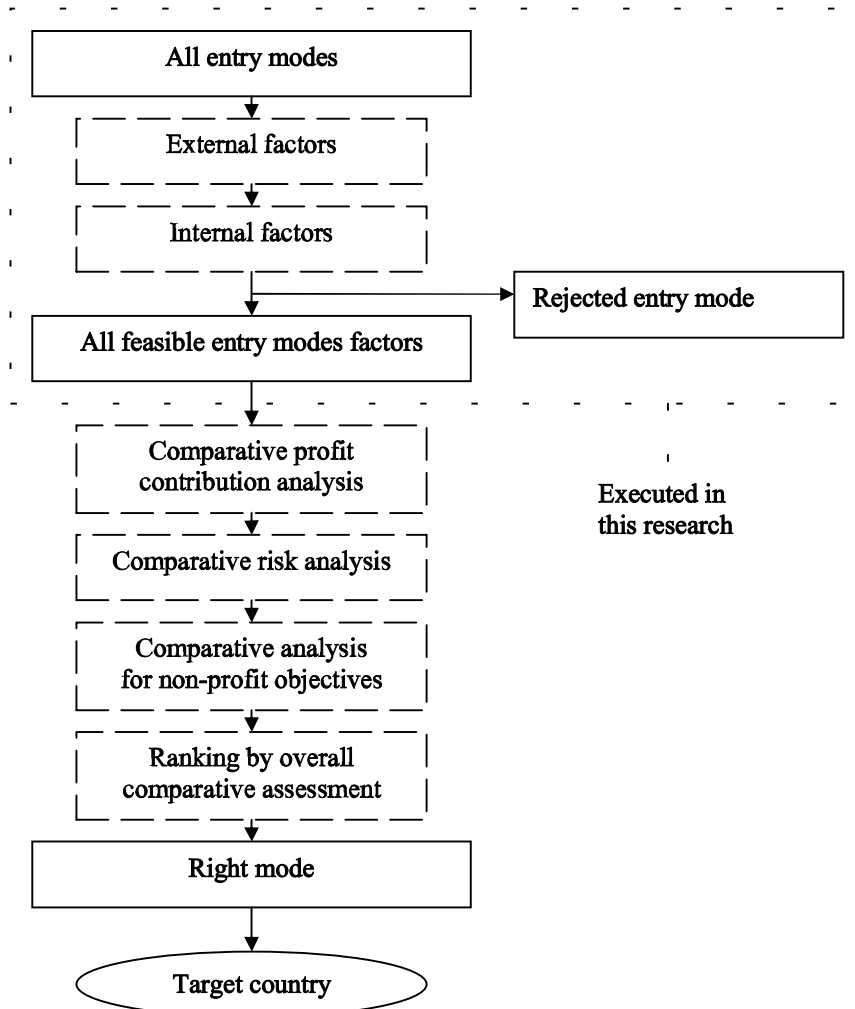


Figure 2.2 Decision model for the right entry mode (Root, 1994)

2.5.2 Methodology

In order to find an answer to the fourth research question, the conclusions of the internal analysis in chapter 4 and external analysis in chapter 5 and 6 are put together in chapter 7. In this chapter no new data is collected.

2.6 International marketing plan

The fifth research question is: How should the international marketing plan be designed in order to implement the selected market entry mode successfully? In order to find an answer to this research question the current marketing mix of Sutek is analyzed. Although a marketing plan contains more than this, only the marketing mix is analyzed, because this involves the most important aspects of the marketing plan. Next to this it is only the research's objective to research how the product of Sutek can be internationally successful and not how Sutek should be changed itself.

2.6.1 Theory

The original marketing mix that was proposed by McCarthy (1960) consists of four P's: Product, Price, Place and Promotion. Where place can be seen as distribution channel. However in this research the marketing mix is placed in an international context. Therefore the international marketing mix from Root is used to answer the fifth research question mentioned above (Root, 1994 pp171-198). In this international marketing mix decisions have to be made on five instead of four areas: Product, Price, Channel, Logistics and Promotion. Here the P of Place is split up in channel and logistics, to give extra attention to the international context. These five areas of Root are explained in table 2.4.

Product	A combination of tangible and intangible attributes that confer benefits on users. These attributes form three subsets: physical, package and service (pre and post-purchase). A given product may have one, two or all three dimensions
Price	Price is the exchange ratio between a product and money. A company's pricing discretion is dependent on the degree of product differentiation achieved in the market. Together with sales volume, price determines sales revenue
Channel	A chain of marketing agencies that links the producer to his final buyers. The distinctive channel flow is a series of transactions that ultimately transfer ownership to final buyers. The producer may own none, some or all agencies.
Logistics	A chain of agencies that accomplishes the physical movement of a product from the producer to its final buyers. Logistic activities include transportation, handling and storage, as well as the choice of production location.
Promotion	All communications initiated by a seller that are addressed to final buyers, channel members, or the general public, and are intended to create immediate sales or a positive image to the seller's product and/ or company. Promotion includes personal selling, advertising, sales promotion, and publicity.

Table 2.4 The international marketing plan: Instruments of action (Root, 1994)

2.6.2 Methodology

Before the internal and external analysis is presented an introduction to the company and the product is given in chapter 3. The researchers have analyzed the current marketing mix, which can be found in section 3.5. The data collected in chapter 3 is all primary data. It was collected by observation and interviews with representatives of Sutek. The elaboration of the question list marketing mix can be found in attachment 4. It was exploratory, because it was necessary to satisfy the researchers' desire for better understanding of the current marketing mix of Sutek. Only qualitative data was used, because a marketing mix can not be explained by numbers. Furthermore the data was collected in face-to-face interviews with representatives of Sutek.

2.7 Framework

The framework below in figure 2.3 shows all chapters in this thesis report and also the connection between the chapters. A distinction is made between chapters that consist of data and chapters that do not. The dotted line around chapter 3 – 6 indicates which chapters contain of data.

In attachment 1 an overview is given of the factors analyzed in this research. The factors used in this research are listed per chapter. It also represents the source and research method used to obtain the data.

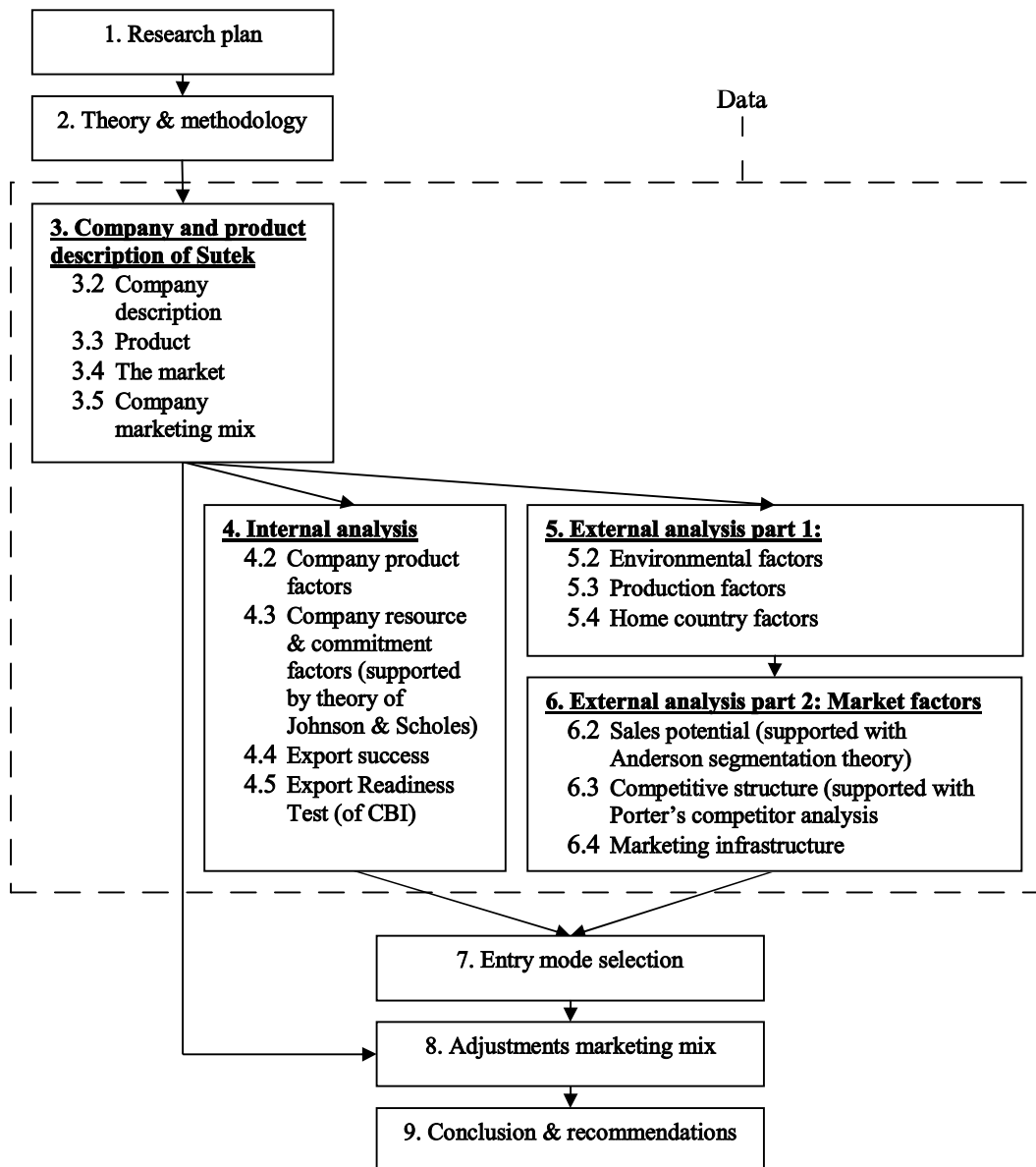


Figure 2.3 Framework

3. Company and product description of Sutek

3.1 Introduction

In order to find an answer to the fifth research question, the current marketing mix of Sutek is presented in this chapter. Later on this marketing mix is used as a frame of reference for setting up chapter 8, where this fifth research question is answered. In chapter 8 the current marketing mix is compared with the results of the internal and external analysis, in order to identify necessary adjustments. Before describing the current marketing mix of Sutek in section 3.5, this chapter starts in section 3.2 with a brief introduction to Sutek. Furthermore in section 3.3 and 3.4 respectively the product and the market is described. This company description is included here to give the reader an overview of Sutek and their business and makes the remaining part of this report more understandable.

3.2 Company description

PT Sutek Mitra Utama (or Sutek) is a small Indonesian company that produces cyclized rubber resin. Sutek was founded in November 2001 and started with the intensive research on newly developed cyclized rubber resins. A plant was constructed from March 2003 until March 2004 and in April 2004 the newly produced resin was received by printing ink, coating and adhesive tape manufacturers in Europe. Sutek is founded and fully owned by the Abadinusa Holding. This Holding consists of the following six companies. These companies are:

- Abadinusa Distribution (founded 1980)
- Sugih Instrumendo Abadi (founded 1990)
- Abadinusa Healthcare (founded 1994)
- Renaltech Mitra Abadi (founded 1998)
- **Sutek Mitra Utama (founded 2004)**
- Technomed Asia (founded 2005)

Except for Sutek, all companies in the Abadinusa Holding produce equipment for the medical business. Together with the other daughter companies of the Abadinusa Holding, Sutek is located in Padalarang, 15 km from Bandung, on the island Java in Indonesia.

3.3 Product

Sutek sells cyclized rubber under the brand name Ripex. It is a non-rubbery, tough, hard, resinous material and it can be used in paints, ink and adhesives. The main raw material of Ripex is natural rubber and is therefore a very important resource for Ripex. More basic knowledge on natural rubber can be found in attachment 2. Sutek buys its natural rubber from the rubber plantation company Estate. This is an Indonesian government-owned company. Thailand, Malaysia and Indonesia are the three main producers of natural rubber.

Natural rubber is a substance that consists of long chains of molecules. When natural rubber is cyclized, the long molecules are chemically cut into small parts and furthermore those 'smallest parts of natural rubber' are cyclizing in a hexagon. When this cyclization process is done many times, a new molecule structure will appear (Blackley, 1966 p418). Important properties of Ripex are the melting point, the viscosity and the colour. These are important, because they influence the properties of the product in which Ripex is used.

The melting point is important for the processing of the product of the users of Ripex. The colour of Ripex determines the use of Ripex in light coloured products, like light paints. Low viscosity is important, because than less solvent are needed.

Process

To get cyclization the following substances are put together and heated: catalyst + natural rubber + phenol. The most common used catalyst for cyclization is P_2O_5 (phosphorus pentoxide). By solving the solid natural rubber in heated phenol, the catalyst can get close to all the natural rubber molecules, so the catalyst can cyclize the natural rubber molecules. In order to obtain a certain desired viscosity, two variables in the cyclization process are of importance: the amount of catalyst used and the temperature of the process. This process requires great precision. See attachment 3 for more technological information about Ripex

3.4 Market

Applications of Ripex

According to Sutek, the main application for Ripex is anticorrosion paint and printing ink. It is useful for paint, because Ripex is especially resistant to water, non oxidizing acids and alkali. Ripex can be particularly useful in coatings for offshore applications, resistant to saltwater, like in pipes, for containers, bottom part of the boat (marine paints). Ripex is also used in the coating of swimming pools (that needs a light colour) and road marking paint (that needs a light colour and needs to stick to bitumen/concrete and has to be hard) For the production of printing ink Ripex can be used, because ink needs a certain viscosity value to prevent the ink from misting. Ripex is also used for pressure adhesive tape, to make the tape (polypropylene) stick to the rubber glue.

The production and market

Sutek produces 2 products: Ripex S and L. The main difference between the two products is that Ripex L has a lower viscosity, see attachment 7 for more information about the technical properties in the Technical Data Sheet (TDS) of Ripex S and L. Up till now Ripex L is the product, which is mainly sold. Sutek sold Ripex to customers in the USA, Peru, Sudan, UK, Italy, the United Emirates and the Philippines.

Currently Sutek has a capacity of 400 ton Ripex per year, but does not by far reach this capacity. Therefore they want to increase sales, by developing a new product. Sutek thinks a big market potential exists, for Ripex with a viscosity even lower than Ripex L, because many distributors and potential buyers request this. They want to sell this new type under the brand name Ripex XL, although it does not exist at the moment. However it is not certain that there is a market, because no marketing research has been done on Ripex XL. Therefore Ripex XL is now in development and the market will be explored at the same time. It is expected that Ripex XL is ready for production at the end of the year 2007. A new experienced marketing employee joined Sutek in Augustus 2007 to market Ripex L and Ripex XL.

Sutek wants to make high quality products (about the same as the competition) for a price that is competitive. They want to focus on the European and Chinese market. The main competitor of Sutek is Cytec that produces the products Alpex CK 450 (comparable with Ripex L) and Alpex CK 514 (comparable with Ripex XL).

3.5 Company marketing mix

The current marketing mix is used as a frame of reference. In this section the four P's of Sutek are discussed, namely Product, Price, Place and Promotion.

3.5.1 Product

Sutek is selling one product. The product is cyclized rubber and is a chemical product. It is a non-rubbery, tough hard, resinous material and it can be used in paints, ink and adhesives. There are two

types, namely Ripex S and Ripex L. Because Ripex S is hardly sold, Ripex L will be used as base to analyze the current marketing mix. The product is standardized. Ripex is not adapted to a special region, because it is proven to be a good substitute for Alpex and can easily be introduced to manufacturers who are already using cyclized rubber. Also a new Ripex product with low viscosity is being developed. This new product will meet the requirements and preferences of more potential customers and therefore has more sales potential than Ripex L. Ripex is being sold in paper bags of 25 kg, with English product information. The product including the package meets the requirements of where it is sold, because has received no complaints. Before Ripex is used in production, it first runs through certain tests, by generally following this procedure:

1. Ripex is tested in the lab by the manufacturer with 1 kilo Ripex
2. Ripex is tested in a pilot plan/production with 500 kilo Ripex
3. If there are no problems, Ripex is used for production

During this process no assistance is needed from Sutek, because the manufacturer has its own formulas and this is not known to Sutek. Ripex is mainly used in the anticorrosion paint and printing ink, but also in a small number in adhesive tape. It is better to sell Ripex to manufacturers, who already use cyclized rubber, because the formula to implement this resin is already known and only small adjustments have to be done to fine tune the process.

Supporting services

Sutek offers the following services to the distributor. (According to Sutek Ripex does not require more services for selling it):

- Company brochure, see attachment 6
- Technical Data Sheet (TDS), see attachment 7: required by the industry
- The Health and Safety Data Sheet (HSDS), see attachment 8: required by the industry
- Samples

Product life cycle

Ripex S is by estimation in the decline phase, because there is hardly demand for it. For Ripex L it is hard to determine the phase, because there is not much sales of Ripex L. This can have several causes and it does not mean Ripex L is in the last phases of the product life cycle. The new product Ripex XL is expected to be in the first phases of the of the product life cycle, because Sutek receives requests for this type. After all it is difficult to determine, because there is no market information about this within Sutek.

Market position

Sutek is a small company and started with research in 2001. In 2004 they started producing their first product, Ripex S. Since the end of 2006 Ripex L is being produced. The cyclized rubber market is difficult to define and therefore there is no knowledge about the market position of Ripex within the company. The market position is not big, because there is not much sales. The product Ripex L is relatively new for Sutek, because it is produced for only eight months now, so they do not have a real market position yet. Sutek is trying to penetrate the market which they think is dominated by their main competitor Alpex.

Competitive alternatives

Sutek knows that they have to compete with other cyclized rubbers on the market, but according to Sutek these cannot compete with the quality of Ripex. At this moment Sutek knows the names of three competitive products, these are: Crodaprene, Resiprene and Alpex. The annual sales of Crodaprene in the UK are estimated on 30-40 ton. The technology of cyclized rubber is old and this technology is modified by Sutek. The characteristics of Ripex are better compared to the competition, but are equal to their main competitor Alpex. Sutek has the strategic advantage of producing in Indonesia. Sutek can

choose from different natural rubber types and quality, which allows Sutek to have a lower purchasing price of natural rubber than European manufacturers. Sutek also has an advantage on energy and manpower cost, therefore they can differentiate on price.

Cyclized rubber is a specialty product and has therefore it is expected to have few substitutes. At the moment the paint market can use alkyd resin, but this is not well resistant to the weather. When cyclized rubber is added to this resin it becomes more resistant to weather influences. Cyclized rubber is the best resin for compatibility with alkyd resin compared to other resins. The paint industry also use epoxy instead of alkyd resin + cyclized rubber, but this is more expensive according to Sutek.

3.5.2 Price

Sales price

Sutek sells Ripex to distributors for US\$5.30 per kg and for US\$5.80 per kg to the manufacturer.

Suteks' vision is to have a profit margin of 25%. At this moment this margin is not achieved.

The sales price to the distributor is based on FOB (free on board). Sutek prefers to sell Ripex in US dollars, because they also buy their main raw material natural rubber in dollars. This makes the product less sensitive for changes in exchange rates. The policy of Sutek is to sell Ripex for a lower price than Alpex. Alpex is estimated to be sold for €5.70 in Europe. Alpex is sold in Euros and Ripex in US dollars, this makes the competitive pricing depended on the exchange rate between Euros and dollars. The sales price to the distributor of Ripex in Euros is €3.61 (June 2007). If the US dollar is getting weaker compared to the Euro, this is an advantage for the price of Ripex, because it becomes cheaper for Europeans.

Cost price

The cost price is calculated in two ways, namely based on less container load (LCL) or on full container load (FCL). Sutek prefers to deliver Full Container Load (FCL), because this makes the transport more efficient, cheaper and is also better for the products. LCL-delivery is more expensive and the container is filled with other products that can damage Ripex. The increase in price is caused by a doubling of the freight costs. In table 3.1 the cost price based on FCL is presented.

Table 3.1: Cost price composition of Ripex L (Sutek, 2007)*

		Part of total costprice (%)
I	Raw material costs	
	Main raw materials	51,0%
	Supplementary raw materials	8,4%
	Packaging materials	0,6%
Total		60,0%
II	Factory overhead	
	electricity	4,6%
	direct labour cost	1,7%
	Indirect labour cost	14,6%
Total		20,9%
III	Selling costs	
	freight cost	0,8%
	mailing & delivery cost	0,4%
	advertising cost	0,0%
	travelling cost	0,4%
	entertainment and commission	1,0%
Total		2,6%
IV	Operating costs	
	general administrative cost	6,5%
	Other cost	0,2%
Total		6,7%
V	Cost of capital	9,8%
Total		9,8%
Total cost		100,0%

* Cost price Ripex per 4th of April 2006; based on a production 240 ton; based on FOB (Free on Board) and FCL (Full Container Load)

When Suteks' production increases the cost price will decrease, because than fixed costs can be distributed over more products. Most importantly is the cost price of natural rubber that is influenced by the market price. If the natural rubber price increases, the cost price increases also. To import natural rubber in Europe there are no import duties, so the price of natural rubber is for Alpex almost the same as for Ripex. Sutek does not have insight in the pricing policy of Alpex. Sutek can choose for the right price and quality relation of the natural rubber. This way Sutek can choose the cheapest natural rubber and assumes Alpex is bonded to purchase contracts with suppliers of natural rubber. This gives Sutek a competitive advantage. The sales price of Ripex is flexible, because buyers can get a discount, depending on the order size.

3.5.3 Place

Market coverage

Sutek does not have information about their current market coverage, but it is reasonable to say it is low, because Ripex is not sold much. Sutek assumes Cytec is market leader, because in every market that Ripex is sold Alpex is available. Sutek's objective is to get 10% market share. There are also other resins available, which are not made out of natural rubber for example Crodaprene. These are cheaper

than Alpex and Ripex. Their sales price is estimated on US\$3.5. There are also other cheaper synthetic alternatives.

Distribution channels

Ripex is sold by distributors in foreign countries. Sutek has chosen for this strategy because a distributor can promote their product more easily. Sutek has an agreement with their current distributors that Sutek does not directly sell to the manufacturer in the country of the distributor. Therefore Sutek has no contact with manufacturers. An overview of Sutek's current distributors, see table 3.2:

Name	Country	Description
The Cary Company	US	Not selling Ripex L, because the market prefers lower viscosity
Euroland Enterprise	Taiwan	Providing Ripex L, but the market prefers low viscosity
KMZ Chemicals Ltd	UK	Providing Ripex L, this is what the market prefers. Estimated sales is 40-50 ton of Ripex L per year
Resine Italiane	Italy	Providing Ripex L. Sales 10 ton of Ripex L per 3-4 month

Table 3.2 Distributors of Ripex

The oldest distributor is Resine Italiane from Italy. The Cary Company in the US ordered 500 ton Ripex L. This order was not executed, because they requested a price below the cost price of Ripex L. There was also a request for lower viscosity than Ripex L, which implements that there is a demand for Ripex XL. Currently there are no sales by this distributor. Next to this also other companies from New Zealand, Japan, and Germany etc. contacted Sutek. Most of the times these contacts did not result in sales. Also many times the request for Ripex with lower viscosity was made.

Logistics

Sutek does not use specific delivery terms, this depends on the request of the distributor, because some distributors use freight companies in Indonesia. Therefore Sutek delivers:

- FOB: Free on Board Sutek only bring the product to the harbour in Jakarta.
- CIF: Cost, Insurance, Freight: Main transportation cost are paid by Sutek plus insurance

The delivery over sea takes about 40 days. The product is transported from the plant to the harbour of Jakarta, here it is shipped to Singapore, where it is further distributed on bigger ships, to Europe for example. The charges for freight to Rotterdam, Hamburg and Venice are not very different from each other. Before delivering the products, different freight companies are contacted for an offer. In this offer the price is less important to Sutek, because reliability of the delivery and insurance are more important. Sutek can also use the references of Sugih, because they have experience with exporting for many years. Although Ripex is a chemical product, it is not dangerous, therefore there are no extra transportation cost needed. The HSDS and TDS are always sent with the products, because this is obligated.

Cyclized rubber molecules break down over time. This results in an increase of viscosity, which means that cyclized rubber expires. Ripex has an expire-date from 9-12 months and influences the distribution. Therefore it is preferred that Ripex is sold within three months after production. This makes it unpreferable for Sutek to produce much on stock.

3.5.4 Promotion

Sutek uses the internet to promote their product, in total seven sites. They place advertisements on coating and trading sites, for example www.alibaba.com. This is the largest online marketplace for the export and import of products. Other websites on which Sutek promotes Ripex can be found in attachment 4. Other forms of promotion by Sutek are providing a company brochure, the TDS, the HSDS and free samples for testing to potential buyers. At the moment it is hard to push the distributor, because there is a lack of sales people within Sutek. So Sutek is not aggressively marketing Ripex. For

selling the product a combination of chemical and marketing knowledge is required. This combination is not available within Sutek. This makes the cost of personal selling is too high, because currently there are two persons needed to interact with potential users. Sutek has solved this problem by attracting a marketing manager with chemical knowledge in August 2007. This marketing manager will more aggressively search for new markets and buyers, by visiting distributors and relevant exhibitions.

3.6 Conclusion

Sutek is a small Indonesian company. It is producing a cyclized rubber resin with the brand name Ripex. It can be used in the paint, ink and adhesive market. Currently only Ripex L is sold. Ripex is exported and sold through distributors. The main competitor of Sutek is Alpex, produced by the company Cytec. Sutek's strategy is to compete on price. Ripex is only promoted on the internet. Sutek is not aggressively marketing Ripex.

4. Internal analysis

4.1 Introduction

This chapter contains an internal analysis of Sutek and answers to the first research question: “How do the product factors and the resource/commitment factors of Sutek influence the entry mode choice?” In order to answer this question in section 4.2 the product factors of Sutek and in section 4.3 the resource/commitment factors of Sutek are analyzed. Furthermore in section 4.4 a short analysis is given on other internal factors, which influence export success. To complement this, the results of the export readiness test are shown in section 4.5. The last section 4.6 represents the final conclusion of the internal analysis.

4.2 Company product factors

Four product factors are identified to analyze, namely the product differentiation, pre- and post-purchase services, technological intensity and product adaptation. Below these four factors for Sutek are described.

Product differentiation

Cyclized rubber is a specialty product and it is expected to have few substitutes and can therefore be seen as highly differentiated. Cyclized rubber can be used as a resin in the paint or ink industry. In general synthetic resins are used in these products, but cyclized rubber is better resistant to extreme circumstances, like on sea or chemicals. The cyclized rubber can not be used as a sole binder, due to the brittleness. One difference with competitive products is that Ripex has lighter colour. Although in general Ripex has the same quality as their main competitor, it can compete on price. Sutek has the strategic advantage to be producing in Indonesia and therefore it is assumed Sutek has the advantage to have low cost on energy, overhead and manpower. Nevertheless it is not certain Sutek can differentiate on price, because the competitive product Alpex can maybe compete on other parts of the cost price. No information about this is available within Sutek.

Pre- and post- purchase services

According to Sutek Ripex does not require special services for selling it. Providing the TDS, HSDS, samples and a company brochure to the distributors is sufficient. The TDS and HSDS are required by the industry. During the process in which a potential buyer tests the sample, no assistance is needed from Sutek, because the manufacturer has its own formulas and these are not known to Sutek. According to Sutek the manufacturer just has to mix resins and other chemicals and the formula is up to the manufacturer. Ripex is a standardized specialty product, which requires no post services; therefore it is easier for Sutek to market the product at a distance.

Technological intensity

The technology intensity is low, because the technology of cyclized rubber is almost 50 years old. There is not much technology needed to manufacture cyclized rubber and the technology is freely available. The technology is modified by Sutek. To make a good competitive resin a certain chemical trick has to be made, which makes it hard to copy. Sutek has tried to copy a competitive cyclized rubber, but it did not get the same results as the competitor. This is also true for Ripex, if competitors try to copy it; they have to find out the special trick. These tricks could be different among competitors and are always hidden on the patent.

Product adaptation

Ripex is already exported to Europe and it is proven to be a good substitute for an existing competitive cyclized rubber, so no product adaptation is needed according to Sutek. It can easily be introduced to manufacturers who are already using cyclized rubber.

Ripex is not adapted to a geographical region, because it is a chemical product and used in the business to business market. Nevertheless Sutek sells and develops different types of Ripex, to meet the special requirements of the customers. An example of this is that Sutek develops new Ripex with low viscosity. This new product meets the requirements and preferences of more potential customers. Ripex is being sold in paper bags of 25 kg, with English product information. It is expected that the package does not require adaptations, because it is already sold in Europe. The viscosity of the product increases faster in countries with higher temperatures, so an advantage of exporting the product from Indonesia to Europe is that temperature decreases.

4.3 Company resources & commitment factors

Four resources and six competences are identified to analyze Sutek in this research. These are elaborated in section 4.3.1. Furthermore in section 4.3.2 Sutek's commitment to do international business is described along eight strategy elements.

4.3.1 Resources

This section describes the following four resources for Sutek: the physical, financial, human resources and intellectual capital. In addition to this the competences are described in this section: management of the resources, cooperation between people, the adaptability of the people and the resources, the innovatory capacity, relationship with customers and suppliers and the experience and learning about what works well.

Physical resources

Sutek is a small company, but has all the necessary physical resources to run the business. The plant and buildings are located on the business park of the Abadinusa Holding, located in Padalarang. All the buildings of Sutek are located next to each other in order to save time and prevent inefficient transportation. The plant is constructed in 2003, so the buildings and machines are relatively new and in a good condition. This is necessary to know, because it is reasonable that in the future no big investments need to be made for example for renovation. Sutek depreciates the buildings and machinery in ten years. Furthermore the current production capacity is 400 ton per year. If Sutek invests in additional supporting facilities they can produce 800 ton per year. The factory is designed for expansion of the production. Hiring extra personnel is not a problem, because production employees can easily be attracted. The expansions are currently not the goal of Sutek; it must first have a stable turnover and be profitable. The physical resources of Sutek meet the minimum requirements that are needed to produce cyclized rubber. Two strong points are the relative young age of the buildings and machines and the possibility to double production capacity with limited investments.

Financial resources

Currently Sutek is financially weak, because it is making loss for a few years now. Sutek has a loan from the Abadinusa Holding without interest. The Abadinusa Holding is mainly owned by Sutek's director Mr. Tarya and his family, so there is a good contact between the company and its shareholders. According to Mr. Tarya the provided loan is limited, so Sutek can not make high investments. A branch or subsidiary for example is therefore not an option for Sutek. To goal of the Holding is that Sutek will become self supporting and not financially depended on the Holding. The Holding also expects that when Ripex XL is developed, the demand will be high enough to increase the sales and make Sutek profitable. If Sutek fails to become profitable in approximately another three years, the Holding will try to find buyers for the production facility. This is only a worst case scenario. The financial resources of

Sutek can be seen as limited, but also as sufficient. The granted loan by the Holding is an advantage for Sutek, because no interest has to be paid and the Holding is patient. The sales and the research of Ripex XL could take longer than necessary, because there is less external pressure. This is seen as a disadvantage of the loan.

Human resources

Sutek is a small company and does not have many employees. The number of employees is approximately 15, of which 6 work in the office and 6-9 in production. The production employees have a high school degree with a basic specialization in machinery, electricity or chemistry. There are two persons who are engaged with the research and development (R&D). The head of the lab is the vice president, who has a MSc in chemistry and a PhD degree in Polymer. He has experience with natural rubber for over 30 years. The other person has a bachelor's degree in chemistry. The employees at the office have basic knowledge on finance and marketing. Sutek searched for a marketing manager for a long time, because it knew this is a weakness of Sutek. Sutek employed a marketing manager in August 2007. He is a chemist and has marketing experience for 5 years in the chemical industry. If the production is expanded, Sutek needs 20-30 employees. Sutek is founded in 2004, but it has sufficient experience and expertise, because the Holding is in the business of natural rubber products since 1990. Sutek can use this knowledge. Also the employees in the production have good basic skills and knowledge. Through training and learning on the job, the productivity goes up. The number and mix of the employees and their basic knowledge are seen as sufficient resources to run the business. The specific knowledge and experience about natural rubber resin are seen as unique resources. The lack of human resources in the field of marketing can be seen as disadvantage.

Intellectual capital

Sutek does not have a patent on their products, because this could alarm the competitors about their presence. Knowledge about cyclized rubber is scarce and difficult and Sutek also tries to keep it a company secret. Sutek tries to gain competitive advantage through tricks in the process, their knowledge and R&D. The brand name Ripex is only patented in Indonesia. Sutek does not know if there is need to patent it also in Europe. Sutek has a consumer database with their current distributors and Ripex buyers, who contacted them in the past. It describes the status of the potential buyers, what kind of contact there was and the prospect rate. If Ripex XL is developed Sutek can contact many potential buyers. The intellectual capital of Sutek, which exist of tricks in the processing and their information on potential buyers, is not seen as a unique resource, because these resources are necessary to run the business and will not provide competitive advantage.

Competences

Management of the resources

At Sutek there is one person who manages the human and physical resources, namely the vice-president Mr. Siswantoro. The financial resources are managed by the president and main shareholder of Sutek Mr. Tarya.

Cooperation between people

The cooperation between people in Sutek is good, because Sutek is a small company. It is obvious who is higher in rank, but there is an informal relationship among the employees. This is due to the mutual respect for each other.

The adaptability of the people and the resources

Making profit is the main goal of Sutek. The employees share this interest, because than they will not loose their job. By having the same interest, the company and the employees can adapt easily. If Sutek expands, their employees can adapt easily, because they have a lot of knowledge and they learn fast. The obtained knowledge of the process and fast learning of the employees makes adaptation easier. The

knowledge of Sutek is an important point, because if the market prefers specific product characteristics they will try to develop it (referring to the product development of Ripex with low viscosity). Next to this the plant is designed for expansion. This means the production capacity can be doubled, while a relative small investment has to be made.

The innovatory capacity

The innovatory capacity of Sutek exists of two persons in the R&D lab, who try to develop Ripex with low viscosity and improve their current products. It is hard to expand the innovatory capacity, because specific applied knowledge on cyclized rubber is required. Although a Rubber Resin Institute exists in Indonesia, this institute can not provide people with enough applied knowledge about cyclized rubber. Ripex is a specialty product and the institute has much more theoretical than applied knowledge.

Relationship with customers and suppliers

The main customers are distributors and the relationship with them is seen as a normal business relationship. The distributor in Italy Resine Italiane promised a lot of sales in Italy in a verbal agreement, but the orders of this distributor fell short of expectations. At the moment there is not a lot of trust that sales significantly will improve. According to Sutek, the owner knows a lot of cyclized rubber, but is not willing to put sufficient effort in selling Ripex, so sales are disappointing. Because Sutek still receives orders from Resine Italiane, they maintain its relationship, although no written obligations exist. Sutek does not have contact with the users of Ripex, because most of time the distributor is afraid that this can result in delivery or disturb the relationship between the distributor and end-user. Therefore the distributor does not give names or other information and Sutek does not always know in which industries the end users are active in. According to Sutek it is therefore difficult to stimulate the market for Ripex. No contact with the end user can be seen as a disadvantage for Sutek, because it creates a lack of information. According to Sutek the relationship with their suppliers is good.

The experience and learning about what works well

The employees of Sutek try to develop themselves. This stimulates innovation for example by repairing things themselves, the employees learn from what works well: this is done by trial and error. The “tricks” earlier described is also an example of learning of what works well. This is a competitive advantage. If there is a request of a (potential) customer, Sutek will try to develop this. The product is developed in the lab and then applied in factory. After many tests the new product will be taken in production. Sutek also further develops their current products.

4.3.2 Commitment

In this section the commitment of Sutek to do international business is discussed. Sutek is a small company and has no formally written strategy. To get a clear picture of the company’s commitment to do international business, the overall company strategy of Sutek is therefore reviewed along eight strategy elements. More information about this can be found in attachment 5. In this attachment also the definitions of all the strategy elements are given.

The mission of Sutek: “To continue and develop the existing business in cyclized rubber”

Using natural rubber as the main raw material is the core business of the mother company Sugih since 1990. Sutek has adopted the mission of Sugih and applied it to Sutek. Besides this, Sutek also wants to create employment for Indonesian people and be a good employer for their employees. Sutek sees this more as a logical consequence of a company that has sales and grows.

The vision of Sutek: “To become a global player in the high quality cyclized rubber industry”

In order to achieve this vision, Sutek hired a marketing manager to run the business. This person is a chemist with five years experience in marketing and started in august 2007.

The goal of Sutek: Sutek has three different goals in line with the mission, but they see the first one as the most important:

1. “To be a profitable organization”
2. “To be environmental friendly”
3. “Respect the values of their employees”

The first goal is the most important, because since the foundation of Sutek it has not been able to be profitable. The other goals are less important and easier to achieve.

The objectives of Sutek: Ripex XL is expected to be ready at the end of 2007. Because the Ripex XL is still in development and the marketing manager will start in August 2007 the objectives are split into two stages:

“To achieve breakeven: to sell at least 200 ton by the end of the year 2008, at first”

“To achieve sales of full production capacity: additional objective is to have annual sales volume of 400 ton by the end of the year 2008.”

The first objective is necessary for Sutek. The second objective is desirable and reasonable. In order to achieve the second goal Sutek has setup the third objective:

“The production must have zero environmental waste”

The technology of Sutek is environmentally friendly. All waste can be converted into fertilizer and the resins are inert and non of harmful materials. Being insoluble in water, the resins do not pollute the environment. The fertilizer can be seen as a side product, because it is not a core product of Sutek. Without modification the waste is useless and harmful to the environment and so conversion into fertilizer is better. The fertilizer conversion process is relatively easy for Sutek.

The strategic capability of Sutek: The strategic capabilities of a company are the resources, activities and processes. According to Sutek, some are unique and provide competitive advantage. The strategic capabilities of Sutek consist of four points and must provide Sutek competitive advantage compared to competitors in Europe.

1. Sutek has good access to the main raw material. Sutek is established in Indonesia, which is one of three countries who are the main producers of natural rubber. There is a lot of supply of natural rubber from several companies. It is an advantage, being able to choose the right quality natural rubber. High quality natural rubber cost US\$2.45 per kilo, but Sutek can sometimes choose a lower quality that only cost US \$2.20 per kilo. This will result in 10% decrease of the cost price, while it has the same quality product.
2. Sutek has good basic knowledge of natural rubber, because the Abadinusa Holding is in the business of natural rubber and end products since 1990. This knowledge is the fundament for developing cyclized rubber. Next to this the vice president has over 30 years experience with natural rubber. This basic knowledge of Sutek is supported by specific research and development of cyclized rubber.
3. Sutek is located in Indonesia, which is an emerging country and has access to low cost labour.
4. Sutek has low energy costs, because the standard price of energy is low and fuel is subsidized by the government. This is an advantage for Sutek, because the cyclization process requires a lot of energy. Compared to the Netherlands the energy price is about 4 times lower. The energy price in Indonesia has doubled in the last two years, which caused a lot of protest, because the Indonesian people have low buying power. Therefore the government “can not” increase the energy cost easily. According to Mr. Tarya, the energy price is expected to remain low for the

next years. Even if the government ends subsidizing, energy still cost less than in developed countries, where taxes on fuel exist.

Strategies Sutek follows: “Sutek wants to expand their sales in Europe and China by being competitive on quality and price”

As an entry mode Sutek is using an export strategy to sell Ripex through foreign distributors. At the moment Sutek has four distributors and their intention at first is to increase the number of distributors in Europe. Sutek believes that selling through a distributor is the right way, in comparison with direct sales to manufacturers, because:

1. A distributor has more experience and knowledge of the local chemical market and knows the manufacturers
2. The distributor already has a relationship with the manufacturer, which makes it easier to introduce the new products
3. According to Sutek the manufacturers are reluctant to new products of unknown suppliers. This makes direct sales more difficult.
4. Manufacturers do not want to be bothered with all arrangements, which have to be made for importing a product. It is easier to buy it from a distributor.
5. The transportation costs are lower when exported to a distributor, because it is cheaper to ship one big amount at once to the distributor, than several times a small amount directly to the manufacturer.

Sutek has an agreement with their current distributors that Ripex is not directly sold to the manufacturer in the country the distributor is located. In China Sutek also want to deliver through a distributor.

Currently the Chinese market is supplied by a distributor located in Taiwan. The target users of Ripex in China are the multinationals who are located in China, but are not from origin established in China. Until now Sutek has failed to successfully implement this strategy. Sutek is aware of this problem and wants to speed up the development Ripex XL and have employed a new marketing manager, who will explore the market.

Business model Sutek: consists of four parts and can be found in figure 4.1. Sutek is active in the business to business market and has therefore most contact with suppliers and distributors. Sutek has hardly any contact with the end user, who uses Ripex. Sutek does not exchange information with the end user.

Control of Sutek: There are two kinds of control mechanisms within Sutek:

- The director of Sutek receives financial figures every month, to evaluate Sutek's performance.
- Every three months there is an evaluation of the development of the new product.

It is hard to take steps as a result of these controls, because Sutek is pre-mature, waiting for the development of Ripex XL to increase their sales and does not have goals for their current products. Sutek is still searching for the best way to sell their products and there is no specific person or department, who is responsible for the sales. This makes it hard to assess the effectiveness of its actions. In the future when Ripex XL is developed, Sutek is planning to have more control. New goals will be set and they will be evaluated.

Business model of Sutek

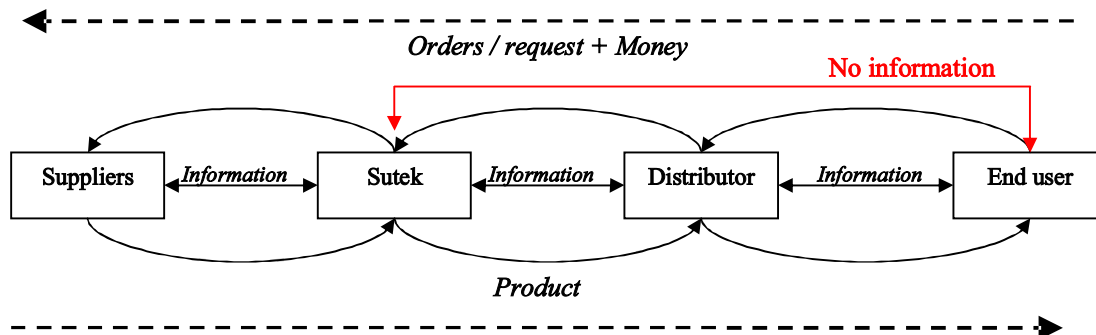


Figure 4.1 Business model of Sutek

4.4 Export success

In this section the factors that influence export success are analyzed for Sutek. These factors are: competitive advantage, willingness to search for foreign markets, export management practices & experiences and the perceptions & attitudes of top managers. This analysis is used for improving the current marketing mix, which is presented in chapter 8.

Competitive advantage

Sutek believes to have a few competitive advantages, like having a lot of knowledge of natural rubber. However Sutek is not aware what competitive advantage Ripex has. Although Sutek received a lot of market information from Resine Italiane some years ago, Sutek currently lacks the understanding of what they are really good at. Sutek knows that Ripex is very water resistant, but Sutek can not say if it more resistant than competitive resins. The fact that Sutek does not knows where it is good at, negatively influences export success. First of all because now it is uncertain if Sutek is focussing on what Sutek is good at. Secondly it is not possible to commit the right resources to the activities that create the competitive advantage.

Willingness to search for foreign markets

Sutek is not frequently visiting foreign markets and attending trade shows. This can be seen as a negative influence on export success. There can even be stated Sutek focuses too much on the product, and does not pay enough attention to the market. This negatively influences the export performance.

Export management practices and experiences

Sutek uses international prices and internal factors for setting up the market price of Ripex. In addition to this the reason for exporting to Europe is not triggered by governmental incentives, which makes the strategy less impulsive. Also the use of foreign distributors for supplying the customers can lead to export success, because they know the market. These practices positively influence the export success. However Sutek did not use detailed market studies before entering a foreign market and is mostly approached by a potential user or distributor, instead of aggressively searching for new export markets themselves. These two practices are negatively influencing export success.

The perceptions and attitudes of top managers

At Sutek there are no governmental incentives or incentives for Sutek's employees, which stimulated to enter international markets prematurely, without having developed quality products and efficient managerial systems. The perceived importance of the marketing mix by the managers of Sutek could

influence the export performance. The most important elements of the marketing mix are appropriate distribution channels, meeting delivery schedules and appropriate pricing. The use of a distributor is good, but it can be questioned if Sutek has selected the “best” distributor. The other two elements are important to Sutek and are well developed.

4.5 Export readiness test

In order to know if the Sutek is ready to do international business the researchers have executed the export readiness test. This test is filled in by the president and vice president of Sutek and the researchers. This way the researchers have a good measurement, because it is filled in by persons with different backgrounds. The results of this test can be found in attachment 9. Sutek has a low score on a few subjects and need to be improved to export. The researchers discuss 6 subjects:

Analysis

Sutek thinks it could be successful in West Europe, because it has access to low labour cost. A company should base their expectations on analysis of various elements. Low labour cost does not imply a competitive advantage, because the labour productivity is also important.

Market information

West European industries do not outsource their production capacity only on competitive price-performance ratio. Also the reliability and in particular process compatibility and low cost of ownership are important.

Plan

According to the researchers the export planning of Sutek is carried out on an ad hoc basis. The entrepreneur who plans on an ad hoc basis is considered reactive and will not be in control of the process. The company disagrees and states that export planning is based on a competitive analysis, translated into a marketing activities plan, implemented and monitored, including budget control. The issue of planning is more important than the plan itself. Therefore planning should be a continuous process and be of a pro-active nature. This difference can be explained by a lack of information to the researchers of Sutek. The export planning should be carried out according the answer of the company. Although the researchers still believe the export planning within Sutek is not carried out in this way, because there is a lack of market information.

Organization

There are differences between the answers of the researchers and the company on this matter. The opinion of the researchers is that currently the export activities are managed by the general manager who can spend 10 to 20 percent of his time to this task. Export requires serious commitment and endurance and should not be the hobby horse of the general manager. Sutek knows this weakness and has employed a marketing manager for this task. The researchers give their opinion on the current situation and the company about the future. This is the reason for the difference in the answers.

Quality management

The quality system of Sutek is based on systematic monitoring of different aspects of the production process. A company will not survive without adherence to total quality management (TQM). Sutek should have a quality system based ISO 9000 certification, which includes TQM standards and particularly customer satisfaction criteria. Such certification has commercial value and is required in certain sectors in Europe. Sutek is aware of this and will try to get the ISO certificate.

Market entry activities

All agree that Sutek does not have much experience with market entry in the European market. Sutek

has not taken part in trade fairs. A trade mission can be an interesting instrument to meet potential business partners and generate market research data. Sutek can also meet their competitors and know their strengths. Sutek is aware of the usefulness of visiting and taking part in trade fairs. With the employment of a marketing manager Sutek is able to visit relevant trade fairs.

4.6 Conclusion Internal Analysis

From the analysis of Sutek's product factors can be concluded that Ripex is differentiated, because it is a specialty product. Ripex requires less pre or post purchase services, because they only provide the TDS and HSDS for selling it and this seems to be sufficient. The technological intensity is low for producing Ripex and according to Sutek no adaptation is needed. From the analysis of the resources and commitment factors can be concluded Sutek in general has sufficient resources and competences to produce and export Ripex to the European market. Even although Sutek is a small company and has no formally written strategies, Sutek has the intention to do international business. Sutek is build for international trade and is already internationally active through exporting, but is still small and premature and therefore it does not have much international experience. Sutek can use the knowledge of exporting of the Abadinusa holding. It is remarkable Sutek does not exchange information with the end user, like product feedback. This causes a lack of important market information for Sutek. Sutek is highly committed to the product. A negative aspect is that Sutek is focusing too much on the product and not active searching for new markets. This is caused by the lack of human resources in the field of marketing and the fact that Sutek's partner Resine Italiane failed to promote and sell Ripex in the European market. Although Sutek could use many resources of the holding, they can not use the marketing knowledge of the holding, because Sutek is active in a complete different industry.

From the analysis of the factors that influence export success, several remarks were found. Sutek has chosen a good way of distributing Ripex and use professional price setting practices. Sutek is not driven by inadequate incentives by Sutek or governmental organisations, which points to possibly export success. In addition to this Sutek has no strong willingness to search for foreign markets, because Sutek is not frequently visiting foreign markets and not attending trade shows. Sutek does not know what the competitive advantage of Ripex is, which negatively influences export success. Finally there are two management practices found that do not have positive influence on export success. Sutek does not use detailed market studies before entering a foreign market and is mostly approached by a potential user or distributor, instead of aggressively searching for new export markets themselves.

From the export readiness test can be concluded that Sutek is ready to export. Although there are small differences in the results of the persons from company and the researchers, the average of the company resulted in 70% readiness to export and the researchers' perception was 64%. This implies Sutek is developed enough to do international business. Sutek has a low score on a few subjects. Sutek could not score close to 100% on these subjects, because the test also contains many export improvements that can only be implemented at a time that a company is fully developed. Since Sutek is premature, it can not always score 100% for every question in the test.

5 External analysis Part 1

5.1 Introduction

This chapter presents the first part of the external analysis and answers the second research question: “How do the opportunities and barriers for Sutek in the European market influence the entry mode choice?” In this chapter three external factors are described. In section 5.2 the target country environmental factors are described. The target country production factors can be found in section 5.3 and a short description of the home country factors is given in section 5.4. The chapter is ended with a conclusion in section 5.5.

5.2 Environmental Factors

Eight target country environmental factors are analyzed in this research. These factors are the type of import policy regarding the import of the product, the policy regarding foreign investment, restrictions of the geographical distance between home and target market, the type of economy of the target market, the type of exchange controls, exchange rate depreciation or appreciation, the political risk and the cultural distance between target and home market. These factors at Sutek are described below.

Restrictive or a liberal import policy regarding the import of Ripex

The EU as target market has a liberal import policy regarding the import of Ripex into the EU, because KMZ, the distributor of Ripex in the UK and Italian distributor Resine Italiane already imported Ripex into the EU, see attachment 11. However there is an import tariff on Ripex. According to Ian Mackridge, KMZ had to pay 6.5% import duty, but that for decent quantities Sutek can produce a GSP Form (Generalised System of Preferences), which reduces the duty to 3.5%.

Restrictive or liberal policy regarding foreign investment

The researchers did not search for data concerning the type of policy (restrictive or liberal) regarding the investment from Sutek in the EU, because it appeared in the internal analysis that it is not Sutek's intention to invest in a new facility overseas. Mr. Tarya explained Sutek does not have the financial resources for an investment abroad.

Restrictions of the geographical distance between home and target market

Almost all natural rubber in the world is produced in South East Asia. In case Sutek would manufacture Ripex in the EU, they would have to buy the main raw material natural rubber from South East Asia. Since natural rubber is almost transformed to cyclized rubber in a 1:1 proportion, there is no difference in the cost of transporting natural rubber or Ripex to the EU. Next to this the transportation cost account for only a few percent of the total cost, so it is relatively unimportant.

Nevertheless exporting cyclized rubber to the EU requires a shipping time of 1 month, see attachment 3 “Ripex”. In case an order is placed by a company that has to be supplied with Ripex this shipping time can be a restriction. However this is not a restriction, when Sutek would have a constant high turnover in the EU. Then EU distributors can build up a small stock of Ripex, so customers can receive Ripex shortly after the order is placed.

Another small restriction is the fact that Ripex' viscosity goes up in time. From attachment 3 “Ripex” can be read that the viscosity of Ripex doubles in about 1 year at a temperature > 30°C. In Europe this may be 2 years, because Europe is cooler than Indonesia. Luckily the period of this degrading is not very short, so Sutek is still able to deliver Ripex with acceptable viscosity to customers in the EU. From this can be concluded that although the distance between Indonesia and the EU is big, it is not a significant restriction.

The type of economy of the target market

The EU as a target market is a very big market. The GDP (at market prices) of all 27 EU countries combined is €11.6 trillion in 2007, while the GDP of the USA is just below this with €10.5 trillion. Many countries in the EU have very high absolute levels GNP per capita and grow at a stable rate (Eurostat, 2007). Next to this the EU strives to achieve four fundamental freedoms in its borders, namely freedom of movement of goods, services, capital and people (Ball, 2006 p131). This shows the EU is a dynamic economy.

Restrictive or liberal exchange controls

Sutek has chosen Europe as target market. Historically Europe is a developed region, which is one of the most stable regions in the world, in politics as well as the economy. On this no further data is collected, because this is basic knowledge and seen as a fact. It is not useful to find evidence to support that Europe has liberal exchange controls.

Exchange rate depreciation/appreciation

Sutek sells its product Ripex in dollars, because their main costs are also in dollars. This research focuses on Europe as its target market, in which the Euro is the main currency. Therefore the dollar and Euro exchange has to be reviewed, because it gives better insight how expensive Ripex is for consumers in Europe. In figure 5.1 the exchange rate of €1 is given in dollars.



Figure 5.1 Exchange rate of €1 in US\$ (Yahoo! Finance, 2007)

The prospects for Ripex have been good for the past years, because the Euro is a strong currency and the exchange rate of Euro to US dollar has made Ripex a lot more attractive over the last five years. In 2002 the dollar was worth more than the Euro, while currently €1 can be exchanged for US\$1.40. So there is exchange rate depreciation.

Political Risk

The EU can be seen as stable economy with low political risk, this is supported by Ball et al., because they consider the most countries in the EU as free countries, with some exceptions in Eastern Europe (Ball et al., 2006 p272). This factor is not further researched.

Cultural distance between target and home markets

The EU has not developed a common culture, because for example there are different languages, religions, educational and political systems among countries. This is less relevant for Sutek, because it is not selling a consumer product. Ripex is a chemical product. Customers of these types of products base their buying behaviour on rational grounds, like properties as melting point, viscosity molecular weight etc. The way how (the design of) a product looks/feels etc, which are very important for consumer products, have hardly any influence on the buying behaviour of resin buyers. Next to this in chemical business in the EU it is essential to speak English (CBI report: the chemical market, 2006). This should not be a problem for Sutek, because all communication on the product is in English, see for example the TDS and HSDS in attachments 7 and 8. When doing business in EU Sutek should be aware of business ethics per country to prevent cultural mistakes. Mr. Tarya has a lot of experience with doing business in Europe and Mr. Siswantoro has done a PHD in England. Through these experiences Sutek can overcome the cultural difference that exists between Indonesia and Europe.

Nevertheless it can be said some cultural difference exists. Rob de Waart from ICspecialties argued that in Europe other regulations apply than in Asian countries and that the European culture is not always understood by suppliers of raw materials from these countries. When the results of the internal analysis are compared to the reactions of all the European contacts it is clear there is a gap between the EU market and Sutek's perspective. Sutek obviously has a lack of understanding about how Europeans nowadays think about the environment, because Sutek is not well informed about the VOC (Volatile Organic Compound) and REACH (Registration, Evaluation and Authorization of Chemicals) regulations. Because these new regulations have a strong influence on the resin business, below an elaboration on VOC and REACH is given.

VOC and REACH regulations in the EU

Next to the environmental factors derived from the model of Root, also two major developments in the target market's environment are identified by analyzing the PESTEL framework. Multiple articles on the internet explained the importance of VOC and REACH regulations and therefore these regulations are described here. According to the articles the introduction of the new VOC and REACH regulations in the EU has a lot of influence on the chemical industry in this region.

VOC

The VOC regulations are set up for the reduction of industrial emissions of Volatile Organic Compounds (VOC's) in the European Community. It covers a wide range of solvent using activities, e.g. printing, surface cleaning, vehicle coating, dry cleaning and manufacture of footwear and pharmaceutical products. The VOC Solvents Directive establishes emission limit values for VOC's in waste gases and maximum levels for fugitive emissions (expressed as percentage of solvent input) for solvent using operators. The VOC Solvents Directive gives industrial operators a possibility to be exempted from the limit values, if they achieve the same reduction by other means. The alternative reductions could be achieved by substituting products with a high content of solvents for low-solvent or solvent-free products. Another alternative could be changing to solvent free production processes. In other words, the operator can choose the most cost-effective approach to reduce VOC emissions (European Commission, 2007). Ink World magazine brings the VOC forward in its yearly article 'the developments of the European ink market' in 2007. They state ink companies are confronted with rising costs for tougher safety and environmental regulations. New restrictions on the VOC emissions come fully into effect in the EU in 2007. Especially producers of ink in food packaging are also facing the prospect of even more rigorous rules. The specific consequences of these regulations for Ripex are described in section 6.2.3.

REACH

The new European chemicals legislation, REACH (Registration, Evaluation, Authorisation and Restrictions of Chemicals) and with it the new European Chemicals Agency have come into force in June 2007. The REACH regulation improve protection of human health and the environment while encouraging innovation and keeping the EU chemical industry competitive. Companies that produce or import more than one ton of a chemical substance per year are required to register it at the new EU Chemicals Agency. The Agency is responsible for managing the implementation of the new requirements and launches a website providing key information such as guidance documents and other tools relating to REACH. The Agency becomes fully operational on 1 June 2008, when companies begin on-line submission of pre-registrations and registration dossiers (European Commission, 2007).

According to multiple sources these regulations have consequences for suppliers of the coatings and ink manufacturers. Ink World magazine's 'the developments of the European ink market' in 2007 argues REACH could possibly bring additional costs, because REACH require ink producers to collect safety data on chemicals used in their formulations and on the risks posed by them to printers and other downstream users. The costs for registration may be so high that certain chemicals may be withdrawn from the market (Ink world magazine, 2007). In the additives market report of Coatings world is also stated that if suppliers want to continue selling their products into Europe, they have to pay substantial costs to make sure their products are approved for the REACH regulations. For products sold in Europe in small amounts, it may not be economically smart to continue selling this product and instead concentrate on the higher volume product mix (Coatings World, 2007).

There is a cultural difference between Sutek and the EU, regarding the environmental values. The new EU regulations have significant consequences for Sutek. The new environmental regulations require a lot of knowledge about the regulations itself, but also about the market of Ripex that changes through these regulations. VOC is not negative in a way that it restricts the entry mode, but it is a lot worse. Namely the direct effect of VOC is that the whole market potential of Ripex in EU is threatened. The production of paints and ink based on organic solvents, in which Ripex can be applied is decreasing dramatically in the EU. REACH has less dramatic consequences for Ripex than VOC, but is a trade barrier for Sutek. REACH subscription for Ripex is necessary and costs money and effort to execute. Mr. Koster from Chugoku Paints recommend Sutek should talk about REACH with specialized consultancy companies located in the EU.

5.3 Production Factors

The production factors of the target market are analyzed in this research. Unfortunately it is very difficult to make a realistic estimate of the actual cost of producing cyclized rubber in the EU. In order to estimate these as good as possible, a comparison is made between the actual cost price of Ripex and the cost price of Ripex when Sutek would produce it in the EU. From the data obtained in Indonesia some presumptions can be made about what the cost price of Ripex would be if produced in the EU. In this analysis the production cost of the raw material natural rubber & transportation, tariff barriers, labour, energy, and additional costs of Ripex are estimated in case it would have been produced in Indonesia as well as the EU.

Raw material & transportation

The most important raw material of Ripex is natural rubber. It accounts for 51% of the total cost price of Ripex. According to Prof. Noordermeer, see attachment 2 "the introduction to rubber" and Mr. Tarya (see internal analysis) natural rubber is recognized as a strategic resource all over the world, so tariff barriers do not exist for this product in the world. Deviations in the price of natural rubber around the world are caused by the fact that natural rubber is mainly produced in South East Asia. Buyers of natural rubber have to be supplied from here and therefore transportation costs increase the price of

natural rubber. However when natural rubber prices are considered, it makes no difference in the final cost price of Ripex, if Ripex is produced in Indonesia or Europe. In case Sutek produces Ripex in Indonesia the natural rubber is cheap, but transportation costs have to be paid for exporting Ripex to the EU. When Ripex would be produced in the EU, the price of natural rubber is higher due to transportation costs. But the end product is already located in the EU, so transporting it to the target market does not take much.

Regarding the main raw material there is no difference between producing in Indonesia or in Europe for Sutek. The Abadinusa holding can send the desired quality of natural rubber to the EU and therefore has still access to relatively cheap natural rubber. There are no leads to foresee what the differences are in cost price for the other raw materials, when Ripex would be produced in the EU. In fact this is not a big issue, because the combined other raw materials only accounts for 10% of the total cost price.

Tariff barriers

A disadvantage of producing Ripex in Indonesia is that a tariff has to be paid when importing Ripex into the EU. KMZ had to pay 6.5% import duty for importing Ripex into the UK, but for decent import quantities of Ripex, Sutek can produce a GSP Form, which significantly reduces the duty to 3.5%. Next to this there are no tariff barriers on natural rubber. So this is an actual advantage of producing Ripex in the EU.

Labour

In chapter 3 can be seen that direct and indirect labour costs account for respectively 1.7% and 14.6% of the total cost price of Ripex. So the labour costs take a significant part (together 16.3%) of the total cost price, therefore a comparison is made between the Sutek's current labour costs and the labour cost when Ripex is produced in the EU.

The Indonesia's investment coordinating states (2007) the regional minimum wage (UMR) of the province of West Java was 447.654 IDR in the year 2006. Using the average daily exchange rate between the Indonesian Rupiah and Euro in 2006, from Oanda (2007) foreign exchange information, this is €40.29 per year in 2006. The EVD (The economic information agency of the ministry of economic affairs of the Netherlands, 2007) also reports that Indonesia's standard for the minimum wage is called UMR. According to the EVD the UMR is 90% of the minimum of existence and that in most occasions the employer pays for travel expenses, food, presence and productivity and sometimes medical and educational provision. So a general Indonesian wage is most likely a lot higher than the UMR. This is supported by the average wage of a factory employee at Sutek, which was 1 million Rupiah per month, converted to Euros, this is €75.-. This is in line with the cost price composition presented in the internal analysis. The minimum wage in the Netherlands for adults older than 23 years is €1129.-/month (after tax) (Ministry of social affairs and employment in the Netherlands, 2007). If Ripex would be produced in the EU, a factory employee has to be paid at least €1129.-/ month, while it is currently €75.-/ month in Indonesia. So it is 15 times higher in the Netherlands. Although the productivity difference between producing in Indonesia or in the EU is not taken into account (the productivity is probably higher in the EU), the direct labour cost are still relatively low for Sutek. Producing Ripex in Indonesia will result in lower direct labour costs, than producing in the EU. For the indirect labour costs the difference between producing in the EU or Indonesia will not be as big, because the indirect labour cost per kg is US\$0.7, based on a production of 240 ton/year and 6 employees. So the average indirect labour cost/employee is US\$28,000. This amount is comparable to European wage levels. Finally about labour at Sutek can be concluded that the total labour cost of producing in Indonesia is lower than producing in the EU.

Energy

In the internal analysis was noted that fuel is subsidized by the Indonesian government, so energy/electricity costs is considered here. Electricity can be produced by burning gas/diesel. So fuel and electricity prices are more or less connected to each other.

Fuel prices are very low in Indonesia. This was also noticed by the researchers, because the price for 1 litre of gas and diesel was both only 4500 Rupiah at the time the researchers were in Indonesia (June 2007), which is around €0.35/liter. Mr. Tarya explained the Indonesian government subsidizes fuel. He also said the energy price is expected to remain low for the next years, because the government just raised the fuel prices. They can not raise it again, because there is a lot of political opposition. Even if the government stops the subsidy, the energy costs are still lower than in the developed countries in Europe, where there are taxes on fuel. The EU fuel prices are displayed for October 2007 (Vab, 2007). For 14 countries the prices are given in Euro and vary between €1.00 and €1.46 for gas (euro95) and €0.95 and €1.26 for diesel. Currently 4.6% of the total costs of Ripex are electricity costs. This percentage is low, because energy is cheap in Indonesia. In case Sutek would produce Ripex in the EU the electricity would be a lot higher. Consider the lowest price for diesel in Europe, which is €0.95. This price is still 2.7 times bigger than the €0.35 price for diesel in Indonesia. The total cost price would rise if Ripex would be produced in the EU. The share of energy cost would then be $4.6\% \times (2.7-1) = 7.8\%$. Here also has to be noted that Sutek has no energy saving installations. Therefore it is possible the total electricity costs are currently too high and that much energy can still be saved. This is uncertain to the researchers and is not included in this research. However the difference in fuel costs between the EU and Indonesia are so big that it seems unrealistic energy saving installations can fill up the gap.

5.4 Home Country Factors

The market for Ripex in Indonesia is very small. Sutek requested the price for the competitive product Alpex in Indonesia at an Indonesian distributor and said this is US\$8/kg to US\$9/ kg. The price is so high, because most likely not much Alpex is sold in Indonesia and the transportation cost has to be paid twice. Transport natural rubber from South East Asia to Europe and transporting the cyclized rubber back to Indonesia. Mr. Siswantoro estimates there is a 300-500 kg/month turnover of Alpex CK 450 in Indonesia. This figure is not supported by data. This production of 500 kg/month or 6 ton/year is very small compared to the production capacity of Sutek, which is 400 ton/year. Therefore Sutek has to sell its product abroad and Sutek is not depending on export promotion, so the home country factors are less relevant for Sutek. As seen in section 5.3 the production costs in the domestic market are lower than the target market, so production in Indonesia is favourable. Restrictions on investing abroad are not researched, because Sutek does not have the financial resources to invest abroad. This is another reason for Sutek to keep the production of Ripex in Indonesia. The type of competition in the domestic market is less relevant for Sutek, because there is hardly a market for Ripex.

5.5 Conclusion

From the analysis of the environmental factors can be concluded that the weakened dollar shows an opportunity for exporting Ripex to the EU. In the EU there is low political risk and is seen as a region with liberal exchange controls and is a dynamic economy. This is not seen as an opportunity or a barrier. The low production cost of producing Ripex in Indonesia could be seen as an opportunity for doing business in Europe, because it allows Sutek to compete on price.

The import duty and the REACH regulation are barriers to do business in Europe. The VOC regulation threatens the sales potential of Ripex. The home country factors are less relevant for Sutek and do not act as an opportunity or barrier. In the external analysis part 2 in chapter 6 a description is given of the market factors.

6. External analysis part 2: Market factors

6.1 Introduction

This chapter presents an answer to the third research question: “How do the market factors influence the entry mode choice?” This chapter presents the market factors. In section 6.2 the sales potential of Ripex in the most interesting segment is described. In section 6.3 the competitive structure is described by using a competitor analysis. In section 6.4 the marketing infrastructure of the potential market is presented. In section 6.5 complementary factors are analyzed and the chapter ends with a conclusion in section 6.6.

6.2 Sales potential

The sales potential of Ripex is divided in three parts in order get all the needed information. First the total market for Ripex is described by preliminary screening in section 6.2.1. Secondly the view of experts in these markets is presented in section 6.2.2. With this information a choice is made to research the most interesting market in depth and is described in section 6.2.3. This whole process can be seen as a segmentation process.

6.2.1 Preliminary screening

From the consumer/ user profile presented in attachment 10 can be concluded that Ripex is used in the paint, ink and adhesive market. Analyzing the European market by application is the first step in the segmentation process. In the paint industry Ripex can be used in the marine and protective coatings. In the ink industry Ripex can be used in letterpress, lithographic, gravure and miscellaneous ink. Ripex is also compatible with UV light printing. In the adhesive industry Ripex can be used in pressure tape adhesive. In this preliminary screening the researchers present the main and most important developments in the paint, ink and adhesive market. More detailed information can be found in attachment 10. For Sutek the production is more important than the sales of a product in a country or region, because Ripex is used in the production process. Unfortunately it is hard to collect data on the production in a country. Therefore the researchers use also other sources.

Paint market

The world paint production was 27,865,000 ton in 2003. The US was the biggest manufacturer with a share of 37%. Western Europe had a share of 24% and Eastern Europe 7%. More detailed information can be found in attachment 10 in table 10.1.

Import and export data from the International Trade Centre (ITC) is used for setting up a table with the top 25 European countries regarding the import and export of pigments, paints, varnishes and related materials. The tables 10.2 and 10.3 can be found in attachment 10. The use of import data is relevant, because high import values of this table can imply that there is a high demand for paint and paint related materials. From the table data can be concluded that Germany, France, Belgium, UK and Italy are in the top 5 of importing European countries in 2005. This does not automatically imply that there is also a high production of paint or coatings, because this can also mean that there are not much local products available. Also low imports do not automatically imply that there is a small market potential. This can be caused by import restrictions or local production. Therefore it is recommended to look also at export data. The export data given in table 10.3 give information of how many products there are sold from one country to a foreign country. High export values in a country are good for Sutek, because it is reasonable to believe that most of these products are made in this country. This means that there is also a high production of paints and coatings. Germany, Belgium, UK, the Netherlands and France are the biggest exporting European countries.

The used data is related to a broad product category and therefore difficult to estimate the market potential. This data is still used, because it is not easy to collect specific import/export data per product. Because the use of import/ export data is limited due to their historical bias, it is also recommended to use other sources to accept or reject prospective countries. This data is partly supported by the business consultant group Information Research Limited (IRL, 2007), which offers market research and analysis of the paint and coating market. The difference between this data can be explained by the time of data gathering. The presented tables 10.2 and 10.3 are more recent.

According to IRL most of the paint used for architectural and industrial applications in industrialized countries, was traditionally produced in factories close to areas of high consumption and within national borders. Therefore sales figures of paint can also be used as an indicator for the production in a country. The European council of the paint, printing ink and artists' colours industry (CEPE, 2003) has presented data about paint sales in Europe. Although the figures are outdated, they are still used, because it is hard to obtain updated market information about paint. In figure 10.1 in attachment 10, an overview of the estimated paint sales in 2002/ 2003 per country in Europe is given. The volume ratio of 2003/2002 is -0.6% and the total sales in 2003 were approximately 5.4 million tons. Here can be seen that Germany is by far the country with the highest paint sales, followed by Italy, UK, French, Spain and the Netherlands.

Ripex can not be used in the whole paint market and therefore it is important to know what the shares of the specific markets of Ripex are. For an overview of estimated paint sales per sector in 2003, see figure 10.2 in attachment 10. According to Sutek, Ripex is applicable in marine coatings and protective coatings. In 2003 the share of marine coating was estimated by the CEPE on 2% and the protective coatings on 3%. This means for Ripex, that 5% of the total market is interesting. In 2003 the total estimated sales in Europe was 5.4 million tons and so the market for marine and protective coatings was in 2003 5% of 5.4 million tonnes, which is 0.27 million tons.

Because the data in figure 10.2 is outdated, also data collected by Chem Research is used. Figure 10.3 in attachment 10 gives an overview of the shares per sector in the industrial coatings market in Western Europe in 2005. The marine paints and corrosion protecting sectors have a share of 4% and 8%. This is a bigger share than the data presented above by the CEPE and is positive for Ripex. The differences can be explained by the date of data collection and that this study is only applicable for Western Europe.

The number of employees in the paint market is also used as indicator for estimating the size of production in a country. Data from the European Printing Ink Association (EuPIA) is used to set up table 10.4 in attachment 10. This table shows Germany employs the most people in the paint industry. This data can be biased, because the productivity per employee per country is not taken into account. However it is not surprisingly that the top 7 EU countries of the highest import, the highest export, highest sales, and most employees show similarities. Therefore it can be concluded that Germany, France, UK, Italy, Spain and the Netherlands are the leading countries in the production of the paint market in 2005. In table 6.1 all data in the paint market per country is presented. This table presents an overview of the top 7 European paint countries based on four criteria. Germany is the biggest country on all four criteria. It is hard to rank countries, but at least from this can be said that France, UK, Italy, the Netherlands and Spain are all interesting as a target country, because they are apparent in all four columns.

Ink Market

The most useful source is the EuPIA, which provides a range of numbers for the year 2005. The EuPIA states that the value of the global ink market in 2005 is €10.5 billion and Europe had a share of 30%. So

in Europe the printing ink market was worth over €3 billion, for more information on the world shares see table 10.5 in attachment 10.

	Import related paint products per country in US\$ million in 2005		Export related paint products per country in US\$ million in 2005		Sales in paint per country in '000 tons in 2003		Number of employees in the paint sector per country in 2005	
1	Germany	2,298	Germany	6,778	Germany	1,350	Germany	20,500
2	France	1,925	Belgium	2,538	Italy	800	France	15,214
3	Belgium	1,691	UK	2,251	UK	700	UK	15,000
4	UK	1,612	Netherlands	1,974	France	610	Italy	14,000
5	Italy	1,497	France	1,791	Spain	590	Spain	9,900
6	Spain	1,252	Italy	1,417	Netherlands	220	Netherlands	5,600
7	Netherlands	1,019	Spain	1,041	Portugal	190	Denmark	5,000

Table 6.1 Top 7 European paint countries

The EuPIA also provides information on the sales of printing ink per European country in 2005. This is described in figure 10.4 in attachment 10. However this information can be misleading for Sutek, because the sales per country is something else than the production per country. The main objective of this research is to focus on the industry in which Ripex can be used, not where the product (in which Ripex is used) is sold. It is still somewhat useful to look at these figures, because it shows the sales volumes of ink in Europe. Next to this the researchers expect that the relation of production and consumption is the same for ink market as in the paint market.

The sales figures are presented in figure 10.4 are dominated by the West European countries, but Eastern Europe is growing faster between 2005 and 2006. The sales volume in Poland and Hungary grew in 2006 with respectively 17% and 15%. It can not be determined if these volumes are also produced by the country in which it is sold in. For Sutek it is important to be aware of these sales developments, because then they know where the end product is sold.

Unfortunately the total production of printing ink per European country is not provided by the EuPIA. Therefore the number of employees that worked in this industry per country is noted here as a measure of the size of production per country. According to EuPIA 18.500 employees worked in this industry in 2005 in Europe. Germany is the country with the most employees, followed by UK, France, Italy and Spain. More employee numbers per country can be found in table 10.6 in attachment 10.

In addition to this the EuPIA presents the shares of types of ink in Western Europe. Pub Gravure ink is the only decreasing type in 2006. Energy curing ink is the fastest growing type with 9% in 2006. More information can be found in table 10.7 in attachment 10. This data is in line with the information provided by the PNEAC (The Printers' National Environmental Assistance Center, 2007) and also by a webinar on UV/EB curing ink (cured by ultraviolet/ electron beam) of Ink World magazine (2007). This magazine argues that the global market for UV/EB curing products is growing at average growth rate of 7% annually since the 70's. They also state Europe has a share of 41% of the global UV/EB market, followed by North America with 30% and Asia with 26%. This global UV/EB market consists of 378 million kg of product of which 25% is ink and 25% is paint.

The website inkworldmagazine.com publishes articles on the developments of the European ink market on their website every year (Ink World Magazine) and argues that sales of ink went up by an average of 2% to 3% in Europe in 2006 and it is expected that revenues from ink will accelerate at a similar pace in 2007. The main growth comes from Eastern Europe and Russia, due to the high GDP growth rates in

these countries, while in Western Europe there are national differences. In the manufacturing sectors Germany has high output growth, while France shows a steep slowdown. In the region's largest printing sector Germany, business prospects are much more hopeful than they were two years ago. Around a third of the members of the German printing industry association (BVDM, 2007) report that the amount of orders is so big, it is putting pressure on their capacity. In Western Europe's the second largest printing sector the UK, the beginning of 2006 was the most depressing half year in times, but in the second half of this year the industry had an upswing. The UK research organization Key Note (2007) predicts that UK printing sales will expand by between 2.2% and 3% annually from 2007 to 2010.

Although ink companies in Europe have a positive outlook, global prices of their raw materials, energy and freight have increased significantly the past years. These increases are mainly caused from a higher demand of some key base chemicals. In the petrochemical business, derivatives from benzene and propylene have been severely affected by shortages. For benzene producers in Europe the gasoline production has become more profitable than the making of chemicals. Also Bio fuels have been causing higher prices of vegetable oils used in ink. Some producers of resins in printing ink have been restricting supplies to ink makers, because of acute shortages. Producers of pigments struggled with rises in costs of chemical raw materials and also steep increases in metal prices. It is expected that global demand for chemical raw materials will rise on a medium and long-term basis.

The long-term prospects for the print media do not look very promising, because of the trend of printing being replaced by digital technologies: many advertisers are moving from printing to the internet; email is replacing direct mail; spending on newspapers will grow slower than the GDP growth rate in Western Europe. In Germany expenditure on magazine advertising is expected to rise by only 3% in the period 2007-2009. Spending on German newspaper advertising will increase by only 1.5% in four years. However print media is also losing share in the total advertising market in Central and Eastern Europe, the picture for the print media is much brighter than Western Europe, with growth forecasts of 11% in 2007 and 10% in 2006. This is caused by higher GDP growth and even higher growths in total advertising spending in these regions. In Russia advertising is expected to more than double from 2006-2009.

Table 6.2 presents data on the ink market. This table presents an overview of the top 7 European ink countries based on two criteria. Germany is the biggest country based on the two criteria and the UK is second. The ranking of other countries differ, but in general Western Europe countries are most interesting as a target country.

	Sales in ink per country in '000 tons in 2006		Employees in the ink market per country in 2005	
1	Germany	261	Germany	5,167
2	UK	156	UK	5,000
3	Italy	127	France	2,103
4	France	115	Italy	1,400
5	Spain	64	Denmark	1,050
6	Benelux	75	Spain	1,000
7	Scandinavia	61	Netherlands	600

Table 6.2 Top 7 European ink countries

Adhesive market

In 2003 the demand in the adhesive market was stable, only in the Asia Pacific region there was a significant growth. According to the Association of European Adhesives and Sealants Manufacturers (FEICA, 2007) the total demand of adhesives in Europe is increasing from 2004 to 2007 with 2,6% per

year. Eastern Europe is annually growing harder than Western Europe, respectively 4% and 2.1%. More information on the European adhesive demand in 2004 - 2007 can be found in table 10.8 in attachment 10.

The increasing raw material costs are reducing the profitability in the adhesive market. The increase in raw material costs raised prices through the whole chain and resulted eventually in a higher consumer price. The new environmental regulations cause also an increase in the (end) price. The new VOC regulations push for developments of solvent free adhesives and more environmentally types. Ripex is used in the solvent technology and this technology was the largest technology with a share of 44% in the year 2003, but was that year decreasing with 2%, which is in line with the future prospects of this technology. The expectation is that this technology is replaced by more environmentally friendlier technologies, like the hot melt technology and water borne technology that had market shares of respectively 40% and 16% in 2003 (Wolfgang Roessing, 2003). The hot melt technology increased with 8% in 2003, which is in line with expectations of Wolfgang Roessing and other trend watchers. This technology is preferred, because:

- lower investment cost compared to the solvent technology
- higher throughput achievable, than water based acrylic emulsions
- lower space requirements for coating unit, raw material inventory and adhesive preparation

The pressure sensitive tape market is a part of the adhesive market and most interesting for Ripex. The world production of pressure sensitive tape was estimated on 21 billion square meters (Bsqm) in 2003 (Wolfgang Roessing, 2003), which is an increase of 4% compared to 2002. The market is dominated by the Asia Pacific followed by Europe and the USA, which have an equal share. The expectation is that the production in the Asia Pacific excluding Japan continues to grow annually with 6%. More figures are presented in 10.9 in attachment 10. According to this research Italy was with 3.8 Bsqm the biggest producer in Europe in 2003. A ranking of producing regions in Europe can be found in table 6.3.

	Country	Production in 2003 (Bsqm)	Growth in comparison to 2002
1	Italy	3.8	- 4 %
2	Spain, Greece, Turkey, Eastern Europe, Middle East & Africa	1.1	10 %
3	Germany, Austria, Switzerland	0.8	2 %
4	UK	0.3	5 %
5	France, Benelux	0.2	- 8 %

Table 6.3 European pressure sensitive tape production in 2003 (Wolfgang Roessing, 2003)

6.2.2 Views of experts in the paint, ink and adhesive market

From the preliminary screening can be concluded that the market of paint, ink and adhesive in Europe is very big. With just a very small market share Sutek can fill its production capacity. The data shows that especially the Western European market is attractive for Sutek. It became clear after analyzing the coatings and printing ink industry in Europe, a country approach was not applicable for the market of Ripex in Europe. National borders are of decreasing importance in the chemical industry in Europe, because there are no trade barriers between the countries in the EU. Next to this there is one Euro currency and almost everybody in this business in Europe speaks English. At last many potential Ripex buyers are big companies, which have subsidiaries/ business units in multiple countries. Therefore the researchers have chosen for further analyzing the three markets.

The second step in the segmentation process in this research is the focus on Western Europe as most attractive target market. The researchers contacted 30 organisations by phone and email in the paint, ink and adhesive industry to find out what the buyers' preferences are and what the prospects are for the

market of Ripex. The contacted companies are former and current contacts of Sutek. Next to this the researchers have added other organizations through internet search. In attachment 11 all the conversations between the researchers and the involving companies can be found. The most important developments are summarized here.

From the conversations can be concluded that the market for cyclized rubber is decreasing. This is caused by the new and strong environmental regulations in the chemical industry in Europe, namely VOC and REACH. According to Mr. Kloosterman of Hexion is cyclized rubber mainly useable in corrosive paint and ink with sharp solvents (like toluene). Due to VOC regulation many solvents, in which cyclized rubber can be solved, are not allowed in Europe anymore in the future. The decrease in the use of cyclized rubber is also supported by conversations with other companies. Grolman, former distributor of cyclized rubber resin in the UK of Cray Valley, estimates their current market potential on 20 ton, but the use of cyclized rubber resin is decreasing, because it is an old coating formulation. Chrestchem, former distributor of Alpex (a competitive product of Ripex) in the UK, said the use of cyclized rubber in the UK has reduced to very small quantities (20/25ton a year maximum) and that it is difficult to see where the new applications can be found. Many European manufacturers of cyclized rubber ended production in the past years. At least two manufacturers in the UK and one in The Netherlands shut these plants down, according to Chrestchem. Internet searches support these statements, because manufacturers of cyclized rubber are hard to find. Only one company could be found in Europe, namely Cytec which is producing Alpex. Rob de Waart of ICspecialties in the Netherlands said there might be a market potential, but only for some very specific applications. He was not convinced to put more time in it.

German distributor Krahn started a project to research the market of Ripex in Germany in two departments at Krahn, namely adhesives/sealants and coatings, but they have hardly found any customers using cyclized rubber today in both segments in Germany. This research was done by asking their customers in direct contact and visits (approximately 30 contacts). Due to the very small market size in Germany Krahn decided to stop the project, they have found only 1 customer (Tesa, Hamburg) with a potential sales of 10 ton/year.

Josef Serbenski of Resine Italiane stated that the market for adhesive tape is going to Asia now and that it is collapsing in Europe and the US. The applications in the ink market are diminishing and in paint the only market can be found in marine paints. Josef Serbenski, who is in the cyclized rubber business for over 50 years, said many substitutes exists and that many cheap synthetic alternative resins exists. Cyclized rubber has become more expensive, this can be explained by the price increase of rubber, because rubber is the main raw material. An overview of the price increase in rubber can be found in figure 2.3 in attachment 2. Between August 2004 and August 2007 the price increased from 115 to 215.

In this research many companies did not (want to) answer the questions asked by phone or email, this could imply that companies are not interested in cyclized rubber anymore or are not aware of this product. This is another indication that implies that the market for cyclized rubber is decreasing.

From the conversations with experts in the paint ink and adhesive market an overview is constructed, which can be found in table 6.4. This table presents an overview with the opinion of the experts on cyclized rubber in the whole market or in a specific industry. In case companies did not give information on a particular industry, this is marked with an X. This table consist also of conversations with experts which are not presented above. These conversations can be found in attachment 11.

In general nobody from these conversations was hopeful about the future of cyclized rubber in Europe, especially for the use in printing ink and adhesive. The application of cyclized rubber in these industries remains unclear. To understand these applications in all three industries and researching these in depth

would take too much time and is too costly. In order to estimate the market potential of Ripex, the researchers made the choice to further research only one segment in one industry in depth. This way the researchers got a good view of the application of Ripex in this segment and could make statements about it. The choice for this segment is based on the market information from the preliminary screening and the view of experts.

The solvent technology of the adhesive, the only possible technology in adhesive in which Ripex can be used is strongly decreasing in the EU in 2003. This is in line with the expected trend for future development of this technology. The expectation is that this technology is replaced by more environmentally friendlier technologies. Next to this multiple distributors say this business has moved to Asia. The printing ink market is very complex. For the researchers it was hard to distinguish what type of printing ink could be interesting for Ripex. The potential users in the ink industry, who tested Ripex, could not provide sufficient information. A bit more positive is the market for cyclized rubber in paint. Although most paint types are shifting from solvent based to water based paints, the solvent technology is still used in the anti-corrosive and marine paint. Multiple experts support the (potential) use of cyclized rubber in this segment.

Company	Paint	Ink	Adhesive
Hexion	Cyclized rubber was used in corrosive paint and ink with sharp solvents, but nowadays a decreasing market, due to the VOC regulation.		
Grolman	Small market and decreasing		
Chrestchem	Reduction in the use of cyclized rubber to small quantities.		
ICSpecialties	Might be a market potential, but only for specific applications. Not convinced to put more time in it.		
Krahn	No market potential for coatings in general in Germany.	X	Small sales potential, only one potential customer is found in Germany.
Resine Italy	Only in marine paints	Decreasing market	Decreasing market, due to the shift to Asia
Chimilab	Only potential users in the anti-corrosive market	X	X
Lackwerke Peters	Supports the use of cyclized rubber in anti-corrosive and marine paint.	X	X
Tesa	X	X	Tested Ripex, but it does not meet the quality standards.
KMZ Chemicals	Might be a potential for strong anticorrosive paint	The use of cyclized rubber in ink is unclear	

Table 6.4 Overview comments on the market of cyclized rubber (X = no comment was given)

The application of Ripex in ink segments remains unclear and the market for adhesive is decreasing and shifting to Asia, therefore the researchers focus on the marine and anti-corrosion paint industry and can be seen as the third step in the segmentation process.

The researchers still faced many uncertainties concerning the application of Ripex in marine and anti-corrosion paint. Therefore a fourth step in the segmentation process was made for executing an in depth explorative research. In this way the researchers are able to make statements about the application of Ripex in marine and anti-corrosion paint. Analyzing Europe as a whole is too time consuming and

costly. Therefore Germany and the Benelux are chosen for more extensive research on marine and anticorrosive paint. Germany is chosen for further in depth research, because Germany is the biggest paint manufacturing country in Europe and it has the highest GDP (Eurostat, 2007). Furthermore Germany's GDP growth and the growth of the paint industry are higher than other Western European countries. Next to this Germany can better function as a door for fast growing Eastern European countries than other Western European countries. Also Germany is high in the preference list of Mr. Tarya and for the researchers it is a relatively easy country to focus on, compared to other European countries, due to the origin of the researchers (The Netherlands). Next to this, Krahn also did not research the market for marine and anti-corrosive coatings in Germany, but only researched the coatings in general.

The Benelux is chosen for further in depth research because the Netherlands & Belgium are together also big manufacturers of paint in Europe. Also Mr. Tarya has already a joint-venture with a Dutch company. He is more familiar with the Netherlands than many other European countries and the Benelux is high in the preference list of Mr. Tarya. Furthermore the Benelux is a relatively easy region for the researchers to focus on, compared to other European countries, due to the origin of the researchers (The Netherlands). In addition Sutek already has one distributor in Italy and one in the United Kingdom. Therefore these countries are excluded from this research.

6.2.3 Focus on marine and anti-corrosion paint manufacturing in Germany and the Benelux

The researchers have interviewed five marine and anti-corrosion manufacturers in the Benelux and Germany by phone or face-to-face. These interviews are conducted to find out what the buyers' preferences are and what the prospects are for the market of Ripex for marine paint manufacturers. See attachment 12 for the report of these five interviews. Below the most important developments for Ripex are summarized. The researchers only received information from two companies in Germany, because others were not able to give more information about cyclized rubber or do not want to cooperate. This does not influence the statements made below, because the other companies all had the same opinion and thought this is the same in other countries.

Market of cyclized rubber

From these conversations can be concluded that the market in Europe for cyclized rubber is decreasing. Wilckens in Germany have used cyclized rubber to improve alkyd resin paints 20 years ago, but since then they did not use this type of binder for their products anymore. For anti-corrosive primers it is better to take 2-pack epoxy systems to get high film thickness and high volume solid. This is supported by Chugoku paints, because they also prefer the 2-pack epoxy resin. In addition to this Akzo Nobel supports that cyclized rubber was used 30 years ago. This resin was not bad, but paints with this resin had a bad film and needed another finish layer of paint on top of it, this is in line with the expectations Ms. Westphalen of Wilckens. DSM Resins in the Netherlands started producing cyclized rubber 20-30 years ago, but ended production in the end of 90's. A decision had to be made about a new investment of fl 4 million, but the market was declining and the profit was small, therefore the production of cyclized rubber was ended. DSM state that nowadays epoxy resins are mainly used, because they are cheap and have a good quality. It is hard for Sutek to compete with epoxy, because it cost by estimation €2.5/ kg and DSM does not believe that the combination of alkyd resin with cyclized rubber has the same results as epoxy. Zuelch in Germany manufactures paint with cyclized rubber, but do not use much cyclized rubber. Unfortunately they can not give figures about the quantity. All companies confirmed that the market for cyclized rubber decreased due to environmental regulations, this is explained below.

Consequences of VOC

In the conversations with the experts of Chugoku paints, Akzo Nobel Marine and Anti-corrosive paints, and DSM resins, was asked about the implications of VOC and REACH for cyclized rubber/ Ripex, see

attachment 12. According to all three experts from these companies, (and also according to all other people in the business that the researchers contacted, before these in depth conversations) the VOC regulations are very important for a company that wants to sell cyclized rubber in the EU. Historically cyclized rubber is dissolved and processed in coatings and other products that use organic solvents. And these are exactly the type of solvents the EU wants to ban with the VOC regulations. The implications of the VOC regulations are already clearly visible in the market. Many types of coatings have been transformed from solvent based to water-based coatings systems. Multiple producers of cyclized rubber in the EU (like DSM resins) have ended the production of cyclized rubber. And all paint and ink manufacturing companies are currently developing products compatible with the new VOC regulations. For example DSM stated that 95% of the R&D activities of DSM resins are concerned with lowering VOC values of current products, or replacing solvent with non-solvent systems.

Especially the meeting with DSM resins revealed much about the implications of the VOC regulations for Ripex. DSM said the business of cyclized rubber is declining, due to the VOC regulations. In general a lower viscosity of a resin implies that a lower quantity of solvent is needed. Less solvent in a product results in a lower VOC of the product. The problem is that when cyclized rubber is used to bind paint, a lot of solvent has to be added. DSM argues that for cyclized rubber a minimum of 600 to 700 gram solvent/litre product is needed, while levels of current resins are at 400. The market is now trying to develop resins that reach levels around 250.

A lower viscosity of Ripex implies a lower VOC value of the end product in which Ripex is used. Although alternative resins currently reach VOC levels of 400, in the future resin manufacturers are able to produce resins that achieve VOC levels of around 250. According to DSM, Sutek should therefore at least achieve a VOC level of 250 to stay competitive. If Sutek continues lowering the viscosity with the objective to achieve VOC levels 400 in the future, Sutek will be one step behind the competition. By the time Sutek achieves 400, the competing resins will be at 250. According to DSM it is very hard to achieve 250 with cyclized rubber, if not impossible. The process of cyclized rubber is a traditional one, in which it is hard to control the (spreading of the) molecular weight. If Sutek is able to control this and can achieve 250, Ripex still has to compete with other (cheaper) alternative resins. So it is still uncertain if a market exists. Therefore Sutek should first find out how far the VOC of a paint made with Ripex can go down.

DSM argues that Sutek can also consider other types of applications, like non-solvent or water-based solvent applications. The disadvantage is that these new applications will take a very long time to develop and that it is very uncertain if it is a viable application at all.

Consequences of REACH

Mr. Koster from Chugoku Marine Paints argued that all EU companies are obligated to report all the chemicals that they produce or import in the EU. REACH entered into force on 1 June 2007. This also applies for Sutek. He said that not just the product needs to be reported, but also all the chemicals in the product and their amount need to be reported. So a little bit of phenol (Ripex contains a few percent of phenol) should also be reported and paid for, if the total imported quantity of phenol exceeds one ton per year. Also the application has to be mentioned in the REACH subscription. This might be a problem, because for Ripex the application is still unknown. Eventually the REACH subscription is the importers responsibility. The additional cost to the product is not a huge disadvantage for Sutek, because competitors also have to deal with REACH, but it increases the sales price. Next to this the costs to subscribe REACH increase, when the production/import of Ripex increases. For low EU import quantities, just a low and cheap subscription level is needed.

Opinion about Ripex

The interviewed companies had also comments on the way Sutek is currently selling Ripex. In the opinion of Mr. Koster of Chugoku the TDS and the HSDS was not filled in on a professional way. Also the old application sheet was not correct. DSM and Chugoku both state that it is important to show test results as a resin supplier, because otherwise a (paint) manufacturer will not be interested in your product. These comments are elaborated in chapter 8.

6.3 Competitive structure

The researchers found in their conversations with multiple distributors that the market for cyclized rubber is decreasing. Multiple companies have said that many European manufacturers of cyclized rubber ended production in the past years. Nevertheless still one competitor of Ripex in Europe exists today, namely the product Alpex of the company Cytec. Although Cytec is the only company in Europe that produces cyclized rubber, the competitive structure can not be seen as monopolistic, because there are many alternative resins to which manufacturers of paint and ink can turn to. So Cytec can not ask an extreme high price for Alpex. They do not have the power that can be expected from a monopolistic company. Next to this the cyclized rubber market is free accessible. Due to developments in the resin market, the turnover of cyclized rubber is decreasing. Until now Alpex is the only cyclized rubber that survived in the EU. In section 6.3.1 a competitor analysis of Alpex is given. Instead of being monopolistic, the European resin market is in fact atomistic, because the European Resin Manufacturers Association (ERMA) has 32 members. In line with this Ink World magazine state in their Resin report 2007 that the competition is high and companies are forced to innovate to survive in this price competitive business. These articles are supported by the conversations with DSM Resins, Akzo Nobel Marine Paints and Chugoku paints.

6.3.1 Competitor analysis of Alpex

Introduction Cytec Industries Inc. and Alpex

The competitive cyclized rubber product of Ripex is called AlpexTM, which is produced by the company Cytec Industries Inc. in a plant in Wiesbaden, Germany (Cytec Surface specialties, 2007). Cytec Industries Inc. is an American manufacturer of many different types of specialty chemicals and materials and has manufacturing plants and distribution centres all over the world. In 2006 the net sales of Cytec industries Inc. were US\$3.3 billion, of which 49% came from the business unit Cytec surface specialties (Cytec annual report, 2006). This business unit with the headquarters in Brussels, Belgium is concerned with the three key areas: coating, bonding and printing of surfaces. The product Alpex belongs to the bonding of surfaces (Cytec Surface specialties, 2007). Internet investigation on Alpex shows that the plant in Wiesbaden in which Alpex is produced has been acquired several times. An account sales manager of Cytec surface specialties for France / Benelux supported this information see attachment 13. Alpex is an old brand name of former Chemische Werke Albert. Later it was acquired by Hoechst, Vianova Resins, Solutia Inc. in 1999 (New York Times, 1999), UCB S.A. in 2003 (UCB annual report, 2003) and Cytec in 2005 (Cytec annual report, 2005).

Unfortunately detailed information about the production of Alpex or the plant in Wiesbaden can not be found, because Alpex and even the production plant in Wiesbaden are relatively small compared to the total size of Cytec. To illustrate this: currently Alpex is just one of the seven products manufactured at the Wiesbaden plant, while Cytec surface specialties' manufactures at least 29 products in 17 plants worldwide (Cytec Surface specialties, 2007). Next to this Cytec surface specialties accounts for half of the total revenue of Cytec (Cytec annual report, 2006). Former acquisitions do not reveal more detailed information on the production of Alpex, because these acquisitions involved high amounts of money. In 1999 for example Solutia Inc. acquired the German chemical company Vianova Resins for US\$640 million (Solutia annual report, 1999) and in 2003 UCB acquired 21 technical resin production lines

(Secinfo, 2003) of the Resins, Additives and Adhesives activities of Solutia Inc. for an amount of € 514 million (UCB annual report, 2003).

Remarkable in the history of the plant in Wiesbaden is that it was struck by explosion and fire on the 12th of October 2000, by which the printing ink resins unit and a small phenolics production unit were heavily damaged. In the first quarter report of 2001 Solutia reports a US\$28 million gain (US\$17 million after tax) from insurance recovery for this incident (Solutia first quarterly report, 2003). But it is questionable what this implies for Alpex, because at least three of the seven products, which are produced in Cytec plant in the Wiesbaden (Cytec Surface specialties, 2007) are phenolic resins (Secinfo, 2002). It is uncertain to what extent the production line of Alpex was affected by this event.

Future Goals

Cytec's vision strives to become a specialist in their field through customer focus, superior technology, operational excellence and employee commitment (Cytec, 2007). The business unit Cytec Surface Specialties states it provides complete solutions for their customers requiring high-value surface technologies and it works closely with customers to improve and develop new technologies/markets. Furthermore they state the commitment is: "finding better solutions for customers through continual research, ongoing collaboration and a passion for innovation." (Cytec Surface specialties, 2007)

Assumptions

In the last decennia the Wiesbaden plant was acquired many times. The fact that the Alpex activities are not terminated implies that sales of Alpex are still profitability. It would be very likely at least one of the acquiring companies would have terminated the Alpex activities in case it would not be profitable.

The acquisition of UCB Surface Specialties in 2005 was relatively big for Cytec, because the total assets and total sales of Cytec more or less doubled by this acquisition. Although the annual reports of Cytec of 2005 and 2006 report several divestments in order to raise funds for this acquisition, no reports are made on divestments in the plant in Wiesbaden. However from this can not be concluded that Cytec assumes the market prospects for Alpex are good, because Cytec could not have divested in the Alpex activities: Cytec leases both the land and the facilities at the Wiesbaden site under long term contracts. Cytec has stated it is negotiating new leases and is reviewing its options (Cytec annual report, 2006). From this it is hard to guess what Cytec's assumptions are concerning Alpex.

Cytec Surface Specialties assumes they can improve and develop new technologies and markets that are in line with their products, as can be read from their vision (Cytec annual report, 2006). Next to this at the Cytec Wiesbaden plant, an R&D department is located (Cytec Surface specialties, 2007). So if Cytec would assume there would be an interesting new application or market for Alpex, they have sufficient possibilities and commitment to research this. In spite of this Mr. Brentkoper of the R&D department at the Wiesbaden plant explained that historically the plant started R&D on natural rubber based resin, but that nowadays there is no sense for further research of this, because the synthetic alternatives are cheaper than Alpex (see attachment 13).

According to the researchers Cytec assumes cyclized rubber and Alpex is in the end of its life cycle. First of all cyclized rubber is a product that is over 50 year old, according to Resine Italiana. The account manager of Cytec can give 15 applications in which Alpex can be used, which implies a great history. But nearly all manufacturers and distributors that the researchers spoke are negative about the market of cyclized rubber. Nowadays cyclized rubber is too expensive compared to synthetic alternatives and it is too hard to manufacture products with a low VOC value, in which cyclized rubber is applied. Next to this the English distributor Crestchem explained he really experienced the decline of the market for Alpex in England. DSM resins added to this that DSM had a deal with Hoechst to add their cyclized rubber product Synotex and their customers to Hoechst. (see attachment 13). The last clue

that Alpex is currently in the declining phase of its product life is the fact that Mr. Brentkoper of Cytec R&D Wiesbaden is not aware what customers do with the Alpex. Cytec sells it and does no further research on Alpex.

From this can be concluded Cytec assumes they can develop new technologies and markets if opportunities occur, but in the case of Alpex they assume it is best to make profit in this declining market as long as possible and not to spend money on R&D.

Current Strategy

To the researchers not much is known of the current strategy of the Alpex activities. Cytec is a big company and therefore it is hard to distinguish their strategy on just a relatively small product like Alpex. In general Cytec is striving to develop new markets for their products, but this is not the case for Alpex. According to Mr. Brentkoper from the R&D department of the Wiesbaden plant Cytec will not develop new applications for Alpex, because there are no good prospects for cyclized rubber. There is no sense to further research new applications for Alpex. Next to this Cytec does not give up a business that is still profitable.

Capabilities

Cytec Surface Specialties is a well developed company. All manufacturing plants and distribution centers worldwide are ISO-certified (Cytec Surface specialties, 2007). It is found that Cytec operates an ERP system (Cytec annual report, 2006). This system is also used in the Wiesbaden plant, because at this plant there is currently a job opening for a supply chain specialist that should have SAP and ERP skills. At the Wiesbaden plant there is also a R&D and a technical service. Cytec Surface Specialties also knows a lot of other resins, because they produce many types of resins and other related products (Cytec Surface specialties, 2007). The Wiesbaden plant already produces Alpex for many years, so they have a lot of knowledge about the production and marketing of Alpex. Furthermore from the meeting with DSM resins the researchers found out DSM sold its cyclized rubber activities to Hoechst (Alpex owner in the past), see attachment 12. This implies that the knowledge of DSM also joined Alpex. At last Cytec is also a lot bigger than Sutek, which implies that Cytec also has many strategic and financial capabilities.

The Wiesbaden plant is located on the Kalle-Albert industry park in Germany's biggest industrial Ruhr area (Cytec Surface specialties, 2007). With 1 million square meters this park is one of the biggest in Germany. This industry park is also over 130 years old (InfraServ Wiesbaden, 2007). The fact that the Wiesbaden plant is located in the heart of the knowledgeable German industry implies Alpex has a very good access to other knowledge/ industrial companies.

Compared to Sutek, Cytec has better capabilities in multiple fields: longer experience in the production of cyclized rubber, better developed quality management, higher efficiency, more knowledge on the marketing, more financial and R&D possibilities.

Competitor's response profile

It is most likely that Cytec will ignore new developments in the field of cyclized rubber. Cytec is certainly satisfied with its current position. They are still selling Alpex and this is still profitable. Cytec assumes the market for Alpex is declining and that it will eventually disappear and therefore it will not make a move to sell under the cost price. If a competitor would enter the market with a lower price, Cytec will end the production of Alpex when it is not profitable anymore. Cytec will not produce under cost price.

Cytec is a very strong competitor in many fields, but it is important to realize Cytec will not have the commitment to fight new competition of Alpex. The main part of the cost price of cyclized rubber consists of the cost of raw material (the raw material natural rubber accounts for about 50% of the cost

price). So there is no big difference in cost price of Alpex and Ripex. It is quite likely that Ripex can be sold cheaper in Europe than Alpex, because Sutek can use their experience of procurement of natural rubber from its mother company. This can result in a reduction of 10% of the costs of natural rubber. The only vulnerable thing of Alpex is price.

The market segment of Alpex is not very important to Cytec. Otherwise they would have used their R&D capabilities to find new applications for Alpex. Making profit is the only thing that keeps Alpex currently going. If a comparable product of Alpex would appear on the market, it will be ignored by Cytec. Perhaps Cytec could be approached by Sutek for cooperation in the field of cyclized rubber. Cytec would probably only cooperate if it is profitable to work together and would not react hostile. The researchers however did not research this, because this is not the intention of Sutek.

In this competitor analysis also the competition factors that influence export success are mentioned. The data confirms that Sutek needs to be price competitive. Ripex has to be significantly cheaper than competitive resins in order to make the product interesting. Suteks' strategy is already based on being competitive on price. This is positive for the export success. There is not much brand competition, because Alpex is the only competitor. There is much product competition, because the potential user can choose from many other resins. It will be hard for Sutek to distinguish Ripex from other resins. This will negatively influence the export performance.

6.4 Marketing infrastructure

Europe and especially Western Europe is a well developed trade block. The EU is the region with the highest GDP in the world (Eurostat, 2007). The availability of the marketing infrastructure in Western Europe is good, because in all countries many chemical distributors are available and freely accessible. This is supported by conversations with different distributors. Although not all distributors can sell Ripex in the EU due to contractual agreements with other companies, multiple distributors were considering distributing Ripex. Next to this IT is well developed in EU, so communication with distributors is easy. This implies the marketing infrastructure in the EU is good.

Also the export market characteristics factors that influence export success are analyzed in this research. Nevertheless these factors are not described here, because they are already covered by all other factors in the market analysis.

6.5 Conclusion Market factors

All three target market country factors are analyzed and the most important conclusion is that Sutek is not aware of the developments in the market. From the analysis of the sales potential, the marine and anticorrosive market appeared to be the most attractive market segment. This is a big market, but there is currently no sales potential for Ripex in the marine and anticorrosive market in Europe. This is caused by the VOC regulation. There is only one competitor for Ripex for cyclized rubber, but the competition in the resin market is high. Ripex has to compete with many other resins. Therefore the competitive structure can be seen as atomistic. The marketing infrastructure in Europe is good, so Ripex can be distributed easily.

7. Entry mode selection

7.1 Introduction

This chapter describes the most suitable entry mode for Sutek. In section 7.2 the entry modes resulted from the internal analysis are mentioned. The entry modes resulted from the external analysis part 1 and part 2 are described in respectively in section 7.3 and section 7.4. These three parts are combined and the most suitable entry mode for Sutek is chosen in 7.5. This chapter ends with four options for Sutek of what they can do from this point on and is presented in 7.6.

7.2 Entry modes internal analysis

In the internal analysis in chapter 4 the product, resources and commitment factors of Sutek are analyzed. From the product factors can be concluded that there is no need for branch/ subsidiary export, licensing or local production, because of several reasons. The product is differentiated and requires no extra services, the technological intensity is low and no adaptation is needed. From the resources and commitment factors can be concluded that export entry modes are recommended to Sutek, but branch/ subsidiary exporting is excluded, because of the limited financial resources. Sutek is not highly committed to do international business and therefore Sutek should choose for export entry modes or licensing, but not for branch/ subsidiary exporting or equity investment/production entry modes. Regarding the financial resources and the intention of Sutek investments entry modes are not an option, but a joint venture can not be excluded from the external analysis. Also certain contractual entry modes could still be valid.

7.3 Entry modes external analysis part 1

In chapter 5 the first part of the external analysis is analyzed, which consist of the target country environmental, production and the home country factors. From the analysis of the environmental factors can be concluded that the weakened dollar and Sutek's lack of understanding of the environmental values in the EU, disfavours equity investment in the EU above export entry modes. Furthermore no restrictions exist for equity investment in the EU, because there is low political risk in the EU and Europe is seen as a region with liberal exchange controls. Next to this entry modes with a high breakeven point are justified for the EU as target market, because the EU is a dynamic economy. From the analysis of the environmental factors is found that there is a small restriction to exporting, regarding the import duty on cyclized rubber, but this percentage is relatively small. The shipping time and the degrading of Ripex do not restrict export, but they just restrict the direct export of Ripex to the end-user, because it takes one month to ship Ripex to Europe and customers can still receive Ripex shortly after the order is placed. A distributor is more favourable than direct export to the end-user, because in this way customers can order smaller amounts of Ripex. The new REACH regulation restricts export to the EU market. Regarding the environmental values there is a cultural difference between Sutek and the EU. This disfavours direct export to the end-user. From the production factors can be concluded that it is more favourable to produce in Indonesia instead of Europe. The labour costs in Indonesia are lower than in the EU. Also low energy costs in Indonesia favours production in Indonesia. A small disadvantage of producing Ripex in Indonesia is that a tariff has to be paid when importing Ripex into the EU, while importing natural rubber is duty free. From the home market factors can be concluded that an export entry mode is favoured for Sutek above an investment entry mode. Sutek has to sell its product abroad due to the small home market. Restrictions on investing abroad are not researched, because Sutek does not have the financial resources to invest abroad. Furthermore the low production costs of Ripex in Indonesia favour production of Ripex in Indonesia. The type of competition in the domestic market does not restrict the entry mode of Sutek, because there is hardly a market for Ripex.

7.4 Entry modes external analysis part 2

In the second part of the external analysis in chapter 6 the target market country factors are analyzed. From the analysis for the sales potential can be concluded that the marine and anticorrosive market is the most attractive market segment. This is a big market, but with the current product characteristics there is no sales potential for Ripex in the marine and anticorrosive market in Europe. When there is no sales potential, there is no use of entering a market. The competitive structure can be seen as atomistic, which favours direct exporting through a distributor or branch, because Ripex has to compete with many other resins. For cyclized rubber there is only one competitor, because the market for cyclized rubber is decreasing in Europe and therefore other competitors ended their business. The overall competition in the resin market is high, due to the new environmental regulations. The most important conclusion is that Sutek is not aware of the developments in the market. Sutek is not familiar with new regulations like VOC. So cooperating with a knowledgeable organisation in the EU is favourable above entering the EU market on its own. The marketing infrastructure in Europe is good which favours indirect exporting or direct exporting through a distributor.

7.5 Most suitable entry mode for Sutek

In this section the choice of the most suitable entry mode for Sutek is made and an answer to the fourth research question is given:

What is the most suitable market entry mode for Sutek to enter the chosen market segment?

In order to give an answer to this research question an overview of entry modes is set up and is presented in table 7.1. In this table the researched factors are applied to Sutek. This way a structured selection of the most suitable entry mode is possible. Only the favourable entry modes are marked with an X.

From table 7.1 can be concluded that indirect export and export through an agent/ distributor is most favourable for Sutek, because it received 10 credits. Indirect export is not recommended, because Sutek is already internationally active. Licensing only received 4 credits and is therefore not an option for Sutek. The entry modes exporting through a branch/ subsidiary and equity investment/production received both 6 credits and are therefore secondly favourable. However these entry modes can not be realized due to the limited financial resources of Sutek. Service contracts are not an option for Sutek, because it received only 1 credit. Therefore it can be concluded direct export through a distributor is most favourable for Sutek, because it requires low investment cost, Ripex is standardized, the Netherlands and Germany have a good market infrastructure and Sutek has already experience with this entry mode.

The recommended entry mode is advisable when strictly following the theory of Root. However in this research no market is found for Ripex in the marine and anti-corrosion paint in Europe. This is caused by the VOC regulation that constrains the applicability of Ripex in these markets in Europe. The researchers also have strong leads this is the case for the ink and adhesive market. Therefore it is not advisable to continue business with the current product characteristics of Ripex in Europe.

Factor \ Entry mode	Indirect and Agent/ Distributor exporting	Licensing	Branch/ Subsidiary Exporting	Equity Investment/ Production	Service Contracts
Internal Factors:					
Standard product				X	
Low product adaptation	X				
Limited resources	X	X			
Low commitment	X	X			
External factors: (foreign market)					
Low sales potential	X	X			
Atomistic competition	X		X		
Good marketing infrastructure	X				
High production cost	X		X		
Liberal import policy	X		X		
Great geographical distance		X		X	X
Dynamic economy				X	
Liberal exchange controls				X	
Exchange rate depreciation				X	
Low political risk			X	X	
External factors: (Home country)					
Small market	X		X		
Low production cost	X		X		
Total credits	10	4	6	6	1

Table 7.1 Entry mode selection for Sutek (Favourable entry modes are marked with an X)

7.6 Options for Sutek

Sutek has four options to continue its business in cyclized rubber:

Option 1 – Research possibility to adjust Ripex to Europe

Sutek should research if it is worth spending money on lowering the viscosity in order to reach an acceptable VOC value of 250. Sutek can do this by making paint with Alpex with the lowest viscosity. This can be done for example by the company PRA (Paint Research Association) in the UK. In this way Sutek knows which VOC level can be obtained. Then it is also known if further research and development on Ripex XL is worth it. This result in an important question: “Can Ripex reach a VOC level of 250?”

- If yes, lower viscosity of Ripex, continue producing cyclized rubber and export it to Europe. Sutek can continue testing Ripex in the current paint, ink and adhesive business that are based on organic solvents. Note that reaching a VOC level of 250 is not a guarantee that Ripex has high sales potential. It still has to compete with other resins.
- If the VOC level of 250 can not be closely approached, options 2-4 should be considered.

Option 2- Focus on Asia and other regions

Consider to focus on Asia and other developing countries, where there are less strong environmental regulations. In these regions is VOC less important. Nevertheless these regions are also putting more emphasis on the environment, like China. So probably in the future Ripex L is not suited for this market. The existence of a market potential in Asia is an assumption of the researchers and it is not known if there is in fact a market for Ripex. Therefore this option needs further research. It is very likely that the adjustments to the marketing plan in chapter 8 also apply for this region.

Option 3 – Contractual agreement

Consider to contact Cytec for a contractual agreement. Perhaps Sutek can produce cyclized rubber for Cytec. There is a big chance that Sutek can produce cheaper. In this way Cytec can still provide their current customers with cyclized rubber from Sutek and it can use the production facility in Wiesbaden for other (more profitable) products. Sutek can use the knowledge of Cytec for lowering the viscosity and make a better qualitative product. Sutek can supply the current users of Alpex in Asia cheaper than Cytec, because no big (double) transport cost have to be made. Sutek and Cytec can set up an agreement for sharing profit. The advantage for Sutek is that they might have higher turnover and at least make a profit, which is better than their current situation. The disadvantage is that this could result in lower margins, when compared to selling Ripex through Sutek's distribution network. The market in Europe for cyclized rubber is decreasing. If it is not profitable anymore to produce cyclized rubber in Europe, cyclized rubber can still be provided from Indonesia. So Cytec can stretch their sales on cyclized rubber. This option is not further researched, because the researchers do not know if this option is the intention of Sutek. From the competitor analysis can be derived that Cytec will be open to talk about this option, because from the conversations with Cytec it was clear that they are not putting much effort in the cyclized rubber business. No further research is done on Alpex applications and Cytec only produces Alpex, because there is a demand from their current customers and it is still profitable. Cytec is not searching for new customers. Of course also contacting potential buyers or other companies with which contractual agreements are possible is an option, also in other regions, like the USA.

Option 4 – Search for new applications

Sutek can research also on other applications, like dispersing Ripex in water or non-solvent solutions. The expert from DSM said this could be an interesting to research, but he has no idea if firstly it will work out well and secondly if it is profitable. For this research also a lot of time and money is needed and it is risky, because Sutek does not know if this is possible and worth it.

If Sutek wants to continue its business, Sutek should execute the adjustments of the marketing mix, which are described in chapter 8. These adjustments are applicable for all options and must be implemented for all regions. Some of these adjustments are applicable for all markets and other have a specific focus on Europe.

8. Adjustments marketing mix

8.1 Introduction

In this chapter the researchers present their adjustments of the current marketing mix, because there is no need to describe the whole marketing mix again. The researchers want to emphasize that the market for cyclized rubber in Europe is very small and declining and that without these adjustments Ripex has no change on export success. Most of these adjustments are also applicable for other regions, because Sutek is active in the chemical business to business market. Before implementing these adjustments Sutek should wonder if it is profitable to put in much time and money in these adjustments, in order to export to Europe.

8.2 Product

The VOC regulation in Europe requires less organic solvents. In the paint and ink industry this leads to a demand of resins with low viscosity. Therefore Sutek needs to make Ripex with low viscosity. So Ripex needs to be adapted to the European market due to the VOC regulation. A lower viscosity of the resin decreases the number of solvent needed and thus lowers the VOC of the paint, but for cyclized rubber still a lot of solvent is needed. According to DSM for cyclized rubber a minimum of 600 to 700 gram solvent /litre product is needed, while levels of current resins are at 400. And the eventual goal of paint manufacturers is around 250. Therefore Sutek should develop Ripex with low viscosity and achieve a VOC level of 250, because the competitive resins will also be at this level. Otherwise Sutek is again one step too late compared with the competition. Before putting much time and money in researching this, Sutek can try to make paint with Alpex CK 514 to find out how much solvents are needed. DSM estimated the investments for a paint producing machine on €2000 - €3000. Sutek can also sent a sample of Alpex to PRA and let them make a paint and test the VOC level.

In this way Sutek can estimate if it is possible to get the viscosity of cyclized rubber as low as required by the European industry. The adaptation of the product is the most important adjustment in the marketing mix, because otherwise Ripex will not be accepted by the European market. If Ripex is not accepted the other adjustments in the marketing mix are not useful for selling Ripex to the European market.

According to DSM and Chugoku paint, Sutek should also have test results of Ripex in paint. Sutek have to convince potential end-users that Ripex is indeed a very good product. In order to tempt a potential buyer of Ripex, Sutek must provide evidence, which make it worthy to test Ripex. Testing a sample of Ripex is expensive for the manufacturer due to high R&D cost. Ripex must significantly be cheaper or of higher quality than the current resin. Sutek can do this by showing results of UV and salt spray tests. This can be done by buying a salt spray test machine which is estimated by DSM on €20,000 - €30,000 (according to ISO standards). Sutek can also sent samples of Ripex to PRA and let them test it in paints under different circumstances. Test results of the PRA are not expensive, because you only pay labour cost and are seen as reliable by the paint industry in Europe.

8.3 Price

The current strategy of Ripex is to compete on price with Alpex. This strategy is good, but it is hard to acquire the current customers of Alpex. The market is small and decreases even more in the future. Therefore Ripex not only has to compete with Alpex, but also with all the other resins used in the market. Currently there are cheaper alternatives for Ripex. The researchers doubt if Sutek can deliver the comparable quality for a lower price, while the price of the Epoxy resin is lower than the combination of Ripex with Alkyd resin. It cost by estimation €2.5/kg, see attachment 12. Next to this the experts from DSM do not believe that the combination of Ripex with Alkyd resin has comparable or

higher quality than an Epoxy resin. If Sutek wants to make the end-user interested in Ripex, the price of Ripex must be significantly lower or the quality must be significantly better than the competitive resin.

8.4 Place

Delivering Ripex through a chemical distributor is a good entry mode, because it is common to deliver resins through a chemical distributor. Sutek should make agreements on a communication system, because currently there is a lack of information. Sutek needs to be up to date of the market developments. Sutek should also try to receive the GSP form for lower import duties, because then Sutek can save 3% import duty. Sutek has to subscribe Ripex to the REACH regulation. This takes time and costs money, but it is necessary for future export of Ripex to the EU. There are independent European chemical consultancy companies who can arrange subscription to REACH.

8.5 Promotion

For promoting Ripex in Europe more adjustments have to be made. Sutek must tempt potential users to test Ripex. This can be done by showing test results of Ripex in paint. These test results should be mentioned on the TDS. Next to this, Sutek should have an application form of Ripex with formulations. It is important to show example formulations of how much Ripex, other binder(s) and solvents are needed to produce paint. Sutek should mention one formulation on the TDS of Ripex. The researchers received comments on the TDS, HSDS and the old application form of Ripex by the experts of the contacted companies. Therefore these forms need attention. It is recommended to set up new forms with cooperation of the PRA or an independent European consultancy company. The received comments are presented on the next page in table 8.1.

It is important to realize that Sutek should only put extra effort in promotion for Ripex, when the product has sales potential and all the other adjustments are implemented. The promotion can be done on trade fairs. On these trade fairs Sutek can make contacts and collect information on the market and get to know their competitive products. After these trade fairs the marketing manager or a sales representative in Europe should make appointments with these contacts and new potential buyers to get them interested in Ripex.

8.6 Additional adjustments for export success

Next to the adjustments of the marketing mix certain parts of Sutek need to be adjusted in order to have export success. Sutek is established as a company for international business. All the resources of Sutek are committed to Ripex. So there is a high commitment to the product, but Sutek as a whole company is not committed to do international business. Sutek should pay more attention to the market, because currently they are only focusing on the product. Sutek does not know what is required by the market. The new marketing manager should be more concerned with the market developments and the preferences of potential buyers. In this way Sutek can commit their resources more effectively. Sutek must systematically explore markets for any export possibilities and must commit adequate resources to exporting. Successful exporting requires a well developed strategy. Therefore Sutek needs to use detailed market studies before entering a foreign market.

Form	Comment	Elaboration	Company
TDS	Looks very busy, but all necessary information is available		Chugoku
	Anti-corrosive paint is not mentioned as an application		Chugoku
	At least one application formula should be mentioned	Otherwise potential buyers will not be interested	DSM Resins
	Test results of applications should be mentioned	Otherwise potential buyers will not be interested	DSM Resins
	The Cas number is not correct	Mr. Hofland checked this number, but it was not correct. This is seen as sloppy in the chemical industry in Europe	DSM Resins
HSDS	The Ripex Safety Sheets seems amateurish	It looks like somebody just filled it in, like as a school applications	Chugoku
	The HSDS has a European structure with 16 subdivisions, but does not contain sufficient information.	This information might be sufficient in Asia, but in Europe there are tighter regulations.	Chugoku
	The possibility of dust explosion of Ripex should be mentioned by point 3 hazard identification.	This is a neglected danger of these types of products (referring to a big explosion of a fertilizer plant)	DSM Resins
Old application form	The antifouling on the Ripex application sheet is not an antifouling.	These paints contain the pigment Cu ₂ O. In time the Cu ₂ O reacts with O ₂ to form CuO of which organisms die.	Chugoku
	Looks like a copy of Synotex	This is the cyclized rubber previously produced by DSM	DSM Resins

8.1 Overview of comments

8.7 Conclusion

This chapter has given an answer to the last research question:

How should the international marketing mix be designed in order to implement the selected market entry mode successful?

Sutek has to adjust their current marketing mix in order to have a successful entry. The most important adjustment is that Ripex needs to be adapted to Europe, because otherwise there is no use of exporting to Europe. The price and place do not require adjustments, but Sutek should make better agreements with their (potential) distributors for receiving more market information. This can also be done by an agent or the new marketing manager. The TDS and HSDS needs to be adjusted, because this does not meet the standards of the European market. In order to sell and promote Ripex, Sutek must show test results of Ripex in a certain application.

9. Conclusion and recommendations

9.1 Introduction

In this chapter the final conclusion is described in section 9.2. This conclusion gives an answer to the problem formulation. In section 9.3 the researchers give recommendations to Sutek. In section 9.4 the reflection of this research is described.

9.2 Conclusion

The problem formulation in this research is formulated as follows:

Which market entry strategy should Sutek follow, in order to significantly increase the sales of Ripex in the European market?

From the internal analysis can be concluded that Sutek has all the required resources to do international business and is highly committed to the product. The first part of the external analysis is showing not many barriers for entering the European market. Many European manufacturers of paint, ink and adhesive could use Ripex in their products.

Extensive research in the anticorrosive and marine paint, which is the most attractive segment, shows that there is no market for Ripex in Europe. Many companies do not use Ripex in their products, because other substitute resins require less organic solvent, which make them more preferable over Ripex. Using little organic solvent in the end product is obligated by the European VOC regulation. Because of its high viscosity, Ripex needs a lot of organic solvent to be applied in the end product. Therefore the current characteristics of Ripex offer no sales potential in Europe. The market for cyclized rubber will decrease even more in the future.

This research can also explain what went wrong and why there are currently no sales for Sutek. Sutek relied too much on its partner Resine Italiane, which promised sales in Europe. Currently Sutek still works with the market information received from Resine Italiane, which is outdated. Therefore there has been a lack of market information within Sutek. Over the years Sutek never researched the market and why end-users requested lower viscosity. This resulted in an overload of focus on the development of the product and no focus on the developments of the market. This can also be seen from Sutek's business model in section 4.3.2: Sutek does not exchange information with the end user. This causes a lack of important market information for Sutek. Therefore Sutek underestimated the regulations of the chemical industry in Europe and did not know the market for cyclized rubber was declining. Next to this Sutek has a lack of marketing knowledge of the chemical industry. The holding consists of five business units active in the medical sector and one in the chemical sector. The management of the holding is an expert in selling medical products, but has no marketing expertise of the chemical sector. The holding has underestimated the marketing knowledge needed for selling a chemical product.

From the theory can be explained that Sutek has underestimated and not conducted the first element of the international entry market strategy: choosing the target product/ market, see figure 1.1. Sutek only focussed on the product and not on the market. Therefore the researchers had problems with conducting the third and fourth element of the international entry market strategy and the researchers can not answer the problem formulation.

9.3 Recommendations

In section 7.6 four options are given that Sutek can execute from this point on. These options have to be followed one by one, so there is not one best option. The researchers give their recommendation about the order in which these options have to be executed. If none of the options presented will lead to

significant sales, Sutek has to consider ending its business in cyclized rubber. It is up to Sutek to decide how to continue their Ripex activities.

Sutek must start with the execution of option 1: Research if Ripex XL can meet future desired VOC levels. If this is realized, Sutek has a possibility to continue their business in Europe. Sutek has to start with executing this option firstly, because it can be quickly done and is not expensive. In order to know if Ripex has a future in Europe, it is necessary to know if Ripex can meet the VOC regulations. The researchers recommend the R&D of Sutek to go to PRA Coatings. This company can easily test the VOC level of paints and ink based on Alpex. Since Alpex with the lowest viscosity already exists and is comparable to Ripex XL, it shows if it is useful to continue further development on Ripex XL for the European market. Next to this it is important to realize, it will still be hard for Ripex to compete in the European market, even when VOC levels are met.

When Ripex can not meet the VOC regulations, option 2: Focus on Asia and other regions and option 3: Contractual agreement must be executed simultaneously, because it saves time in the declining market and this way Sutek can choose the most profitable option. The researchers recommend Sutek to execute option 2, because less developed regions have less strict environmental regulations and are therefore still interesting for Sutek. Next to this relatively low investments have to be made to execute this option. The researchers recommend focusing on the Asian market, because it could offer sales potential according to the contacted experts. However this sales potential is uncertain and further research is recommended. The marketing manager must research the Asian market and other regions with less strict regulations. In option 3 Sutek must research the possibility of a contractual agreement. This way Sutek can still profit from the declining market in cyclized rubber in Europe and other regions. The management of Sutek must contact Cytec for a contractual agreement. If Cytec is not interested in future cooperation, also companies from other regions like the USA can be contacted for contractual agreements.

If options 1-3 do lead not to satisfactory sales, Sutek can execute option 4: Search for new applications of Ripex. This option is not recommended by the researchers, because the researchers did not find strong leads for new applications. This research is highly uncertain, costly and time-consuming. When new applications are found, it is still unknown if it can compete with other resins. When Sutek decides to invest in option 4, R&D and marketing at Sutek should work together for finding new applications. Sutek must be aware the development of a new application for Ripex will take multiple years.

A very important lesson that is learned from this research is that the incentives of this product development must be based on market information and customer needs and not only on the product itself. Therefore it is important "To know your market first!"

9.4 Reflection

If the research would be conducted again, with the obtained knowledge, the researchers would do a few things differently and also some things the same. Below the reflection of the researcher is described. Also some aspects were applicable to both the researchers:

Wouter

- Wouter experienced some problems with making appointments for the internal analysis. The interviewees in the internal analysis were not always available for questions. Next time he would make appointments for interviews or set contact hours in advance, so the internal analysis could be conducted faster and could be more structured.
- In the external analysis part 2 Wouter faced multiple problems. There was too much focus on internet search for general data. This took a lot of time and many data appeared to be irrelevant for this research. Wouter had a lack of chemical knowledge to efficiently search for the relevant

data. He had the opinion that a comparison of countries was needed for selecting a target country. It became clear to him that comparing markets is more applicable in the chemical industry. It is advisable to start with contacting manufacturers and distributors in this business. They can provide more information about the product and market. This way the search for market information will be more efficient, because than you will have more specific knowledge.

Both

- In this research there were many companies, which were not willing to cooperate or did not reply on emails. Although the researchers have send follow up emails, in many cases companies did not reply. Next time the researchers would call companies again, who did not react on emails. When people are approached by phone they feel more obligated to give an appropriate reaction.
- Next time the researchers would use a voice recorder for recording the interviews, because they faced difficulties with listening and writing at the same time.
- Next time the researchers will collect more data for the in-depth research face-to-face, because this way more information can be obtained.

Attachments

1. Factors analyzed in this research
2. Introduction to rubber
3. Ripex
4. Question list marketing mix
5. Question list internal factors
6. Company brochure
7. Technical Data Sheet Ripex (TDS) Ripex
8. Health and Safety Data Sheet (HSDS) Ripex
9. Export readiness test
10. Preliminary screening
11. Explorative interviews
12. Marine and anti-corrosion paint manufacturers
13. Alpex

Abbreviations

The following abbreviations are used in this master thesis report:

CAS	Chemical Abstract Service number
CIF	Cost, Insurance, Freight
CR	Cyclized rubber
FCL	Full Container Load
FOB	Free on Board
HSDS	Health and Safety Data Sheet
LCL	Less Container Load
NR	Natural Rubber
REACH	Registration, Evaluation and Authorization of Chemicals
TDS	Technical Data Sheet
VOC	Volatile Organic Compound

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“Know your market first!”

*A market entry strategy in Europe
for the Indonesian company Sutek*

Master thesis
Business Administration
International Management

- ATTACHMENTS -

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University of Twente
Enschede, The Netherlands
January 2008

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Attachment 1: Factors analyzed in this research

Chapter	Factor	Source	Method
3. Company and product description of Sutek	Firm characteristics	Representatives at Sutek	Face to face interview/ observation
	Product		
	Price		
	Place		
	Promotion		
4. Internal analysis	Company product factors	Representatives at Sutek	Face to face interview/ observation
	Company resource & commitment factors		
	Competitive advantage		
	The willingness to search for new markets		
	Export management practices		
	Managerial perceptions and attitudes		
	Motivation	Representatives at Sutek and the researchers	Questionnaire
	Market information		
	Objectives		
	Market entry		
5. External analysis part 1	Management of resources		
	Target country environmental factors	Ball 2006 and websites of CBI, Eurostat, Yahoo Finance and European industry associations and distributors and manufacturers	Internet and literature research
	Target country production factors	Representatives at Sutek, websites of EVD, Oanda, Vab	Face to face interview/ observation and internet research
	Home country factors	Representatives at Sutek	Face to face interview/ observation
6. External analysis part 2: Market factors	Sales potential	Websites of industry associations, industry magazines	Internet research
		Experts, distributors, potential users in multiple segments	Telephone and email conversations
		Experts, potential users in one segment	Face-to-face conversations, telephone and email conversations
	Competitive structure	Competitors' websites, distributors, annual reports and representatives	Internet research, telephone and email conversations.
	Marketing infrastructure	Distributors	Telephone conversations

Attachment 2: Introduction to rubber

This attachment concerns the report of the meeting with Jacques Noordermeer, professor of rubber technology at the faculty of Science and Technology at the University Twente on the 30th of May 2007.

Since the researchers did not have any specific knowledge on rubber in general at the start of the research, it was necessary for the researchers to explore more on this subject. To be well prepared before departure to Indonesia, the researchers contacted Mr. Jacques Noordermeer, professor of rubber technology at the faculty of Science and Technology at the University Twente. Thereby the researchers got invited by Professor Noordermeer to talk about the rubber. The attachment is the elaboration of this meeting.

In this professor Noordermeer was given the opportunity to speak freely about events, behaviour and beliefs in the relation to the topic and so the unstructured interviews method was applied. This interview method is explained by Saunders et al. as an in-depth exploration of a general area, in which the interviewer has interest in (Saunders et al., 1997 p247). This interview had no predetermined list of questions to work through, because a clear idea about the aspects that had to be explored was needed. Obviously the application of an unstructured interview method was the only option, because of the researcher's lack of knowledge of rubber. The researchers prepared for this meeting by reading about the basics of rubber in the library and studying the technical data sheet of Ripex. Next to this, during the interview the researchers wrote down as much information as possible. Basically all questions asked were open questions. To improve data quality the researchers checked on the CAS registration number of Ripex. For this Hanneke Becht of the Faculty for Science and Technology of the University Twente was consulted. Mr. Siswantoro M.Sc., Ph.D, who is the Vice President of Sutek and concerned with the production and R&D at Sutek complemented our report from 'the introduction to rubber' from our meeting with Prof. Noordermeer.

The rubber tree

Rubber comes from the *Hevea Braziliensis* tree; found growing originally in the jungles of Brazil and Columbus was the first European, who discovered natural rubber (NR). In 1820 the first British Rubber company was founded by James Lyne Hancock. In 1839 Charles Goodyear of Woburn discovered how to vulcanize rubber. He found that the material charred like leather and the resulting composition was a much stronger material that was no longer sticky at high temperatures. In 1889 John Dunlop in England invented the first commercial successful pneumatic tire, which was at that time only used for bicycles. Only when the motor car arrived in 1910, the use and price of NR exploded (Ciesielski, 1999 pp1-6).

The process

Every other day plantation workers make a slit into the bark of the rubber tree to allow the flow of a milky sap. This sap is called latex and consists of 30% polyisoprene (the rubber) and 70% water, protein and carbohydrates (Ciesielski, 1999 p14). The sap is collected into big tanks and is picked up by a truck every day. This truck brings the latex to the NR factory. Here formic acid or acetic acid is added, so that the latex will coagulate: all the little pieces of rubber in the sap, which are of a nanometer size, attach to each other. After this the liquid is wringed out by rollers, so that rubber skins remain.

These Rubber skins also contain proteins, so when unhandled, these skins will start to rot. Therefore these proteins must be extracted from the rubber. By rinsing/wringing the rubber skins

with water, already much of the protein will be extracted from the rubber skins. By doing this over and over again, the NR will be tenable for some time. This process is called deproteinization.

NR can also be totally stabilized, which means that the NR can't rot anymore. In the stabilization process the rubber skins are not rinsed/ wringed multiple times, but the rubber skins are dried in smoke chambers. In these chambers the smoke of wood fires is blown. The carbon in the smoke attaches to the protein and makes the protein resistant for oxygen, so it cannot rot anymore. When the smoking is finished, talc is added to the rubbers skins to make the skins not stick to each other. Normally this product is transported to other factories for further processing, i.e. to the tire factories.

The choice between stabilizing or deproteinizing is important, because it gives the NR several properties, which make the NR only useful for certain applications. When deproteinized by rinsing/wringing the result has the advantage that the rubber will stay white and thus useful for applications where the color of the end product is important, like condoms, gloves, paints and ink. The disadvantage is that this deproteinized NR can still rot. Stabilized NR (when the skins are smoked) will result in black NR and makes it particularly useful for the tire industry, since the use of black NR for tires is no problem. This process is easier, cheaper and stabilized NR will not rot anymore.

The chemistry of rubber

NR consists of a long chain of molecules with a certain pattern. Below in figure 2.1 the smallest part of the pattern is shown. One NR molecule exists of many times of this part connected to each other for n-times in a row. The molecular weight of a NR molecule can vary between 700.000u and 1.200.000u and the molecular weight of 1 smallest part is:
 $5 \text{ C's} + 8 \text{ H's} = 5 * 12\text{u} + 8 * 1\text{u} = 68\text{u}$. The length of a NR molecule or n varies in the range of: 10.000 to 20.000 of these parts.

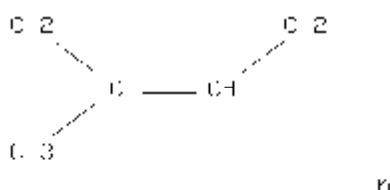


Figure 2.1 the smallest part of a NR molecule (Noordermeer, 2007)

In chemistry molecules can also be displayed simpler. Simply displayed, the smallest part of a NR molecule from figure 2.1, becomes type A shown in figure 2.2.

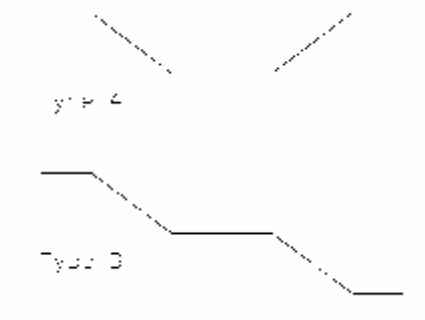


Figure 2.2 types of the smallest part of a NR molecule (Noordermeer, 2007)

However the smallest part of a rubber molecule can also be a little different. The CH₂ part in the top right corner of figure 2.1 can also be bonded with the CH, so that it will be in the bottom right corner. This is what is simplified displayed by type B in figure 2.2. This difference gives the molecule and the whole substance different properties and is important when NR is compared with Synthetic Rubber. As stated already, A NR molecule exists of a chain of only type A parts. On the contrary Synthetic Rubber (the one that comes the closest to NR) exists of many type A's and just a few percent of type B parts. This difference on molecular scale makes NR superior over Synthetic rubber. It just gives NR better properties like elasticity, strength and durability. Disadvantage of NR is that it is not thermally stable, in comparison with synthetic rubber. The NR polymer falls apart into subunits during time.

Market development of rubber

The rubber tree only grows in countries near the equator, because of the climate. Therefore most of the NR is produced in Asia. In 2000 Asia produced about 90% of the NR world supply. It was estimated that about 6 million tons of NR was produced in that year (Jakobi, 2002 p106). The current world production is about 7 million ton/year. Thailand, Indonesia and Malaysia are the biggest producers, but also Sri Lanka, India and a few African countries produces it. Although the tree originates from Brazil, there is hardly any production in Brazil, due to the higher labor cost.

A rubber tree can produce rubber for 30 years. During this period the production slowly decreases. Every tree can produce 100 ml of latex sap per day. This sap consists of 30% rubber and 70% water and protein. With a yearly production of 7 million ton NR, over a billion trees are needed. In the past a rubber tree had to grow for 8 years before it could produce latex. Nowadays this has been improved to at least 6 years.

What is important to know, is that the main part of the NR production goes to the tire industry. Since NR has better properties (like elasticity, strength and durability) than synthetic rubber, NR is a lot more suitable (if not the only option) for tires. Due to these better properties, tire producers always prefer NR. Truck tires are made of almost 100% of NR, while car tires consist of 1/3 NR and 2/3 of synthetic rubber. Car tires do not have the same standards as truck tires, because cars are less heavily loaded and cover smaller distances.

Since a lot of NR production is used for tires, tire producers have their own plantations, but there are also free market plantations. The prices of NR at the free market have gone up the last years, because of several reasons. Firstly the demand of condoms has increased over the years and the recent increase of prices is mainly caused by the higher demand of Chinese car manufacturers. Also a law in Germany that obligated car owners to always have a first aid kit with rubber gloves,

the price of NR suddenly increased. Since a rubber tree has to grow for 6 years before it can produce latex, the NR production is always lagging the demand. At this moment prices of NR are really high. Because of the high price of NR, Russia increased the production of synthetic rubber. Below the price of NR From SICOM (Singapore commodity exchange) is presented in figure 2.3.

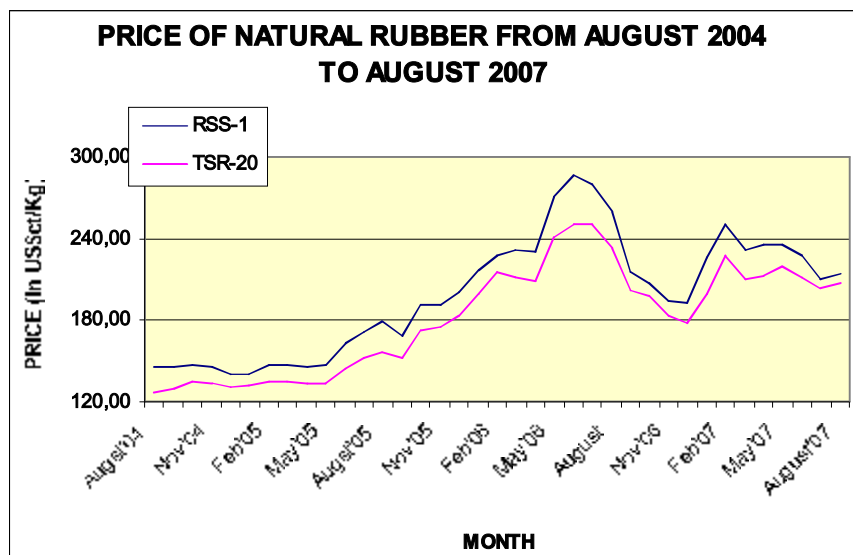


Figure 2.3 Price of natural rubber from august 2004 – august 2007 (SICOM, 2007)

NR will stay important in the future, because it is too hard to engineer a chemical process that can create the same purity of isoprene (rubber) molecules as NR. According to Professor Noordermeer synthetic rubber will most likely never replace NR. A good thing about NR is that it is environmentally friendlier than synthetic rubber because the CO₂ produced in the production of NR, is consumed by the trees that produce the latex. By the increasing importance of sustainability, NR will probably remain an important product for the world economy.

There has been a crisis in the tire business and a lot of producers are pushed out the market. The big tire producers Michelin, Goodyear and Continental, Pirelli and Bridgestone, Yokohama and Firestone are the big survivors up till now. Just like sugar etc., NR can also be traded on the stock exchange in Thailand, China and also Holland.

Rubber as strategic resource

Access to NR is very important for an economy and therefore NR is a strategic resource. The Japanese already knew this in WW2 and because most of the NR is produced in South East Asia, Japan invaded this region to get the exclusive rights on NR. In a reaction to this and the higher need for NR of the United States, caused by the war, the synthetic rubber industry strongly emerged in this time. Europe and the United States did not want to be too much depended on other countries for their supply of NR and thus stimulated research on synthetic rubber. Nowadays a lot of NR is replaced by synthetic rubber. However NR remains of strategic importance, because for example NR is the only really useful resource for tires. In the United Nations is agreed that no import duties on NR will be imposed among the members, because of its strategic importance. This is not necessarily the case for processed NR, like CR. In 1980 the International Natural Rubber Organization (INRO) was established, with the main purpose to stabilize the supply and demand of NR. The participating countries agreed to terminate the

agreement in 1999. The main organization concerned with the discussion of matters affecting the supply and demand for NR is the International Rubber Study Group (IRSG).

Additional information on rubber

Professor Noordermeer was surprised to see a CAS (Chemical Abstract Service) number on the TDS of Ripex. Every substance in chemistry that is invented gets a CAS Nr. With this CAS Nr. a lot of information can be obtained from the particular substance. For example the chemical properties, technical data sheets, things a doctor might need to know about the substance in case of emergency, yearly world production etc.

According to Professor Noordermeer, you can not assume the CAS nr is always totally correct. For the law and also for exporting usually a CAS + technical data sheet is necessary.

Attachment 3: Ripex

Upon arrival in Indonesia, the researchers consulted Mr. Siswantoro, the Vice President of Sutek and concerned with the production and R&D. In these conversations he told a lot of the company, the products and the production process. These meetings were explorative and unstructured, because the researchers did not have detailed information of the company on arrival in Indonesia. All the information collected from these explorative conversations was written down and presented to Mr. Siswantoro, who gave feedback on this elaboration. After that a meeting for an extra interview was set, with more structured questions than the first in-depth interview. The interviewee and the interviewers argued that the following areas should be discussed in this interview: what Ripex is; an explanation of the important aspects of the Technical Data Sheet; an explanation of the cyclization process and general market properties. The final report was cross-checked between the two researchers and Mr. Siswantoro. This attachment is the elaboration of these meetings.

What is Ripex?

Ripex is one of the brands names of cyclized rubber resin and it is a product of Sutek. This is a non-rubbery, tough material, derived from rubber and used in paints, ink and adhesives and for insulation. Blackley defines cyclized rubber (CR) as a hard, resinous substance which is obtained from natural rubber (NR) by treatment with strong acids (Blackley, 1966 p416). The appearance of Ripex is presented in figure 3.1.



Figure 3.1 the appearance of Ripex (Sutek company brochure, 2004)

As stated in 'the introduction of rubber', NR consists of a long chain of molecules with a certain pattern, shown below in figure 3.2.

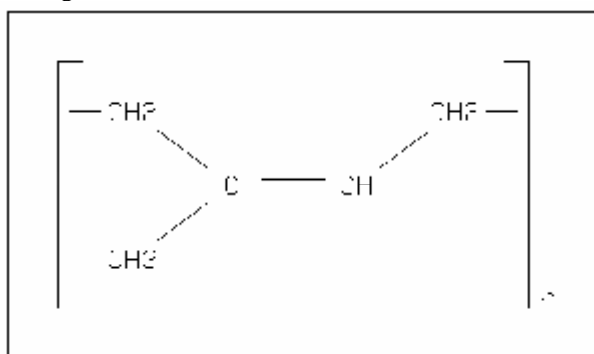


Figure 3.2 the smallest part of a NR molecule (Noordermeer, 2007)

One NR molecule exists of many times of this part connected to each other; n will range from 10.000 to 20.000. Blackley furthermore describes how the process of the cyclization chemically goes. In figure 3.3 this process is shown. This process will not be elaborated extensively, because this is not necessary. The goal of this research is only to give insight in cyclization process, instead of giving a full chemical description.

When NR is cyclized, two of those ‘smallest parts of NR’ are cyclizing in a hexagon. This is shown in figure 3.3: where the red part of the first molecule is one of those ‘smallest parts of NR’. In figure 3.4 the structure of the new formed CR molecule is shown. This is the molecule that exists when the whole process of cyclization in figure 3.3 went on many times

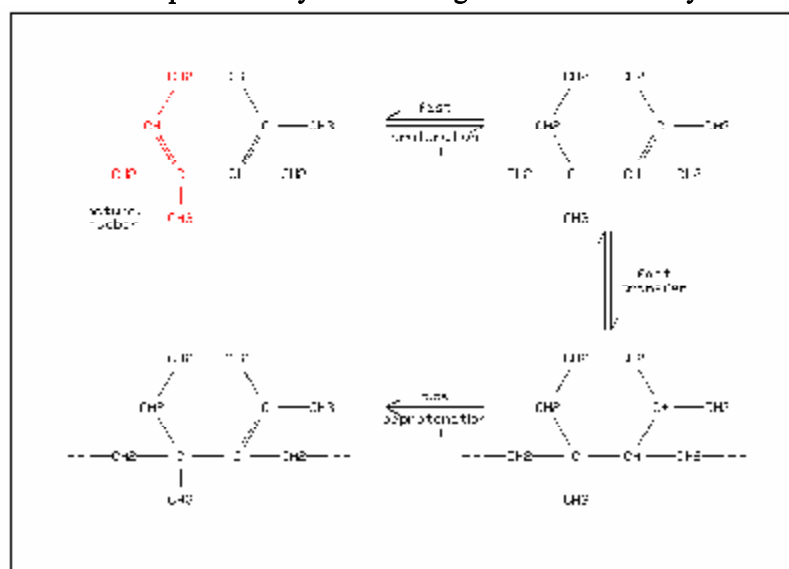


Figure 3.3: the cyclization process (Blackley, 1966 p420)

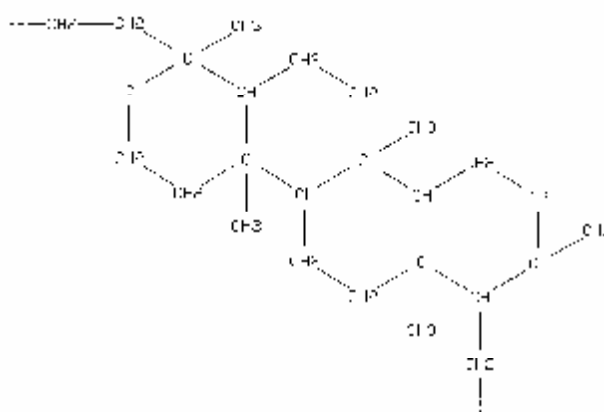


Figure 3.4: the molecular structure of cyclized rubber (Blackley, 1966 p418)

Explanations Technical Data Sheet (TDS)

Specification

This table shows important specifications of Ripex, like Melting point, Viscosity and Colour scale.

Melting point

Mr. Siswantoro assumes that for the user of CR, the melting point of the CR must be between certain values and so it will likely be just a limiting condition for the customers. CR with a lower viscosity will have also a lower melting point.

Color scale

The lighter the color or the lower the color scale value → the better the use for light paints. Dark resin will influence the color of the paint more. According to Mr. Siswantoro the achieved color is acceptable and the same as the main competition and better than the other competitors.

Additional viscosity

The specification of the properties of Ripex is given at 20°C. Below this additional viscosity data is given, which shows the viscosity of Ripex at 23°C. This temperature is used a lot in the CR business and since it is placed on the TDS of Ripex, potential customers can easily compare the viscosity of Ripex with competitive products. The viscosity is given in a solution with Toluene on 1:1. (This is the same as a solution in 50% Toluene)

When the TDS of Ripex L and Alpex CK 450 are compared, Ripex L (with the specification printed on the TDS), is not competing with Alpex CK 450, because the stated viscosity range of 700 – 1000mPa.s is higher than Alpex' viscosity range of 350 – 700mPa.s. Therefore Mr. Siswantoro tried to get better ways of production to reach a viscosity range of 450 – 800mPa.s this year. It is not easy to improve the viscosity, because chemically it is a complicated process. Although a viscosity range of 450 – 800mPa.s is achieved already, it is also very important to get such values constantly, because you always need to provide constant quality. It is estimated another 6 months are needed, to achieve a constant of 450 – 800mPa.s viscosity range. This is satisfactory according to Mr. Siswantoro. The viscosity of Ripex is relatively comparable and Ripex L has been approved by some customers to be well direct substitute for Alpex CK 450.

Solvents

The reason why the different solvents (toluene, white spirit and soy oil) are mentioned is because of different applications. Some applications are restricted by certain solvents, because of environmental legislation from the EU and US. For example when the printing process is done in the open air. So solvents in the ink evaporate and become a danger to the people close the printing machine. Therefore printing ink can only consist of non-carcinogenic substances. Toluene (Benzene with CH₃; boiling point of 100°C.) is a very good solvent for the CR, but toluene is an aromatic substance (it has a Benzene part), which is carcinogenic. Aliphatic solvents (with linear molecules, like {...-ch₂-ch₂-ch₂-...}) are an example of non-carcinogenic solvents, like D-40 with boiling point of 140°C) consists of linear molecules with all different lengths. Soy oil is environmental friendly and can even be eaten, but is only used by a small number of companies. White spirit is a mixture of aromatic and aliphatic molecules and thus less carcinogenic as toluene. The Linseed oil will be added on the TDS in the future, because it is common drying oil for printing ink.

The correlation between the variables

The correlation between molecule sizes, melting point, viscosity, dissolvability is the following. In the process of cyclization, cyclized structures appear: these are benzene rings connected to each other.

The bigger the size of the molecule the	→ Higher the viscosity
	→ Harder to dissolve
	→ Higher the melting point
	→ Looser structure
	→ Lower brittleness

In the last experiments done by Mr. Siswanto he got:

Ripex	with viscosity of 500 mPa.s	& a melting point of approximately 125°C.
	with viscosity of 200 mPa.s	& a melting point of approximately 110°C.

The increase of viscosity of CR with time

CR gets a higher viscosity over time, when CR is exposed to heat, oxygen and light. To the best of Mr. Siswanto's knowledge, Ripex exhibits slower increase in viscosity in time compared to other CR. The viscosity of Ripex doubles in about 1 year at a temperature > 30°C. In Europe this may be 2 years, because Europe is cooler than Indonesia. If you keep Ripex in an air-conditioned room, the viscosity also goes up more slowly.

This phenomenon is important because it makes Ripex tenable. It is also important to consider this when exporting, because it takes approximately 1 month to ship Ripex to Europe or the United States.

Theoretically putting the Ripex in vacuum sealed bags would slow down the process of rising viscosity. Nevertheless this is not done, because when Ripex is produced, it takes weeks before it is cooled off to room temperature. You can not put a hot substance in a vacuum sealed bag. This is the reason why Ripex is packed in paper bags, because then the heat can go out.

The Cyclization process

It is already mentioned how the process of cyclization takes place. Here the production process at Sutek will be described. CR is already 50 years old. First it was made of latex, so it was not clean and a lot of catalyst was needed. This was bad for the environment. It is further developed now and the process is as follows: To get cyclization the following substances are put together and heated: catalyst + NR + phenol. The most common used catalyst for cyclization is P₂O₅ (phosphorus pentoxide). By solving the solid NR in heated phenol, the catalyst can get close to all the NR molecules, so the catalyst can cyclize the NR molecules.

The two main variables, which influence the cyclization process is the amount of catalyst used and the temperature of the process. The higher the amount of catalyst used, the higher the degree of cyclization. If the temperature of the solution is higher, the reaction will also go faster. However if the temperature gets too high, the NR can carbonize. Thus to get a CR with certain desired viscosity and without carbon is very difficult. Ripex L is fully cyclized, while Ripex S is not. Using a small amount of catalyst results in Ripex S. The material flow is shown in figure 3.5.

The process is as follows (see flow chart on next page):

R1: the NR, catalyst and phenol are mixed in the reactor and heated. Here the cyclization process takes place. The NR cyclizes and the impurities are getting loose from the NR.

R2: after the cyclization process an aliphatic solvent is added.

R3: the liquid from the reactor is pumped to separating tanks. The solution is 90°C. and remains there for 1 week to cool down to approximately 40°C. Due to the difference in density and compatibility, 3 substances separate from each other during this period: the aliphatic solvent + the CR (orange/red color), the residue solved in phenol (black color) and the used catalyst (green color). This is the order from top to the bottom of the tanks. Because the substances have a different color, they can be tapped off separately from underneath the tanks.

R4: here the aliphatic solvent is distilled from the CR, by heating the substance to approximately 250°C., because the CR has to be liquid enough to discharge from the kettle. The aliphatic solvent is then reused. After distillation the CR is pressed out into trays with nitrogen gas. (No air is used, because it contains O₂ that reacts with the CR.) When the CR is solid, employees break the CR in big pieces. After this it is granulated and put into paper bags. This is the CR for sale: Ripex.

R5: here the phenol is recovered by distilling.

R6: the used catalyst at the bottom of the separating tanks can be used for fertilizer, if Calcium is added. This also implies for the residue from the phenol distillation process, which still contains phosphor. By turning these two in fertilizer, there is be zero waste.

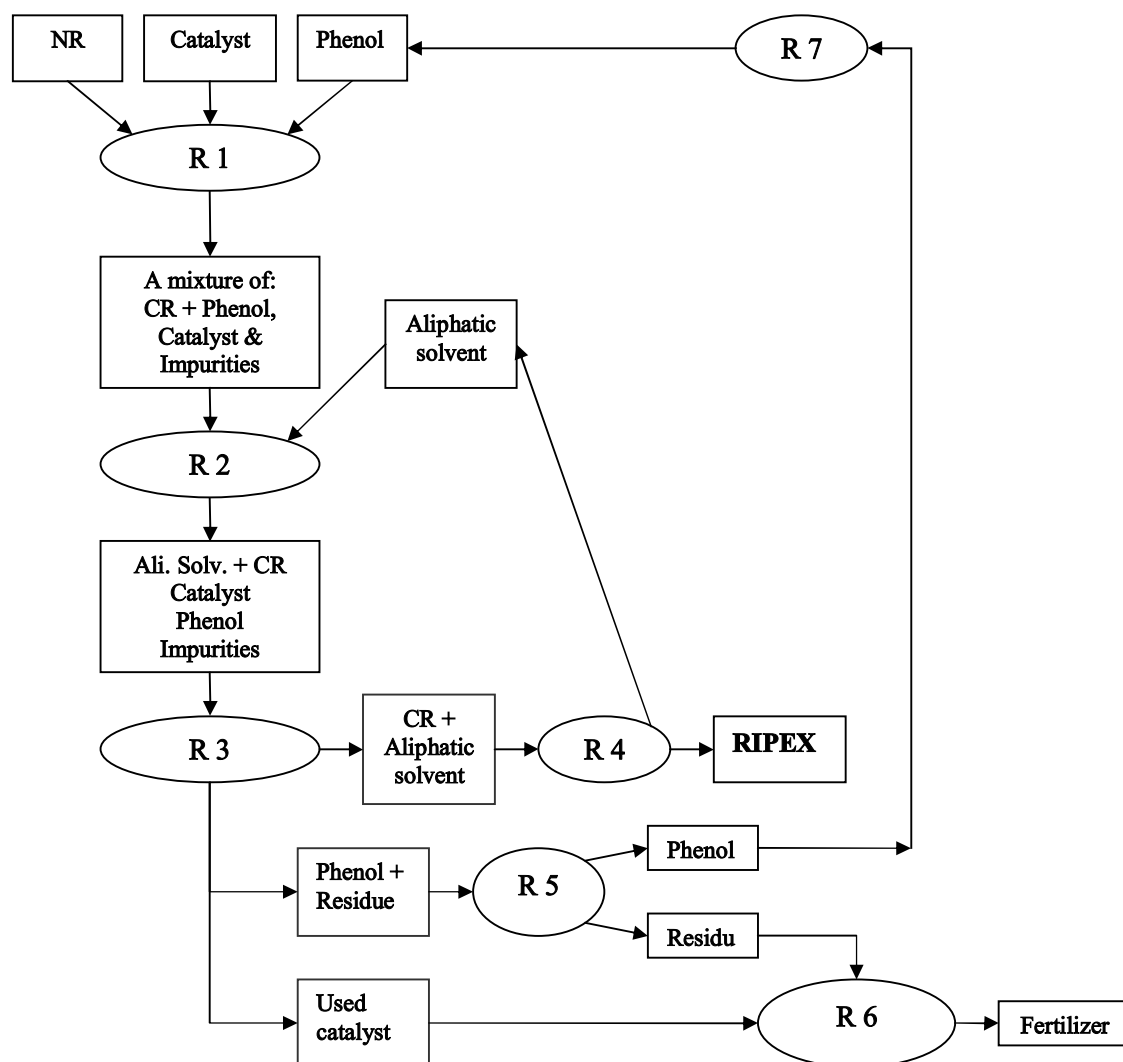


Figure 3.5 The material flow of Ripex (Sutek, 2007)

R7: to store phenol, water is added. To use the phenol again the water has to be removed. This can easily be done by distillation.

NR

All the NR comes from the rubber plantation company Estate. However all NR is washed and wringed many times to remove some of the proteins from the NR, it is not necessary to use pure NR, because the impurities can be separated after the cyclization process. There are different types of NR, like brown crepes and smoked sheets. It is important to obtain dry NR. Fungi (decomposing organisms) will eat the protein, when the NR is wet. When the NR is dry, it is well preserved. There are several standards for NR. These standards concern the water content, the physical appearance, viscosity, color, etc.

Thailand, Malaysia and Indonesia are the three main producers of NR. The governments of these countries have made agreements on the limits of supply of NR. These countries don't want the price of NR to become too high, because than SBR (the synthetic alternative) will be become too competitive.

Phenol

To make CR resin the liquid phenol (benzene with OH) is used to dissolve the rubber resin strings. Phenols melting point is 40°C. Being solid below this temperature is a handy property, because it can be transported quite easily. For the process however it has to be kept liquid to use it. But if 5% of water is added to the phenol, it stays liquid. This way no expensive heater is needed. Only the water has to be removed, because it is poisonous for the catalyst P_2O_5 . This can easily be done by distillation. Phenol is a nasty substance, because it burns the human skin. Because it is aromatic, phenol is reactive. Sutek buys it is phenol from a distributor, who most likely gets it from Japan.

Bonded phenol

Although phenol is used as medium in the cyclization process, also some phenol is bonded to the CR, during the cyclization. About 5%-20% of phenol is bonded to the CR. The NR that is used in cyclization consists of 93% polyisoprene and 7% impurities. When NR is cyclized into Ripex L, it has no impurities and 5-10% phenol is bonded to the CR. Thus 100% NR is processed into 98-103% CR. In the figure below bonded phenol is shown.

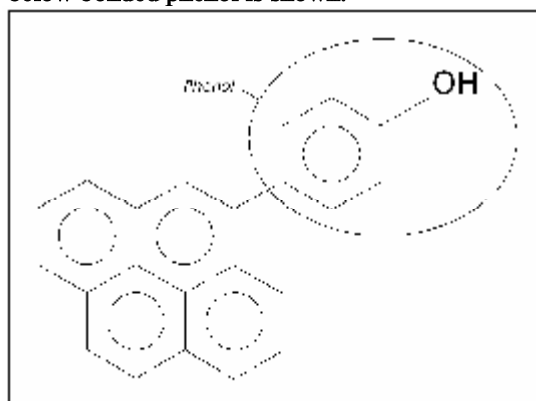


Figure 3.6 bonded phenol, (Sutek, 2007)

The additional phenol is particularly useful for customers, because it has a really reactive OH part. This part is really useful for customers, because the OH is reactive to temperature, oxygen and light. In general a higher bonded phenol percentage is better.

The bonded phenol is of use when CR is used in coatings. When the solvent of the paints is evaporating, the phenol creates intermolecular crosslinks: The Oxygen atoms from the bonded phenol will attach itself to the other CR molecules. This is very important, because it creates a network of molecules that is really tough. A paint in which CR is added, will be harder to dissolve and more resistant to water and weather. For weather resistant paint, other synthetic resins are used, like alkyd. Less CR is used for this paint, in the proportion of 2:3, CR: alkyds. In this case the CR is known as an additive to speed the drying rate and to harden the paint.

CR is used in ink, to harden the ink and to make the ink dry faster. Next to this a higher phenol percentage also increases the UV-light sensitivity of the CR. This property is sometimes used in the printing ink industry, because UV-light, when applied in printing machines, can speed up the drying rate of the ink and harden even more. This light sensitivity property can also be used for the application in analog photo technology, but Mr. Siswanto argues that the economic prospect of this use is uncertain, since digital photo technology strongly emerged. If you want something reactive to light, you need a chemical part reactive to light. It is difficult to differentiate on a CR, with a certain percentage of bonded phenol, because the impurities in the NR have an effect on the content of bonded phenol in CR. Now it is not measured, but Mr. Siswanto could derive the content of bonded phenol in the Ripex from the material balance.

Applications of Ripex

According to Mr. Siswanto the main application for CR is anticorrosion paint and printing ink (70% of all CR use), because Ripex is especially resistant to water, non oxidizing acids and alkali. For the production of printing ink also CR is used, because the ink needs specific viscose properties. The ink needs certain viscosity value to prevent the ink from misting.

There are many synthetic types that are also applicable in paints and cost less to produce, like Epoxy. CR can be particularly useful in coatings for offshore applications, resistant to saltwater, like in pipes, for containers, bottom part of the boat (marine paints).

DSM has a patent for a certain paint in which CR is used. This paint prevents any sea life to attach to ships, like algae. CR is also used in the coating of swimming pools (that needs a light color) and road marking paint (that needs a light color and needs to stick to bitumen/concrete and has to be hard)

CR is also used for pressure tape adhesive. The CR is needed to make the tape (polypropylene) stick to the rubber (can be NR or SBR). 3M is a big manufacturer of tape.

General market properties

Transport

The shipment of Ripex to Europe takes about 4 weeks. However it is better to use lead time instead of this transportation time. The lead time is the time from production till the arrival at the end user. For Ripex the lead time to the European market is 6-8 weeks.

Ripex S has to be ordered 3 months in advance by the customer, because Ripex S is not produced a lot and thus has to be planned in advance.

There are two types of containers: 20ft. and 40ft. of length. Ripex is only exported in 20ft. containers, because the 40ft. are too big to get to the factory of Sutek. A 20ft. container can carry 10ton Ripex. Due to efficiency reasons, Sutek always strives to export full containers. This is called F.C.L.: Full Container Loaded.

Production

The production of 10 ton Ripex L takes 3 weeks. When produced continuously, it will be only 2 weeks. Sutek has 3 reactors to produce Ripex, but currently only 2 reactors are used. With 2 reactors the capacity is 1.6 ton/day and with all 3 reactors 2.4 ton/day can be produced. If the market is good, another kettle for phenol can be bought for the phenol preparation, so all 3 reactors can be used. The current capacity is 400 ton per year.

Trade Barriers

Important for customers of Ripex is the HSC: Harmonized System Code, because it influences the price of Ripex. This code is given to any exported product and it defines possible trade barriers. For Ripex the conditions are very favorable, because there are low tax concerned (maybe even zero). Every time you export your product you need to fill in the form Certificate of Origin.

Changing to another CR

It is important to consider that in the chemical industry, buyers do not prefer to change the resources they use, because it can change the properties of their product. It also takes time (and thus money) to get used to new resources and they might need to change their process. Customers will most likely only switch to Ripex if there will be significant advantages.

The market

Currently Sutek sells Ripex L to the following Buyers:

- in Peru 1 ton/year for paint
- in Sudan 2 ton/year for paint
- in UK 10 ton/year for printing ink
- Resine Italiane 10ton/3months. (First Resine Italiane produced this product itself with the name Resiprene 35. Now Ripex L is sold here, because the customers thought Ripex is better. Because customers are used to the name Ripex S, it is also marketed as Ripex S.)

The buyers in Sudan and Peru prefer Ripex, because it is cheaper.

According to Mr. Siswantoro, there is a high demand of CR with low viscosity, mainly used in the printing ink industry (for newspaper and so on), because many (potential) users and distributors request a Ripex with low viscosity. The estimated potential turnover of Ripex XL is therefore high, because only the market for ink for newspapers is really big! Billions of people read newspapers everyday. Due to this Ripex XL with extra low viscosity is now developed. The new product Ripex XL is expected to become like Alpex CK 514. Until now Mr. Siswantoro has managed to reach a viscosity of 250mPa.s, but this is not up to the Alpex' viscosity range of 100-140mPa.s. It is a matter of time.

Because the development Ripex XL is not finished, it will be sold in the market in a later stage and Ripex L is the product to focus on now. Although Sutek now estimates a big market potential for Ripex XL, it is not certain there is a market, because no marketing research has been done on Ripex XL. Therefore Ripex XL is now in trial and the market will be explored at the same time. It is expected that a new experience marketing employee will join Sutek in Augustus to market

Ripex L and Ripex XL. Ripex S is now only produced, if there is a demand. When Ripex XL can be marketed, it is expected that the production of Ripex S will be ended, because of the low demand for this product.

Sutek is convinced there is a big market potential. The fact that Reichold, a distributor of CR in the United States requested 500 ton Ripex, implies that the market exists. Unfortunately the offer was below cost price at that time. According to Mr. Siswanto the main competition in:

United States	→	1. price	2. quality
Europe	→	1. quality	2. price

Mr. Siswanto argues that Ripex should have a good quality (about the same as the competition) and that the price should be competitive and that there are no other things that have to be differentiated on.

Competition

Mr. Siswanto said he knows some things about the main competitor of Ripex. This is the product Alpex from the Belgian company UCB, which has been acquired by the American company Cytec. UCB had to sell some business units for recovery. Nevertheless it did not decide to sell its Cyclized rubber business. From this it might be concluded, the market for CR must still be valuable.

The researcher will review if this is correct, when they are back in the Netherlands, because there they have good internet access. It could also be that nobody has interest in buying this business unit and that the only option for Cytec is to remain producing Alpex. This has to be checked! From the annual report facts on this company can be retrieved!

Mr. Siswanto argues that the name of the company that produces Alpex has changed about 4 times in the past due to changes in ownership. What is known is the change from UCB to Cytec. The initial factory was probably located in Germany or Belgium. Also a customer once requested Sutek a Cyclized rubber that was similar to the Alpex that was used to be produced in Canada. Mr. Siswanto assumes that the technology, needed to produce Alpex, could be transferred to other countries. Solutia is most likely the first company name. There probably was a fire some time ago. In the United States there is 1 distributor of Alpex, which is Reichold. In the UK the distributor is Crestchem. The focus/target market for Ripex should be on the potential market of Alpex. The data of import of Alpex in the Netherlands is most likely available at the CBS or a ministry (probably of foreign affairs) in the Netherlands. In April 2006 a French student, who did an internship at Sugih, requested the price for Alpex at a European distributor (name). This distributor could deliver Alpex for a minimum of 3 tons of:

60%	Alpex for € 4.85 solved in Toluene.
100%	Alpex for € 5.70

The price will possible go down if Ripex L will be sold more.

At the Indonesian distributor the price for Alpex in Indonesia is \$8 to \$9 The price is most likely high, because not much Alpex is sold in Indonesia and because it has to be imported. Mr. Siswanto estimates there is a 300-500kg/month turnover of Alpex CK 450 in Indonesia. Although it is interesting (high margin) to sell Ripex directly to users in Indonesia, Sutek still prefers selling Ripex with an Indonesian distributor, because Indonesian companies are more reluctant to use new products. If Indonesian companies already buy other chemicals of a distributor, these companies will more easily switch to/start using Ripex.

Ripex L is a good substitute for Crodaprene, which is sold in the UK. This product is probably produced in the UK. The specifications of Crodaprene can be found on internet.

Attachment 4: Question list marketing mix

This interview is conducted face-to-face with Mr. Siswantoro and Mr. Tarya. The questions for this interview were added at the end of the question list internal factors. The question lists are split up in two attachments, because it gives the reader a clearer overview. How this interview is executed and how the researchers have improved the quality of the data can be found in attachment 5.

In order to know more about the market position of Sutek, we would like to know more about the marketing mix of Sutek. To set up a new international marketing plan we must first know what the current marketing plan of Sutek is.

Product

- a. What product (aspects) is being sold?

Sutek is selling one product. The product is cyclized rubber and is a chemical product. There are two types that are being sold:

- Ripex S
- Ripex L

The product is standardized, but because they are selling and developing different types this can meet the special requirements of the customers. Ripex is already been exported and is not adapted to a special region, because it is proven to be a good substitute and can easily applied to manufacturers who are already using cyclized rubber.

Also a new Ripex product with low viscosity is being developed. This new product will meet the requirements and preferences of more potential customers. This product has more sales potential than the other two types. The products are developed for the business to business market and can be seen as a specialty product. In theory Ripex can be custom-made, but in practice this never happens, so Sutek does not focus on this. The main product that is being sold is Ripex L.

Ripex has an expire-date from 9-12 months. Therefore Sutek is not able to produce too much on stock, if the sales are not there. The expire-date will also influence the distribution.

The product is being sold in paper bags of 25 kg, with English product information. The product including the package meets the requirements of the countries in which it is being sold. Before Ripex is sold to the manufacturer, it will first run certain test, generally by following this procedure:

1. Ripex is tested in the lab by the manufacturer with for example 1 kilo Ripex.
2. Ripex is tested in a pilot plan/production with for example 500 kilo Ripex.
3. If there are no problems, Ripex is used for production.

During this process no assistance is needed from Sutek, because the manufacturer has its own formulas and this is not known to Sutek. So Ripex does not require special services for selling it, although Sutek provides the health and technical data sheet to the distributors, because this is required by the industry.

Ripex is mainly used in the anticorrosion paint and printing ink, but also in a small number in adhesive tape. It is better to sell Ripex to manufacturers, which are already using cyclized rubber, because the formula to implement this resin is already known and only small adjustments have to be done to fine tune the process.

Sutek does not have much information about the market and therefore it does not know exactly in which phase the products of Sutek are in.

Ripex S is by estimation in the last phase; Decline, because there is hardly demand for it.

The phase of Ripex L can not be determined, because there are not much sales for Sutek, but this can have several causes and it does not implement Ripex L in the last phases of the product life cycle.

The new product Ripex XL is expected to be in the first phases of the product life cycle, because Sutek receives requests for this type, but for this product it can also not be determined, because there is no market information about this.

b. What is their market position?

Sutek is a small company and started with research in 2001. In 2004 they started producing their first product, Ripex S. Since the end of 2006 Ripex L is being produced. The cyclized rubber market is difficult to define and therefore there is no knowledge about the market position of Ripex S and L within the company. The market position is probably not high because there are not much sales. The product Ripex L is relatively new for Sutek, because it is produced for only eight months now, so they do not have a real market position yet. Sutek is trying to penetrate the market which is dominated by their main competitor Alpex.

c. What competitive alternatives are available in the market?

Sutek knows that they have to compete with their main competitor Alpex. There are also other cyclized rubber resins on the market, but these cannot compete with the quality of Ripex. The characteristics of Ripex are better compared to the competition, but are equal to their main competitor Alpex.

At this moment Sutek knows the names of three competitive products, these are: Codeprene, Resiprene and Alpex. The annual sales of Codeprene in the UK are estimated on 30-40 ton. The technology of cyclized rubber is old and this technology is modified by Sutek. To make a good competitive resin a certain chemical trick has to be done, which makes it hard to copy the product.

Sutek has a strategic advantage, because they are producing in Indonesia and therefore they think they can differentiate on price. It is assumed that Sutek has an advantage on energy, overhead and manpower cost, but Alpex can maybe compete on other parts of the cost price. This information is not available within Sutek.

The cyclized rubber is a specialty product and has therefore a few substitutes. The cyclized rubber can be used as an additive in the paint or ink industry. At moment the paint also uses alkyd resin, but this is not well resistant to the weather. When cyclized rubber is added to this resin it becomes resistant to the weather. Cyclized rubber is the best resin for compatibility with alkyd resin compared to other resins. The paint industry can also use epoxy resin instead of alkyd resin + cyclized rubber, but this is more expensive.

d. How are you measuring the quality of the product?

To make sure that Ripex provides the same quality every time, it has a few measurements to test the quality:

- The main raw material of Ripex is natural rubber and the quality of natural rubber can change everyday and this can influence the viscosity of Ripex. Therefore the viscosity is tested early in the process. If it is too high, it will be blended with a batch with lower viscosity, so every batch has the same quality.
- Before the resin is recovered it is tested in the lab

- Each batch will receive a certificate of check
- Before an order is being exported the products are being checked. If the product does not meet the requirements it is not sent. The product is being tested on:
 - viscosity
 - melting point
 - colour

If the sales increase, Sutek will try to obtain an ISO certificate, to improve quality control of the product and also the management.

Price

- e. What is the current price of your product and what is the pricing policy?

Sutek has set two prices for selling Ripex:

The sales price to the distributor: US \$ 5,30 per kg

The Sales price to the manufacturer: US \$ 5,80 per kg.

Suteks' vision is to have a profit margin of 25 %.

The sales price to the distributor is based on FOB (free on board). Ripex is preferred to be sold in US dollars, because it buys their main raw material natural rubber also in dollars. This makes the product less sensitive for changes in exchange rates. The preferences from European distributors are different, because KMZ Chemicals buys Ripex for US dollars and Resine Italiana prefers to buy it in euros.

The policy of Sutek is to sell the price lower than Alpex, which is assumed to be sold for € 5,70 in Europe. Alpex is sold in euros and Ripex in US dollars, this makes the competitive pricing depended on the exchange rate between euros and dollars. The current sales price to the distributor of Ripex in euros is €3.61 (GWK 06-07-2007).

If the US dollar is getting weaker compared to the euro, this is an advantage for the price of Ripex, because it becomes cheaper for European buyers to buy Ripex. For example:

US\$ 1 = € 0.69 (GWK 06-07-2007) and if the dollar is getting weaker and the new fictive rate is US\$ 1 = € 0.59, Ripex is getting cheaper. The new sales price to the distributor is would then be € 3.,13.

- f. How is your cost price calculated/ built up

The cost price is calculated in two ways:

1. Cost price based on less container load (LCL)
2. Cost price based on full container load (FCL)

Sutek achieves to deliver Full Container Loaded (FCL), this makes the transport more efficient and is it is also better for the products. If the products are delivered on Low Container Loaded (LCL) it is more expensive and the container is filled with other products, which can damage Ripex. The differences in cost are caused by cost in packaging, electricity and especially freight cost.

It is expected that the cost price will decrease if Suteks' production is increasing, because the production price per product will decrease. The cost price is influenced by the market price of natural rubber, if the price of natural rubber increases the cost price is also increasing. The transport costs from the plant to the harbour of Jakarta are included in the cost price.

Table 4.1: Cost price composition of Ripex L (Sutek, 2007)*

		Part of total costprice (%)
I	Raw material costs	
	Main raw materials	51,0%
	Supplementary raw materials	8,4%
	Packaging materials	0,6%
Total		60,0%
II	Factory overhead	
	electricity	4,6%
	direct labour cost	1,7%
	Indirect labour cost	14,6%
Total		20,9%
III	Selling costs	
	freight cost	0,8%
	mailing & delivery cost	0,4%
	advertising cost	0,0%
	travelling cost	0,4%
	entertainment and commission	1,0%
Total		2,6%
IV	Operating costs	
	general administrative cost	6,5%
	Other cost	0,2%
Total		6,7%
V	Cost of capital	9,8%
Total		9,8%
Total cost		100,0%

g. To what extent do you apply different pricing from the competition

* Cost price Ripex per 4th of April 2006; based on a production 240 ton; based on F.O.B. (Free on Board) and FCL

It is assumed that the cost price of Alpex is lower than Ripex, because Alpex is bigger, it can have purchase contracts with suppliers of natural rubber. In the this purchase contract the prices are set for 1 year, so Alpex is not depended of the market price of natural rubber. To import natural rubber in Europe there are no import duties, so the price of natural rubber is for Alpex almost the same as for Ripex. Sutek does not have insight in the pricing policy of Alpex, but Alpex controls the prices, because they are market leader and Sutek will try to compete on price. Because Sutek is located in Indonesia, it has more choice of natural rubber types, because for the process of cyclized rubber, it does not matter which color or type you use. In this way Sutek can choose for the lowest price and Alpex is bonded to the purchase contract, this give Sutek a competitive advantage.

h. How do you apply pricing flexibility in order to promote sales (e.g. discounts, quantity offers, contractual tenders etc.)?

The sales price of Ripex is flexible, because the distributors and manufacturers can get a discount, depending on the order size.

Place

- i. What is your current market coverage?

Sutek does not have market information about their current market coverage, but it is reasonable to say it is low, because Ripex is not sold much. It is assumed that Alpex is market leader, because in every market that Ripex is sold Alpex is available. Sutek will try to get at first 10% of their market.

There are also other resins available, which are not made out of natural rubber for example Codeprene. These are cheaper than Alpex and Ripex. Their sales price is estimated on US \$ 3,5.

- j. Which distribution channels do you use? Can you give us the names of your current distributors?

Ripex is sold by distributors in foreign countries. Sutek has chosen for this strategy because a distributor can promote their product more easily, because:

1. A distributor has experience and knowledge of the chemical market and knows the manufacturers
2. The distributor already has a relationship with the manufacturer which makes it easier to introduce the product
3. According to Sutek the manufacturers are reluctant to new products of unknown suppliers. This makes direct sales more difficult.
4. Manufacturers prefer a distributor in comparison to direct sales, because the manufacturer does not want to be bothered with all arrangements which have to be made for importing a product. It is easier to buy it from a distributor.

Sutek has an agreement with their distributors that Ripex is not directly sold to the manufacturer in the country the distributor is located. The manufacturer can be approached, but the product is being sold by the distributor.

Sutek has an overview of their current customers, this is as followed:

Name	Country	Description
The Cary Company	US	Not providing Ripex L, because the market prefers lower viscosity
Euroland Enterprise	Taiwan	Providing Ripex L, but the market prefers low viscosity
KMZ Chemicals LTD	UK	Providing Ripex L, this is what the market prefers. Estimated sales is 40-50 ton of Ripex L per year
Resine Italiane	Italy	Providing Ripex L, the market prefers Ripex S, but Ripex L is marketed as S. Sales 10 ton of Ripex L per 3-4 month

Table 4.2 Distributors of Sutek (Sutek, 2007)

Ripex L is being sold as Ripex S in Italy, because the market is known with the brand name Ripex S, but they like the characteristics of Ripex L. It was easier for Sutek to deliver the brand name Ripex S with the characteristics of Ripex L rather than introducing Ripex L. Sutek produces Ripex S only on demand, because there is hardly any demand for it. Ripex S needs to be ordered three months in advance, because to produce Ripex S many preparations need to be done and the process needs to be adapted. The delivery of the product from order to delivery will then take up to 5 months.

There was an order from the US distributor for Ripex L for 500 ton. This order was not executed, because they requested to deliver below the cost price of Ripex L. There was also a request for lower viscosity than Ripex L, which implements that there is a demand. Currently there are no sales by this distributor.

There was a request from New Zealand for 30 ton per year but according to the potential distributor this market is too small. In the future when Sutek can produce Ripex with lower viscosity they may contact this company again.

There is no contact with the manufacturer in Sudan, because this production facility is owned by a German company, who placed also the order for Ripex. Sutek has only has contact with this German company.

Sutek also had contact with a distributor in Germany, but no agreement has been made. The distributor conducted a survey and it turned out that there is not enough sales potential for this distributor. He estimated the sales on 20 ton, which is too low for this distributor.

Sutek had a request from a company in Japan, but Japan as a target country is not an option for Sutek. Japanese regulations require phenol free Ripex, but this is not possible for Sutek. The Japanese company requested for chlorinated polypropylene, but this adaptation is too costly for Sutek.

This company is active in printing packages for the food industry. There was no agreement, because the phenol in the Ripex produces a smell, which is created by the phenol and printing food packages require no smell. The Japanese regulations were another reason that there was no agreement. Therefore Sutek concludes that Japan can not be seen as a target country and the industry in printing food packages also. In the US there is also a phenol level, but Sutek is able to produce and deliver beneath this level

k. How does the distribution channel relate to the competition?

Alpex is also sold through distributors, but in some countries it is sold directly to manufacturers, to be more price competitive.

l. How does the process of logistics look like?

Sutek does not use specific delivery terms, this depends on the request of the distributor, because some distributors use freight companies in Indonesia. Therefore Sutek delivers:

- FOB: Free on Board Sutek only bring the product to the harbour in Jakarta.
- CIF: Cost, Insurance, Freight: Main transportation cost are paid by Sutek plus insurance

Sutek achieves to deliver Full Container Loaded (FCL), this makes the transport more efficient and it is also better for the products. If the products are delivered on Low Container Loaded (LCL) it is more expensive and the container is filled with other products, which can damage Ripex.

The delivery over sea takes about 40 days and it is preferred that Ripex will be sold within three months, because then the quality is guaranteed. After six months the quality can not be guaranteed, because the product is expired.

The product is transported from the plant to the harbour of Jakarta, here it is shipped to Singapore, where it is further distributed on bigger ships, to Europe for example. The freight charges are almost the same in the harbours in Europe, like Rotterdam, Hamburg and Venice. Before delivering the products, different freight companies are contacted for an offer. In this offer the price is less important to Sutek, because reliability of the delivery and insurance are more important. Sutek can also use the references of Sugih, because they have experience with exporting for many years.

Although Ripex is a chemical product, it is not dangerous, therefore there are no extra transportation cost needed. The Health & Safety and Technical Data Sheet are always sent with the products, because this is obligated.

Promotion

- m. What promotional tools does Sutek employ? Please describe the promotional mix (Advertising, trade fair participation, direct marketing, e-Marketing, sales promotion, public relations etc.)

Sutek uses the internet to promote their product, in total seven sites. They place advertisements on coating sites and also trading sites. On is www.alibaba.com, this site is an online marketplace for the export and import of products. They have members in more then 200 countries. According to the site it is the largest online market place for the export and import of products. The site is awarded for "Best of the web" by Forbes for seven years in a row.

The other websites:

1. www.coating.de
2. www.worldtrade.com
3. www.importers.com
4. www.asiantradersinfo.com
5. www.worldtradeaa.com
6. www.modernchina.com

Sutek also provides brochures, the Technical Data Sheet to the distributor and give free samples to the manufacturer to test the product. At the moment it is hard to push the distributor, because there is a lack of sales people within Sutek. So Sutek is not aggressively marketing Ripex. In the near future when the new marketing manager will start, they will more aggressively search for new markets and buyers, by visiting distributors and relevant exhibitions. At the moment the cost of personal selling is too high, because for selling the product there are always two persons required. The president has a lack of chemical knowledge and the vice president has a lack of marketing knowledge. Sutek has solved this problem with the attracted marketing manager, who is a chemist and have marketing experience of 5 years.

Because Sutek is a small company and have a specific product, it does not have PR. Mr. Tarya is the president of the Abadinusa Holding and of Sutek and also main shareholder with his family, so it easy to inform them.

Attachment 5: Question list internal factors

This is the elaboration of the question list of the internal analysis. It contains mainly primary data. Sutek is a small company and therefore the only secondary data that exists of Sutek are the company brochure, the Technical Data Sheet and Health and Safety Data Sheet of their products and can respectively found in attachment 6, 7 and 8.

The primary data needed to answer the questions is collected by conducting interviews with company representatives, because it is given preference over other data collection methods for several reasons (Saunders et al., 1997 p249-252):

- The participants were willing to use their time and put effort in an interview.
- The question list is very long: it took multiple sessions to conduct the interview. It is uncertain if the interviewees would have put as much effort in a questionnaire.
- Some question considered sensitive topics, like financial resources. In questionnaires it is more inappropriate to give sensitive and confidential information.
- The questions of the internal analysis did not invite for standard answers. In an interview the interviewee can elaborate more on a subject if the answer is not clear to the interviewer. Talking about something is easier than writing about something.
- The interview consists of open questions, which stimulates the interviewee not to give short and standard answers. An advantage of an interview is that the interviewer can ask additional questions if something is not clear. If the answer is not satisfactory enough, the interviewer can ask the interviewee to elaborate more, so the researcher has more control than with a questionnaire.
- Managers are more likely to prefer being interviewed, rather than to complete a questionnaire, especially when it's about their work and interest.
- Being interviewed provides the opportunity to receive feedback and personal assurance about the way in which the information will be used.

The two persons interviewed, are:

- Mr. Oerip Siswantoro MSc PhD: Vice President of Sutek and concerned with the production and R&D
- Mr. Ade Tarya Hidayat; President of Sutek. He is the main shareholder of Sutek and the Abadinusa Holding. He is concerned with the marketing of the whole Abadinusa Holding, so can spent little time on marketing for Sutek.

Only these two persons at Sutek are interviewed, because they are only persons that can provide relevant information for this research. Sutek is a small company and has approximately 15 employees, who are all executive personnel.

The interviews for this research were conducted by meeting the participants. This is the face-to-face interview approach (Saunders et al., 1997 p247). This approach was the only option, because there were only two interviewees: a focus group interview approach was no option. Also face-to-face interview was given preference over a telephone interview, because firstly the interviewees worked on the same location as the researchers, so it was easy to set meetings. Next to this there was a necessity to conduct the interview in multiple sessions, because of the length of the question list. This makes a face-to-face interview more suitable.

The typology used in this interview was semi-structured, according to Saunders' description of types of interviews (Saunders et al., 1997 p246-249). To cover all necessary subjects and themes, the interview was structured by pursuing a list of questions derived from the theory. Despite this

predefined structure of questions, the order was not pursued firmly. In some cases background information was given for certain questions, which provided the answers of questions to be asked later on. Next to this the interviewees could not always answer all questions: the technical questions were mainly answered by Mr. Siswantoro and the marketing and business orientated questions were answered by Ade. There were no predefined answers for the questions.

Data Quality Internal Analysis

In order to avoid bias in the data collection for the internal analysis, the key measures to overcome bias in qualitative interviews of were considered (Saunders et al., 1997 p246-252).

First of all the researchers have tried to prepare as good as possible. Before departure to Indonesia the researchers spoke to Prof. Noordermeer to get to know the world of rubber products. Next to this at the company the researchers conducted an initial explorative interview to get a better feel of the business of cyclized rubber.

Secondly the question list was handed to both interviewees several days before the interview. So the interviewees could prepare for the interview in advance. In multiple occasions the interviewees gave remarks about the questions and supporting texts in advance of the interview, which complemented the viability of the internal analysis.

During the interview, both researchers took notes. To overcome interviewer bias, all data has been cross-checked between the researchers.

To overcome interviewee or response bias, in a sense that the response does not reflect the perception of the interviewee, the data has also been cross-checked by the interviewees.

Unfortunately there might be bias, because only two representatives of Sutek are interviewed. It is possible that the outcome of the interview reflects the personal views of the interviewees and not correlates with the opinion of other experts in this field: the data may not be completely viable. Nevertheless this was inevitable, because there were only two interviewees available at Sutek.

All information about rubber organisations mentioned, books about rubber and other public facts were checked on the internet and adjusted if necessary. Uncertainties were left out the report.

The question list

We have set up a question list, because we want to know what kind of company Sutek is and what she is able to do. This is called an internal analysis. To get this information we have formulated questions concerning four subjects:

- The overall strategy of Sutek.
- The resources of Sutek
- The competences of Sutek

The list is presented to you as a preparation for the interview, so the interview will be more efficient. Answers can be given faster and additional information can be gathered before the interview. In other words you do not have to full in the complete test yet, just prepare the answers. Certain words might be vague or unknown to the company; these are defined on the bottom of the page and not referred to anymore. (Johnson & Scholes, 2005 pp117-119)

1. To get a clear picture of the company's commitment to do international business, the overall company strategy of Sutek will be reviewed. In many companies, especially small companies, mission, goals, objectives and strategy etc. are not formally written down, but implicit and can be deduced from what the company is doing. Therefore we have set up the following questions:

a. What is the mission¹ of Sutek?

“To continue and develop the existing business in the cyclized rubber”

Using natural rubber as the main raw material is the core business of the mother company Sugih since 1990. Sutek is established from a new process of using natural rubber. In this process they have developed cyclized rubber. Sutek has adopted the mission of Sugih and applied it to Sutek. Besides the mentioned mission, Sutek also want to create employment for Indonesian people and be a good employer for their employees. Sutek sees this more as a logical consequence of a company who has sales and is growing. This is currently not the case for Sutek so it is hard to live up to this second part of the mission.

b. What is the vision² or strategy intention of Sutek?

“To become a global player in the high quality cyclized rubber industry”

In order to achieve this vision, Sutek has hired a marketing manager to run the business. This person is a chemist with five years experience in marketing and starts in august 2007. It was hard to find a person with this combination of skills and experience in the surroundings of Bandung, because it is a textile city from origin.

c. What is the goal³ of Sutek?

Sutek has three different goals, but they see the first as the most important.

1. “Sutek wants to be a profitable organization”
2. “To be environmental friendly”
3. “Respect the values of their employees”

The first goal is the most important, because since the foundation of Sutek it has not been able to be profitable. The other goals are also important but are easier to achieve.

d. What are the objectives⁴ of Sutek?

Sutek has two sales objectives in order to achieve the first goal, because the new product with low viscosity is still in development and the marketing manager will start in August 2007. The new product is expected to be ready at the end of 2007. Therefore they have split the objectives in two stages.

1. “To achieve breakeven: to sell at least 200 ton by the end of the year 2008, at first”
2. “To achieve sales of full production capacity: additional objective is to have an annual sales volume 400 ton by the end of the year 2008, at second”

The first objective of Sutek is to achieve breakeven. The break even point of Sutek is now 200 ton per year. This is about 20 ton per month and is the same as two containers.

They have set up the second objective, because the market looks promising for the new product with low viscosity. Therefore the marketing manager should be able to sell annually their current production capacity of 400 ton. When these objectives are achieved Sutek will achieve their first

¹ Mission:	Overriding purpose in line with the values or expectations of stakeholders
² Vision:	Desired future state: The aspiration of the organization
³ Goal:	General statement of aim of purpose
⁴ Objective:	Quantification (if possible) or more precise statement of the goal

goal: be a profitable organization. In order to achieve the second goal Sutek setup the following objective:

“The production must have zero environmental waste”

The technology of Sutek is environmentally friendly. All waste can be converted into fertilizer and the resins are inert and non harmful materials. Being insoluble in water, the resins do not pollute the environment.

The fertilizer can be seen as a side product, because it is not a core product of Sutek. Without modification the waste is useless and harmful and therefore it is better to convert it into fertilizer. The fertilizer conversion process is relatively easy for Sutek. The third goal is not quantified, because Sutek finds it hard to transfer the third goal into figures. Sutek is respecting the religion of the employees by enable them to pray in the office.

e. What is the strategic capability⁵ of Sutek?

1. Sutek has easily access to their resources. Sutek is established in Indonesia, which is one of three countries who are the main producers of natural rubber. The supply of the natural rubber of Sutek comes from the government owned company Estate in Indonesia and is located 30 minutes from the plant. If there is extra demand from Sutek, the product capacity of this supplier is large enough to deliver the extra order. They can also contact another supplier, so their main raw material can easily be obtained.
2. Sutek has good basic knowledge of natural rubber and is the fundament of the company. The Abadinusa holding has sufficient experience and expertise, because they are in the business of natural rubber and end products since 1990. This knowledge is used for developing cyclized rubber and Sutek was founded. The vice president has over 30 years experience with natural rubber. This basic knowledge of Sutek is supported by specific research and development of cyclized rubber. The combination this basic and applied knowledge is not easy to find.
3. Sutek is located in Indonesia, which is a developing country. Therefore Sutek has access to low cost labour. The process of cyclized rubber is not labor intensive, but Sutek is using more manual work in comparison to developed countries, because calculation implies it is more profitable to do it manually than using machineries. In this way Sutek lives also up to their mission to create employment. But if automation will be cheaper, Sutek will use it.
4. Sutek has access to low energy costs, because standard price of energy is low and fuel is subsidized by the government. This is an advantage for Sutek, because the cyclization process in which many heating is involved, requires a lot of energy. Compared to the Netherlands the energy price is about 4 times lower. The energy price in Indonesia has doubled in the last two years, which caused a lot of protest. Therefore the government “can not” increase the energy cost easily and also because the Indonesian people has low buying power. According to Mr. Tarya, the energy price is expected to remain low for the next years and even if the government stops the subsidy, the energy cost will still be lower than in the developed countries, where there are taxes on fuel.

f. What strategies⁶ does Sutek follow?

“Sutek wants to expand their sales in Europe and China by being competitive on quality and price”

⁵ Strategic capability: Resources, activities and processes. Some will be unique and provide competitive advantage

⁶ Strategies: Long term direction

Until now Sutek has failed to successfully implement this strategy because at the moment they do not follow all the steps which are needed for this strategy. They focus on quality, regarding to developing process Ripex with lower viscosity and they can also produce it for a relative low price. However currently there is not much sales and they are not actively searching for new markets/ countries or approaching new distributors and manufacturers. Sutek is aware of this problem. Sutek is waiting for the development of this new product, because it is expected to have high demand. Sutek finds it hard to sell its current products. It was difficult to find a marketing manager with the characteristics that Sutek demanded and this is one of the reasons why Sutek could not successfully follow this strategy. Recently Sutek has attracted a marketing manager and he will try to contact distributors/ manufacturers and find markets for new product. When the product is ready it can be marketed immediately. In order to expand sales, Sutek wants to have more distributors in Europe. Sutek believes that delivery through a distributor is the right way, in comparison with direct sales to manufacturers, because:

1. A distributor has more experience and knowledge of the local chemical market and knows the manufacturers.
2. The distributor already has a relationship with the manufacturer, which makes it easier to introduce the new products.
3. According to Sutek the manufacturers are reluctant to new products of unknown suppliers. This makes direct sales more difficult.
4. Manufacturers prefer a distributor in comparison to direct sales, because the manufacturer does not want to be bothered with all arrangements which have to be made for importing a product. It is easier to buy it from a distributor.
5. The price will be lower when exported to a distributor, because it is cheaper to ship one big amount at once to the distributor, than several times a small amount directly to the manufacturer. According to Sutek this is better for all the parties.

Sutek has an agreement with their distributors that Ripex is not directly sold to the manufacturer in the country the distributor is located. Strategy for China is almost the same as for Europe, because Sutek will also deliver through a distributor. Currently the Chinese market is supplied by a distributor located in Taiwan. The target users of Ripex in China are the multinationals who are located in China, but are not from origin established in China.

g. What is the business model⁷ of Sutek?

Business model of Sutek

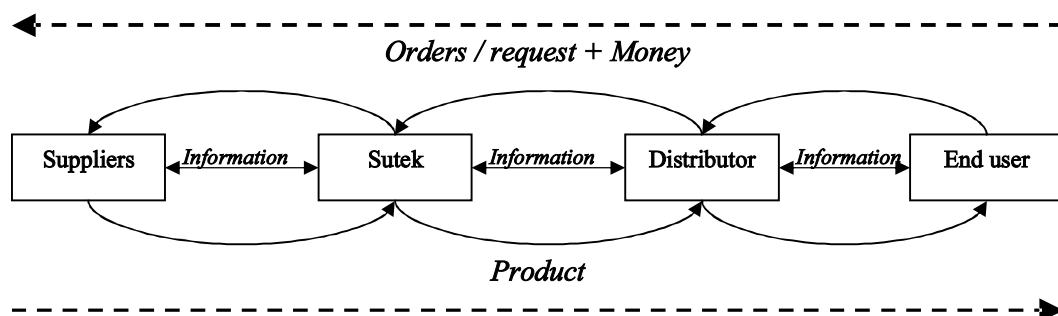


Figure 5.1. Business model of Sutek (Sutek, 2007)

⁷ Business model: How product, service and information “flow” between participating parties

h. What kind of control⁸ has Sutek?

There are two kind control mechanisms within Sutek, but it is hard to take steps as a result of these controls, because Sutek is still pre-mature, waiting for the new product to increase their sales and does not have goals for there current products. Sutek has the following control mechanisms:

1. The director of Sutek receives financial figures every month, to see how Sutek is doing financially.
2. Every three months there is an evaluation of the development of the new product.

Sutek is still searching for the best way to sell their products and there is no specific person or department, who is responsible for the sales.

In the future when the new product is developed, Sutek is planning to have more control. New goals will be set up and they will be evaluated. With the new marketing manager it is easier to set goals and evaluate them.

2. We would like to know more about Suteks' resources. The access to resources is necessary for certain entry strategy modes. The more abundant a company's resources are the more numerous its entry mode options. Can you tell us what the size is or the way the company's resources are arranged regarding?

Physical resources

- a. What is the number of buildings, machines, the production capacity etc? To assess the usefulness we would like to know the age, condition and location of these resources. We also would like to know how the depreciation is arranged.

Buildings:

1. Factory where the product is being made
1. Warehouse for storage of the product
1. Power plant
1. Small lab for R&D with standard equipment
1. Office for supporting activities to run the business

All the buildings of Sutek are located next to each other in order to save time and prevent inefficient transportation. There is also control on safety in the plant. The plant is designed in such a way, that there is a small chance on fire. The electric installations in the factory are explosion proof and there are emergency buttons, which cuts of the power of the plant. Next to this the factory is equipped with lighting protection systems. The plant is relatively new and therefore the machines are in good condition. Sutek depreciate the buildings and machinery in ten years. At the moment Sutek is using 2 reactors, if Sutek decides to use their full production capacity, the third reactor will be used.

Machines:

The factory is equipped with the following machineries and some with specific characteristics:

<i>Machine</i>	<i>Characteristic/ activity</i>
3 reactors	Resistance to high temperatures and corrosive chemicals
3 distilling units	To recover the resin, solvent and phenol
8 Separating	To sepearate resin layer, residual layer and used catalyst

⁸ Control:

The monitoring action of action steps to:

- assess effectiveness of strategies and actions
- modify as necessary strategies and/or actions

tanks	
2 vacuum pump's	Used for the whole factory. A unique device which is hard to obtain (1 stand by)
2 Boilers	Thermal oil boiler
1 granulator	To granulate the product in to small pieces
1 wrapping machine	To put the granulated product in paper bags
2 fork lift trucks	To transfer the product from the factory to the warehouse
2 hand fork lifts	To manually transfer the product inside the factory and in the warehouse
Other	Supporting tools

Table 5.1 Machineries of Sutek (Sutek, 2007)

Production capacity:

The current production capacity is 400 ton per year, but Sutek has produced only 30 ton in the period from January till June 2007, because of the low demand. If Sutek would produce more, they would have a lot of stock and this is not good because the product can expire. The forecast of the new product is promising, because Sutek has a lot of request for this product. If the product is developed and the demand is increasing, the production capacity can easily be expanded to 500 ton per year. This can be done by small changes in the process and work more efficient. With this production the total return on investment will then be 5 years. This is one of the reasons why the development of Ripex with lower viscosity is so important. There is a high demand for this product. If Sutek invests in additional supporting facilities they can produce 800 ton per year. The factory is designed for expansion of the production. Hiring extra personnel is not expected be a problem, because production employees can easily be attracted. Sutek has to change and add shifts to produce more. Attracting new employers is not a barrier to expansion.

Financial resources

- b. Can you tell us more about capital, cash, debtors/ creditors and suppliers of money from Sutek? If you don't want share actual figures please give a description like high/ low etc.

Currently Sutek is financially weak, because they are making loss for a few years now. Sutek is started up with a loan from the bank, but when Sutek began making loss the loan was stopped. This is done by the Abadinusa holding which took over the loan and high interest. Currently Sutek has a loan from the Abadinusa holding without interest. The loss of Sutek is compensated by the profit from the other companies of the holding. The provided loan is limited, so Sutek can not make high investments anymore. A branch or subsidiary for example is not an option for Sutek, because this is too expensive. The expectation of the holding is that when the new product is developed, the demand will be high enough to increase the sales and make Sutek profitable. To goal of the holding is that Sutek will be self supported and not financially depended on the holding. Sutek will have approximately another three years to become profitable. If it fails the holding will try to find buyers in other industries for the production facility, so way the holding can reduce its loss. The Abadinusa holding is a family company. It is owned by the director Mr. Tarya and his family, so there is a good contact between the company and its shareholders.

Human resources

- c. What is the number and mix⁹ of the employees working at Sutek?

⁹ Mix: demographic profile like age, gender, religion etc.

Because Sutek is a small company they do not have many employees. In the period from January to June in the year 2007 they produced only 30 ton. According to these figures the number of employees is approximately 15. There are 6 persons working in the office and 6-9 production employees are required. The persons of the office are a mixture of male and female. The production employees are all male. If the production is expanded to 500 ton per year Sutek require 20-30 persons.

d. How are their skills and knowledge?

The production skills of the employees are good. The persons in the factory have finished high school with a basic specialization in machinery, electricity or chemistry. One person who works in the lab has a bachelor in chemistry. The head of the lab is the vice president, who has a master in chemistry and a PHD degree in Polymer. He has experience with natural rubber for over 30 years. The other persons at the office have basic knowledge on finance and marketing. Sutek has been searching for a long time for a new marketing manager. Recently Sutek has hired the new marketing manager. He is a chemist and has marketing experience for 5 years in the chemical industry.

e. How high is the labour productivity?

The labour productivity is good. The employees in the production have a good basic knowledge. Through training and learning on the job, the productivity goes up. Now the employees have become experts in their own unit/ field. Through this knowledge the labour productivity remains high. When an imported technical product brakes down or fail, the employees of Sutek try to repair it themselves with their gained knowledge. The maintenance of the machines is done by the employees of Sutek their selves. The increasing knowledge is a strong point of Sutek. This saves time and money, which stimulates the labour productivity.

Intellectual capital

f. Does Sutek have patents, brands, business systems¹⁰ and consumer databases? (is this also available to us)? If so what do they look like?

Sutek does not have a patent on their products, because this could alarm the competitors about their presence. Patents can not easily be copied, because the company will hide a special chemical trick. Knowledge about cyclized rubber is scarce and difficult and Sutek also tries to keep it a company secret. Sutek tries to gain competitive advantage through tricks in the process, their knowledge and R&D. The brand name Ripex is only patented in Indonesia. Sutek does not know if there is need to patent it also in Europe. Sutek has a consumer database at its disposal. In this database an overview is given of their current distributors. Sutek has also an overview of distributors and manufacturers who contacted them in the past and if Ripex XL is developed Sutek can contact them. Sutek has a prospect list of potential buyers. This list describes the status of the potential buyers, which kind of contact there was and a prospect rate. This list will be updated every month. Sutek does not use certain business systems for analyzing the production process. In the R&D lab no software is being used, because the analysis is done manually, but this not a disadvantage, because this can be done easily. This technique is also used in the factory. However they have software programs to run the business. They have access to software programs of Sugih, for example financial programs to control the costs and present reports.

¹⁰ Business systems: The use of software programs that makes (analytical) work more efficient

3. We would like to know more about the competences of the company. Competences are the activities and processes through which an organization deploys its resources effectively. Thus, how resources are managed, the cooperation between people, their adaptability, their innovatory capacity, the relationship with customers and suppliers and the experience and learning about what works well. An extension to this concept is the distinction between threshold capabilities (are those capabilities essential for the organization to compete in a given market) and those that might help achieve competitive advantage.

a. How are the resources managed?

At Sutek there is one person who manages the human and physical resources, namely the vice-president Mr. Siswantoro. The financial resources are managed by Mr. Tarya, president and main shareholder of Sutek. The raw material of natural rubber can easily be obtained from their local supplier in Indonesia. Recently the supplier asked for a long term contract. Sutek refuses this, because currently they do not have stable and high sales. The production capacity of this supplier is 30-40 ton per month and another supplier can produce 20 ton per month. This is enough to supply Sutek and even when they expand their production. The two chemicals used are phenol and catalyst and are obtained by an Indonesian distributor, who imports the products. Sutek does not want to import directly from the supplier, because then they have to arrange a lot of things. It is easier to order supplies at a distributor.

b. How is the cooperation between people and how is the process?

The cooperation between people in Sutek is good. There is no discrimination on genders and religion, because employees work in same office and the religion of employees is respected. In order to respect the religion of the employees, Sutek enables male employees to go to the mosque on Friday between 11.30 and 12.30, because this is important to them. If Ripex XL is developed and the demand is increasing, the religion will not be a barrier to expansion and Sutek will produce also on Friday. It is obvious who is higher in rank in the organization, but there is an informal relationship among the employees. This is due to the mutual respect for each other. This way of cooperation is important in order to get and remain employees.

c. How is the adaptability of the people and the resources?

Making profit is the main goal of Sutek. The employees also have the interest in making profit, because then they will not lose their job. By having the same interest, the company and the employees can adapt easily. If Sutek will expand their employees can adapt easily, because they have a lot of knowledge and they learn fast. This expansion will have consequences for the order amount of the supplied resources, but this is not a problem as is described by 3.a above. If Sutek decides to expand, the obtained knowledge of the process and fast learning of the employees makes adaptation easier. The knowledge of Sutek is an important point, because if the market prefers specific characteristics they will try to develop it (referring to the product development of Ripex with low viscosity). Next to this in the design of the plant is thought of growth. This means the production capacity can be doubled, while a relatively small investment has to be made.

d. How big is the innovatory capacity and can this be expanded?

The innovatory capacity of Sutek exists of two persons in the R&D lab. They try to develop a new type Ripex with low viscosity and improve their current products in their R&D lab. It is hard to expand the innovatory capacity, because specific applied knowledge on cyclized rubber is required. There is a Rubber Resin Institute in Indonesia, but this institute can not provide enough

knowledge about cyclized rubber. Ripex is a specialty product and the institute has much more theoretical than applied knowledge.

e. How is the relationship with customers and suppliers?

The main customers are distributors and the relationship with them is a normal business relationship.

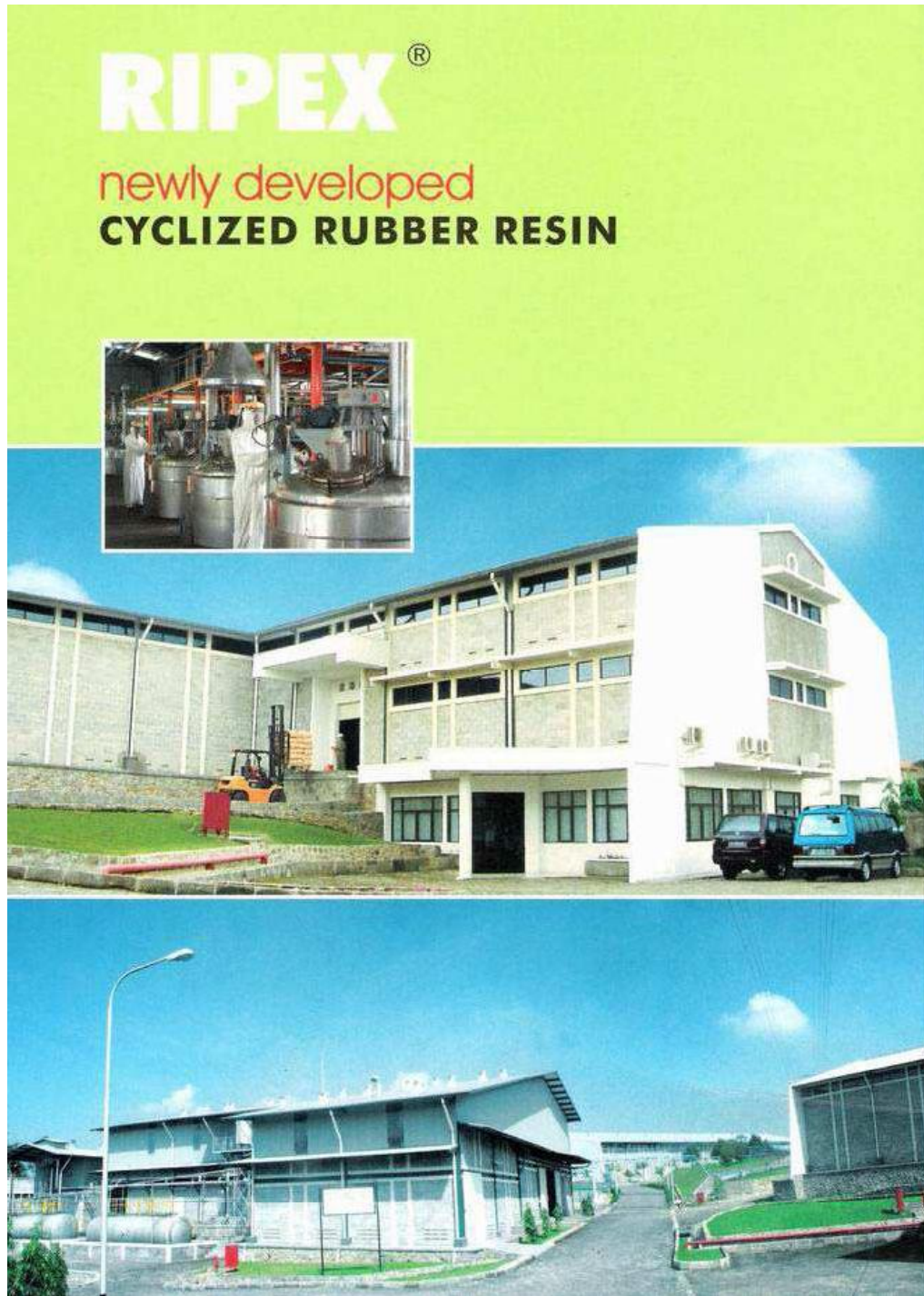
The relationship with Resine Italiane is ok, but his early promise to sell an x amount of Ripex was not realized, so there is a lack of trust in growth of future sales of Resine Italiane. The distributor in Italy promised a lot of sales in Italy in a verbal agreement, but the orders of the distributor fell short of expectations. At the moment there is not a lot of trust that sales significantly will improve. The owner has a lot of knowledge of natural rubber, but according to Sutek he is not willing to put sufficient effort in selling Ripex, so sales are disappointing. Because Sutek still receives orders from Resine Italiane, they maintain its relationship, although there are no written obligations. Sutek does not have contact with the manufacturers, because most of time the distributor does not feel comfortable with it. The distributor is afraid that this can result in direct delivery or disturb the relationship he has build up with the manufacturer. According to Sutek it is therefore difficult to stimulate the market for Ripex. The problem is that Sutek does not always know in which industries the manufacturers are active in, because the distributor does not gives names or other information to Sutek. The relationship between Sutek and their suppliers can also been seen as a normal and good business relationship.

f. How is the experience and learning about what works well?

The employees of Sutek try to develop themselves. This stimulates innovation for example by repairing things themselves, the employees learn from what works well: this is done by trial and error.

The “tricks” earlier described, which makes the production process more efficient, is another example of learning of what works well. This is very important for the competitive advantage. If there is a request of a (potential) customer, Sutek will try to develop this, for example Ripex with low viscosity. The product is developed in the lab and then applied in factory. After many tests the new product will be taken in production. Sutek also further develops their current products.

Attachment 6: Company brochure (Sutek, 2004)



The company was founded in November 2001, but we have sufficient experience and expertise as we have been in business of natural rubber end products since 1990. Such abundant experience and expertise were really meaningful when we were developing new product cyclized natural rubber resins of much improved quality.

We started the activity with intensive research work and finalized with trial run as summarized below:

• June 2001 - December 2003

Intensive research work on newly developed cyclized rubber resins.

• March 2003 - March 2004

Plant construction and trial run production.

• April 2004

Approval of the resins with a great satisfaction by printing ink, coating, and pressure sensitive adhesive tape manufacturers in Europe.



The plant has been equipped by the following :

- Multipurpose reactors fabricated with stainless steel AISI 316 L and Hast Alloy B4
- Stainless Steel Mixing Vessels
- Stainless Steel Storage Tanks
- Stainless Steel Vertical Separating Tanks
- Diathermic Oil Boilers
- Condensers
- Cooling Tower
- Active Carbon Filters for Pollution Prevention

The laboratory has the following equipment :

- Complete unit of multipurpose reaction vessels for R & D
- Viscometers
- Electrothermal Melting Point Apparatus
- Colorimeter



We offer cyclized rubber resins of superior quality as they are indeed very competitive in viscosity, colour, clarity, and consistency.



Our technology is environmentally friendly. All waste is converted to useful fertilizer and the resins are inert and non harmful materials. Being insoluble in water, the resins will not pollute the environment.



WEST JAVA PROVINCE



The plant and buildings are on 15,000 square meters of land located in PADALARANG, a small town, with a distant about 15 kilometers from BANDUNG the Capital City of WEST JAVA PROVINCE - INDONESIA. In addition, construction of a new motor way connecting the town to JAKARTA is now in progress and it will be available in mid 2005. This will enable us to get JAKARTA within two hours only and hence offering much better service facilities.

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oerips@sugih.co.id

Attachment 7: Technical Data Sheet Ripex (Sutek, 2004)



GENERAL FEATURE

RIPEX resin is our new novelty product. It consists of depolymerized cyclized rubber based on natural rubber. Because of high purity, the colour, viscosity, and stability of the resin are exceptional. RIPEX has good compatibility with number of industrial raw materials. These useful properties make RIPEX of considerable interest to the formulators of inks, lacquers, adhesives, printing inks, and rubber/plastic compounds.

RIPEX is supplied as granulated solid resin and is now available as low viscosity type, RIPEX L, and high viscosity type, RIPEX S. RIPEX L is intended for application requiring better flow properties such as printing inks and RIPEX S is for that requiring high strength such as adhesives. RIPEX S is available as a wider range of viscosity. It is intended to cover and to suit individual customer's need for the use of specific value and range of viscosity.

CAS Reg. No. : 972016-46-9

BEING REVISED

SPECIFICATION

	RIPEX L	RIPEX S	Analytical Method
Melting Point, °C	135 - 145	135 - 145	ASTM E324
Viscosity at 20°C (Ford 4C-1:2 in Toluene), sec	18 - 22	22 - 28	ASTM D1200
Colour (1:2 in Toluene), Gardner scale	8 max	7 max	ASTM D1544
Acid value, mg KOH/g	3 max	3 max	ASTM D1639

ADDITIONAL VISCOSITY DATA

Range of apparent viscosities of solutions of RIPEX L and RIPEX S in toluene, white spirit, and soy oil are as follows:

Solution	Apparent Viscosity at 20°C ASTM D2196	
	RIPEX L	RIPEX S
1:1 in Toluene	700 - 1,000 mPa.s	1,000 - 1,800 mPa.s
1:1 in White Spirit	2,000 - 3,000 mPa.s	3,000 - 5,000 mPa.s
1:2 in Soy Oil	250 - 450 cP.s	450 - 800 cP.s

DILUTABILITY

• Toluene	Complete	• Cyclohexanone	Complete
• White spirit	Complete	• Soy Oil	Good
• Mineral Oil	Complete	• n-Butyl Acetate	Limited
• Xylene	Complete	• Methyl Ethyl Ketone	Insoluble
• Cellulose	Complete	• n-Heptane	Insoluble

PIGMENTATION

RIPEX L possesses very high capacity of absorbing pigments and maintains good glass films, even with high pigmentation. As RIPEX is non reactive material, it is useful for metallic pigments.

COMPATIBILITY

RIPEX has excellent compatibility with long oil alkyds and medium oil alkyds as shown by no phase separation and no change of clarity of the mixture at any proportion. The compatibility with water and resins, metal, and other substances is good whereas with acrylic and epoxy resins is limited.

CHEMICAL RESISTANCE

• Resistance to water and alkalis	Excellent
• Resistance to non-oxidizing acids	Good
• Resistance to concentrated inorganic acids	Limited
• Resistance to Phenol, Fatty acids & solvents	Poor

APPLICATIONS

RIPEX is recommended for:

- Additive for printing inks to improve setting, ink transfer and scratch resistance, and to diminish leak.
- Alkyd based coatings to improve corrosion, water, and chemical resistance.
- Primer coating for polypropylene films in manufacturing of pressure sensitive adhesive tapes.

Other applications:

- Marine paint (anti fouling)
- Road marking paint.
- Mirror bonding paint.

CHARACTERISTICS

The most interesting characteristics of RIPEX are:

- Rapid solvent release
- Excellent resistance to color, water, and salty water
- Excellent resistance to alkalis
- Very open, free radical radicals
- Good resistance to non-oxidizing acids
- Good mechanical properties
- Non reactive to metallic pigments
- Film incorporating RIPEX has good adhesion and hardness

PACKAGING

Three bag plastic bags. Each bag contains 25 kg net of product. The bags are supplied on wooden pallets. Each pallet contains 40 bags = 1000 kg net of product.

STORAGE CONDITION AND STABILITY

The stability of RIPEX is exceptional when stored indoors in a dry place, far from the sources of heat, and away from direct sunlight exposure. Under these storage conditions and in original packs, the storage stability at 20-25°C is 6 months from the date of manufacture.

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The information given is to the best of our knowledge true and is intended for general guidance. However, any recommendations or suggestions made are without guarantee, since the condition of use is outside our control.
Issue : February 2006

Attachment 8: Health and Safety Data Sheet Ripex (Sutek 2004)



1. IDENTIFICATION OF PRODUCT AND MANUFACTURER

TRADE NAME	: RIPEX [®]
CHEMICAL CLASSIFICATION	: CYCLIZED RUBBER
TYPE OF RUBBER ORIGIN	: NATURAL RUBBER
MANUFACTURER	: PT SUTEK MITRA UTAMA, JL. TEMBOKAN RT 1/01 DS. CIBEUNDELY PADALARAN/AK 40063, JAWA BARAT INDONESIA TEL: PHONE : +62 22 6865576, 6865318 TEL: FAX : +62 22 6865575, 6865315

2. COMPOSITION/ INFORMATION ON THE INGREDIENTS

HAZARDOUS INGREDIENTS	: NONE
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3. HAZARD IDENTIFICATION

According to EEC Dangerous Substance Directive and Dangerous Preparation Directive

HEALTH HAZARD	: Not dangerous
FIRE HAZARD	: Will burn when ignited
ENVIRONMENTAL HAZARD	: Not dangerous to the environment

4. FIRST AID MEASURES

INHALATION	: Remove person from contaminated area. Should large quantities of the powder or dust be inhaled call medical help.
CONTACT WITH THE SKIN	: Wash with plenty of running water using soap.
CONTACT WITH EYES	: Wash eyes with plenty of water. Should irritation persist, call medical help.
INGESTION	: If large amounts are ingested, the mouth should be washed out with large quantities of water. If necessary seek medical attention.

5. FIRE-FIGHTING MEASURES

MEANS OF EXTINCTION	: Sand, Carbon dioxide, dry powder or foam extinguisher.
COMBUSTION PRODUCTS	: In case of fire, self-contained breathing equipment would be necessary as combustion gases of organic materials must be classified to be poisonous.

6. ACCIDENTAL RELEASE MEASURES

Stop the product entering soil and water. Use mechanical means for cleaning.

7. HANDLING AND STORAGE

Product is supplied in three leaf paper Kraft bags containing 25 Kg net of product on shrink-film ed pallets loading 1000 Kg net. The bags should be stored indoors in a dry place and far from sources of heat. Smoking should be prohibited.

8. PROTECTION FOR THE PERSONAL

PROTECTION	: Use dust masks and gloves, when handling product
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9. PHYSICO-CHEMICAL CHARACTERISTICS

PHYSICAL STATE	: Solid
COLOR	: Light yellow solid
ODOR	: Slight and specific
MELTING POINT	: Approx. 140°C
DECOMPOSITION TEMP	: above 300 °C
DENSITY	: Approx. 1.0 g/cm ³
DENSITY OF THE VAPOURS	: N.D.
SOLUBILITY IN WATER	: Insoluble
SOLUBILITY IN ORGANIC SOLVENT	: Good



HEALTH AND SAFETY DATA SHEET

RIPEX® S
RIPEX® L
CYCLIZED RUBBER

10. STABILITY AND REACTIVITY

POLYMERISATION POSSIBILITY	: None
STABILITY	: Stable
CONDITION TO AVOID	: Avoid sunlight and heat
HAZARDOUS DECOMPOSITION PRODUCTS	: No decomposition if used as prescribed

11. TOXICOLOGICAL INFORMATION

INHALATION	: The product is non-toxic. However, resin dust may irritate the respiratory tract and large amounts may block the air passages. Therefore, dust masks should be worn when excessive dust is generated.
CONTACT WITH THE SKIN	: The product is non-irritant. However, prolonged contact with the skin may cause localised irritation leading to dermatitis, and should be avoided.
CONTACT WITH EYES	: Cause discomfort but does not damage.
INGESTION	: The product is non-toxic for ingestion. However, the preparation or consumption of food or beverages must not be allowed in areas where resin is handled or processed.

12. ECOLOGICAL INFORMATION

Cyclized rubber resin is relatively neutral, non-toxic, and water-insoluble. Being water-insoluble, it does not represent ecological hazards.

13. DISPOSAL CONSIDERATIONS

Disposal should be done in accordance with local state or national legislation.

14. TRANSPORT INFORMATION

ADR/RID IMDG DGR	: Not restricted under these regulations.
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15. REGULATORY INFORMATION

LABELLING AND CLASSIFICATION ACCORDING TO EEC REGULATION

CLASSIFICATION/MARKING	: Not classified
CLASSIFICATION/MARKING	: Not required
HAZARD CODE	: Not required
SECURITY CODE	: Not required

16. OTHER INFORMATION

This information is for the specific material designated only and is not valid when it is used in combination with any other materials or in any process. Such information, to the best of PT. SUTEK MITRA UTAMA'S knowledge and belief, is accurate and reliable as of the date indicated. However, no representation, warranty or guarantee is made for its accuracy, reliability or completeness. The user should perform his own tests for suitability and the final choice remains the sole responsibility of the user.

Attachment 9: Export readiness test (CBI, 2007)

This question list is answered by two representatives of Sutek, namely Mr. Tarya and Mr. Siswantoro and also by the researchers. This was done in the last two weeks of the researchers' six weeks stay at Sutek in Indonesia. This way the researchers had obtained sufficient knowledge about the company. The results of this test can be found in the end of this attachment.

Please fill in the multiple-choice questions

1

Motivation

My organization wants to export to West European markets because

☐

It enables us to obtain foreign currency for equipment investment

☐

The competition in the local and regional markets becomes very tough

☐

The West European markets have such demand and spending power that profit levels are much higher

☐

Our domestic and regional market positions are solid and internationalisation will improve our overall competitiveness

2

Analysis

We think we will be successful in the West European markets because

☐

We have made an assessment of our internal organisation and the West European market environment

☐

The labour costs in our country are very low

☐

We have received a number of demands from western companies to send in samples

☐

We are flexible enough to produce large quantities at buyers specifications

3

Market information

We think we can anticipate the buying behaviour in West European markets because

☐

We understand it through the use of TV and international magazines

☐

We consider it in line with our routine experience in the domestic market

☐

We plan to keep updated on the trends by making regular visits to the markets

☐

We conduct systematic research through Internet and relevant European trade publications

4

Market information

We believe that when West European Industries want to outsource production capacity, the main criterion for choosing a supplier is



To have a traceable quality management system in place



To demonstrate reliability through a track record with long standing customer relationships



To have compatible production and administrative processes and a low total cost of ownership



To have a competitive price-performance ratio

5

Competitor assessment

Our perceived position regarding our competitors is



We know the countries with which we have to compete, but realize we do not know everything



We know our main domestic and international competitors



We know our main domestic and international competitors, as well as their strengths and weaknesses



We are not worried about the competition

6

Objectives

Our objectives for internationalisation are



To develop a strong position in a niche market



To develop a few long term partnerships



To make higher profit than in the local market



To reduce our dependence on the volatile economy of the home market

7

Plan

Our export planning is



Carried out on an ad hoc basis



Based on a competitive analysis



Based on a competitive analysis and translated into an operational Marketing Activities Plan (MAP)



Based on a competitive analysis, translated into a MAP, implemented and monitored, including budget control

8

Product development

Our product development is



Initiated by the engineering department



Limited since we have a traditional well recognized product (line)



Based on buyer specifications



Based on purchasing trends and customer satisfaction assessment

9

Organisation

The export activities are



Managed directly by the general manager who can spend between 10 and 20 percent of his time to that task



Managed by the marketing manager who allocates 25-50% of his time to international marketing



Managed by a dedicated export manager



Picked up by whoever has time available at that moment

10

Human resources

Our employees



Get a salary that is in accordance with at least the legally set minimum wage standard and overtime paid according to labour law



Are skilful and low cost which makes us competitive internationally



Do not stay long with the company



Receive a premium salary and training programmes to develop professional and social skills

11

Human resources

Our export marketing team is formed on the basis of



Affinity with other cultures



Marketing diploma's and the willingness to travel



Communication skills and cosmopolitan attitude



International marketing experience and the capability to represent our company in foreign business cultures

12

Financial resources

To finance our export venture



We will keep our investments in line with the expected yields of the first transactions



We have planned and reserved an amount to cover expenses for the first two years



We have some cash in the bank



We will contact the banks where we can avail of a loan

13

Quality management

Our quality system is based on



Checking of the products before shipping



ISO 9000 certification and continuous performance improvement



Systematic monitoring of different aspects of the production process



A quality plan, which includes staff training, standardized procedures and quality assessment of suppliers

14

Market entry regulations

Our response to the increasing international market entry regulations is



Our products comply with the relevant standards and legislation in the European Union



The protectionist measures of the Western governments are discriminatory and have to be turned back in the WTO



We are aware of the regulations and acknowledge that we need professional or importers advice to meet the requirements



We have documented proof that we are in the process of meeting the minimum standards and/or obtaining appropriate certification

15

Market entry activities

Our experience with market entry activities in the European market is



We have participated in a trade mission to West Europe



We have participated in a relevant trade fair in Western Europe



We have not yet participated in any relevant West European trade fair or trade mission



We have visited a relevant West European trade fair before

Results Export Readiness Test

	Researchers' perception				Company's perception			
	Marinus		Wouter		Mr. Siswanto		Mr. Tarya	
	answer	result	answer	result	answer	result	answer	result
1 Motivation	c	50%	c	50%	c	50%	c	50%
2 Analysis	c	50%	c	50%	d	75%	c	50%
3 Market Information	c	100%	c	100%	c	50%	d	75%
4 Market Information	b	75%	d	25%	d	25%	d	25%
5 Competitor Assessment	b	75%	b	75%	c	100%	c	100%
6 Objectives	a	75%	a	75%	b	100%	a	75%
7 Plan	a	25%	a	25%	d	100%	d	100%
8 Product Development	c	75%	a	50%	c	75%	c	75%
9 Organisation	a	50%	a	50%	c	100%	b	75%
10 Human Resource	a	75%	b	50%	b	50%	b	50%
11 Human Resource	d	100%	d	100%	d*	100%	d	100%
12 Financial Resource	b	100%	a	75%	b*	100%	b	100%
13 Quality Management	c	50%	c	50%	c	50%	c	50%
14 Market Entry Regulations	a	100%	a	100%	d	75%	c	50%
15 Market Entry Activities	c	25%	c	25%	d	50%	c	25%
Average Percentage		68,3%		60,0%		73,3%		66,7%

Table 9.1 Test results of the export readiness test (Sutek, 2007)

* Mr. S swantoro argued he could not answer this question and that he would agree to ade opinion.

Average percentage researchers

64.2%

Average percentage company's representatives

70.0%

Attachment 10: Preliminary screening

Consumer/user profile

From the information received from Sutek in Indonesia and the internal analysis, the consumer/user profile was set up. This is necessary, because knowing the core of the properties of the consumer of your product makes market estimating for your product more effective.

The consumers of Ripex are manufacturers of coatings, printing ink and adhesive. Ripex is resistant to water, non oxidizing acids and alkali. This means Ripex can be particularly processed in coatings for anticorrosion and offshore applications that are resistant to saltwater like in pipes, for containers, bottom part of the boat (marine paints). Ripex is also algae resistant and can thus be used in the coating of swimming pools and road marking paint (that both need a light colour). For the production of printing ink Ripex is used for specific viscose properties, to prevent the ink from misting in high speed printing. From attachment 2 can be read that Ripex can be used in letterpress, lithographic, gravure and miscellaneous ink. Ripex is also compatible with UV light printing. Ripex can be used for pressure tape adhesive to make the tape (polypropylene) stick to the rubber glue (can be natural or synthetic rubber). Sutek has the strategy to work with distributors to sell Ripex in Europe. In Europe Ripex is currently sold through a distributor in the UK and Italy. Ripex is a chemical and not a consumer product, so the chemical quality is very important. Most manufacturers mix Ripex with other resins, to create products with specific properties, so generally only 5%-10% of total product consists of Ripex. In some products like white anticorrosive paints, this percentage can run up to 17%.

Paint market

Paint is used to protect, decorate, or add functionality to an object or surface by covering it with a pigmented coating, for example to retard corrosion of metal.

Paint consists of four components (Wikipedia, 2007):

1. Pigment
2. Binder, also known as non-volatile vehicle or resin (Ripex category)
3. Vehicle, also known as volatile vehicle, also called solvent
4. Additives, can improve for example pigment stability.

The paint or coating market can be divided in three main subjects (Akzo Nobel, 2006)

Architectural or decorative coatings: are used to protect and decorate surfaces like doors and walls. This market includes the do-it-yourself market and professional and trade sector.

Industrial coatings: are all consumer durable products, as well as all types of industrial equipment, from computers to fridges and freezers etc.

Special purpose coatings: can be divided in protective coatings, car refinishes, marine coatings, aerospace coatings and other special purpose coatings. (Ripex category)

	Production ('000 tonnes)	Consumption ('000 tonnes)	Population (Million)	Consumption/capita (kilos)
Total*	27,865	27,880	5,455.7	5.1
Western Europe	6,807	5,971	392.8	15.2
Eastern Europe	1,833	2,278	363.1	6.2
Asia/Pacific	7,226	7,238	3431.7	2.1
America	10,286	10,548	853.9	12.3
Middle East	862	887	163.0	5.4
Africa	850	957	251.1	3.8

Table 10.1 World paint production/ consumption 2003 (International Trade Centre, 2003)

Table 10.2 European import of pigments, paints, varnishes and related materials in 2005 (International Trade Centre, 2005)

2005 - International Trade - Colours 2005			
	Product group: 533 - Pigments, paints, varnishes and related materials	Imports	Growth rate 2005 in comparison with 2001
		Value 2005 US\$ '000	
	Country		
1	Germany	2,297,972	58%
2	France	1,924,888	47%
3	Belgium	1,690,581	73%
4	UK	1,612,431	54%
5	Italy	1,497,209	50%
6	Spain	1,251,714	77%
7	Netherlands	1,019,000	80%
8	Poland	1,014,354	82%
9	Turkey	738,281	183%
10	Austria	667,647	58%
11	Switzerland	581,533	34%
12	Sweden	555,481	58%
13	Czech Republic	529,519	77%
14	Denmark	430,867	64%
15	Portugal	397,667	44%
16	Greece	321,154	91%
17	Norway	311,111	72%
18	Hungary	308,331	64%
19	Romania	283,448	138%
20	Finland	262,682	64%
21	Slovakia	231,598	104%
22	Ukraine	213,315	148%
23	Ireland	201,001	45%
24	Slovenia	135,569	75%
25	Ukraine	213,315	111%

Table 10.3 European export of pigments, paints, varnishes and related materials in 2005 (International Trade Centre, 2005)

2005 International Trade Centre 2005			
	Product group: 533 - Pigments, paints, varnishes and related materials	Exports	Growth rate 2005
		Value 2005 US\$ '000	in comparison with 2001
		Country	
1	Germany	6,777,576	63%
2	Belgium	2,537,989	60%
3	UK	2,251,310	46%
4	Netherlands	2,027,210	97%
5	France	1,973,883	57%
6	Italy	1,791,179	68%
7	Spain	1,417,002	67%
8	Switzerland	1,041,226	58%
9	Sweden	754,719	84%
10	Finland	592,633	52%
11	Austria	514,296	92%
12	Denmark	367,134	65%
13	Poland	331,214	195%
14	Slovenia	279,806	79%
15	Czech Republic	190,611	83%
16	Ukraine	187,964	66%
17	Turkey	186,934	164%
18	Portugal	181,523	222%
19	Greece	122,825	334%
20	Norway	95,788	50%
21	Estonia	92,688	71%
22	Hungary	58,148	71%
23	Lithuania	58,049	366%
24	Ireland	42,259	43%
25	Luxembourg	37,439	700%

This data is partly supported by the business consultant group Information Research Limited (IRL), which offers market research and analysis of the paint and coating market. According to IRL, the top 10 exporting countries account for 75% of total international paint trade, with Germany as the leading exporter, accounting for 18%, followed by the US (15%), Italy (7%), Japan (7%), the UK (6%), France (6%), Belgium (5%), Netherlands (5%), Sweden (3%) and Singapore (3%). The difference between this data can be explained by the time of data gathering. The presented tables 10.2 and 10.3 are more recent. However it can be concluded that Germany is a big player in the paint market and also the other Western European countries are global players.

The CEPE is a non-profit making organisation, which represents, promotes and protects the common interest of the European paint, printing ink and artists' colours industries.

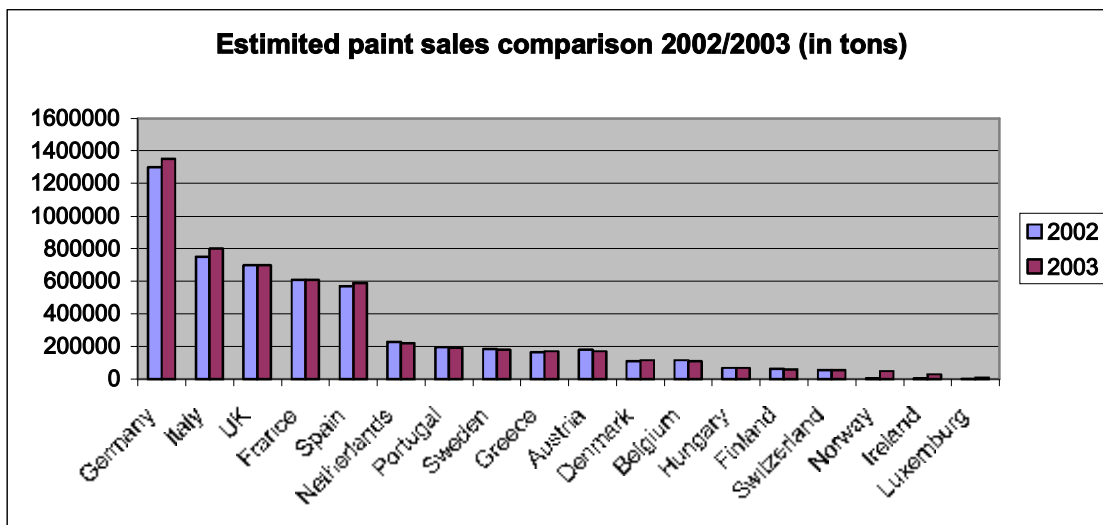


Figure 10.1 Estimated paint sales in 2002/2003 (CEPE, 2003)

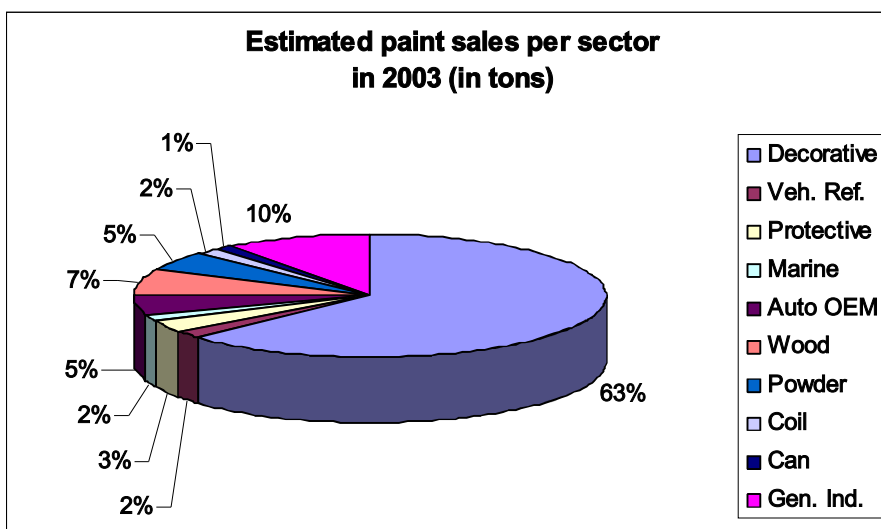


Figure 10.2 Estimated paint sales per sector in 2003 (CEPE, 2003)

Because the data in figure 10.2 is already outdated, the researchers use also other data, which was collected by Chem Research. This company offers specialized services to the chemical and related industries to support marketing strategies and business development activities. One rapport provides an overview of the industrial coatings market in Europe, but unfortunately this report is not free of charge. The data used in figure 10.3 was available to the researchers. This figure gives an overview of the shares per sector in the industrial coatings market. The marine paints and corrosion protecting sectors have a share of 4% and 8%. This is a bigger share than the data presented above by the CEPE and is positive for Ripex. The differences can be explained by the date of data gathering, the used methodology and this data is applicable on Western Europe. The definition of Western Europe in figure 10.3: Benelux, France, Germany, Italy, Nordic Countries, Spain, UK, Other Countries.

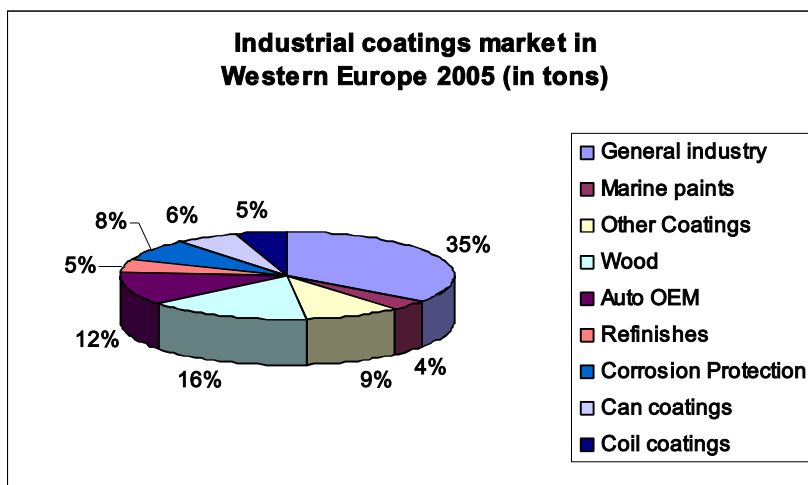


Figure 10.3 Industrial coatings market in Western Europe 2005 in tons (Chem Research)

	Country	Number of employees in 2005 in paint
1	DE	20,500
2	FR	15,214
3	UK	15,000
4	IT	14,000
5	ES	9,900
6	NL	5,600
7	DK	5,000
8	PT	4,000
9	AT	2,700
10	CH	2,084
11	BE	1,800
12	SE	1,500
13	FI	1,500
14	NO	1,265
15	EL	1,200
16	LU	150
17	EI	150

Table 10.4 The number of employees in the paint sector in 2005 (EuPIA)

Ink Market

A printing ink is a semisolid quick drying ink made especially for use in printing (The free dictionary, 2007). Printing ink are divided into liquid and paste ink. The main difference between these two is the viscosity. No matter what the type is, all printing ink are made up of the same four components as paint. Printing is quite comprehensive and therefore in printing it is important to consider the printing technology, the type of ink and the substrate (on what underground is printed: paper, plastic, metal, wood etc). The Printers' National Environmental Assistance Center from the USA describes the printing processes stated in the consumer/user profile as follows (PNEAC, 2007):

Letterpress printing is oldest printing method for substrates like business cards, forms, posters, announcements etc. The use of letterpresses is declining, because offset lithographic press and the flexographic press are faster and more efficient. The ink used in letterpress are similar to those used in lithography.

Lithographic printing is well suited for printing both text and illustrations in short to medium length runs. Typical products printed with offset printing processes include general commercial printing, newspapers, books, financial and legal documents etc. Lithography is an "offset" or indirect printing technique. This means the image is first printed on a printing plate and then transferred to the substrate, like paper or paperboard. Sheet-fed means that one substrate is fed into the press at the time. Web fed presses print on a continuous roll of substrate and is later cut to size. Heatset means that heat is used to dry the prints. Linseed and rapeseed oil are used in litho ink for years, but now other vegetable oils like soybean oil are used more, because of their lower Volatile Organic Compound (VOC) content. Heatset Ink are completely different from non-heatset ink and cannot be interchanged between the two types of presses.

Gravure printing is characteristically used for long run, high quality printing producing a sharp, fine image. Products printed by gravure printing, include Food packaging, Wall paper, Wrapping paper, Furniture laminates, Greeting cards and Magazines. Gravure ink are fluid ink with a very low viscosity. Both solvent and water based ink can be used.

Energy curing ink

Also energy curing ink can be seen as a type of printing ink. These ink can be cured by ultraviolet (UV) light and electron beams (EB). Curable ink are available for litho printing and the use of UV curable ink is on the rise, which will be elaborated later on.

It is hard to estimate the direct market potential for the printing ink industry, because not many sources provide free data on the printing ink industry. Several sources provide some pieces of information, but most are incomplete or not quantitative. Next to this the comprehensibility of the printing (ink) industry makes it hard to make strong estimates. Therefore only a general estimate on ink can be made.

Europe	30%
North America	36%
Asia	27%
Latin America	5%
Africa	2%

Table 10.5 Sales share in the ink market in 2005 per region (EuPIA)

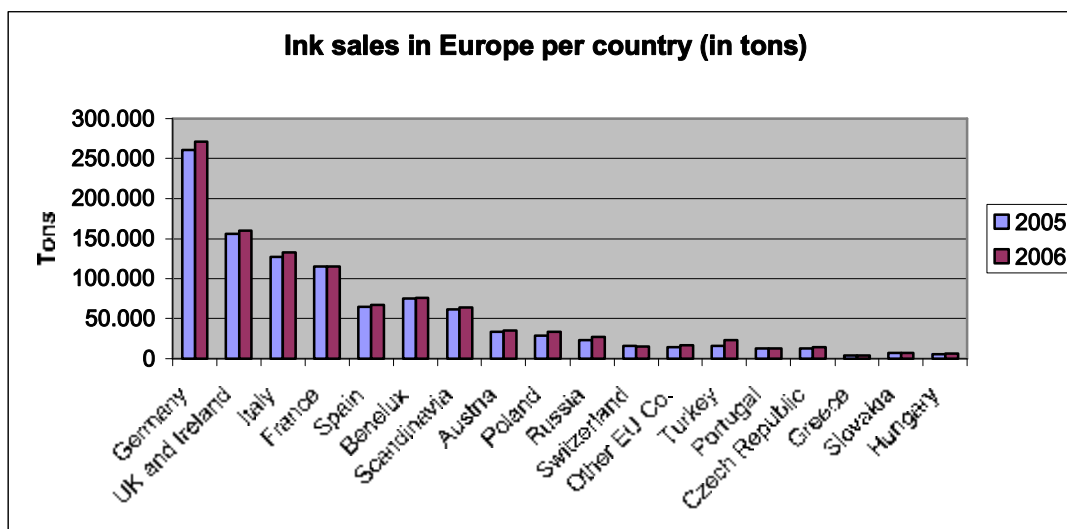


Figure 10.4 Ink sales in Europe per country (EuPIA)

Germany	5.167	Switzerland	362
UK	5.000	Austria	350
France	2.103	Finland	300
Italy	1.400	Portugal	250
Spain	1.050	Sweden	160
Denmark	1.000	Others	90
Netherlands	600	Norway	70
Belgium	546	Luxemburg	50

Table 10.6 Estimated numbers of employees in printing ink in 2005 (EuPIA)

Compared to the paint industry the printing ink industry is about 5 times smaller, when looking at the number of employees as well as total sales. In 2005 18.500 employees worked in the printing ink industry in these countries, compared to 101.600 employees in the paint industry. Next to this in 2005 the European ink market was worth €3.8 billion (EuPIA), compared to about €18 billion in the coatings industry. Western Europe took a share of US\$23.5 billion of the total US\$ 85.7 billion global coatings market in this year (Akzo Nobel global coatings report).

	2005	2006	% of total (in '06)	% rise
Liquid Ink	1.96	1.172	40%	5%
Heatset	562	580	20%	3%
News Ink	361	383	13%	6%
Sheetfed Offset	347	365	12%	5%
Pub Gravure	291	282	10%	-3%
Energy cured ink	130	142	5%	9%
Total	2.808	2.924	100%	4%

Table 10.7 Sales per type of ink in Europe (€ millions) (EuPIA)

Adhesive

The most adhesives consist of several raw materials and can be classified in three groups:

- Binders
- Liquids
- Other raw materials

The binder is the base raw material of adhesives. The binders make the adhesive sticky. The mostly used are the synthetic binders, but there are also adhesives which use natural binders like starch, natural rubber and casein (Vereniging Nederlandse Lijmindustrie, 2007). According to Sutek, Ripex can be used for pressure tape adhesive to make the tape (polypropylene) stick to the rubber glue, with natural or synthetic rubber as a binder.

Pressure sensitive tape

It is called pressure-sensitive tape, because light pressure causes it to stick readily to most surfaces. It consists of four component layers (Smith et al, 1984), which is presented in figure 10.5. Two of these layers are easily recognizable:

- The adhesive mass, which is usually composed of a synthetic or natural rubber (more recently of an acrylic polymer) and may contain a variety of softeners, antioxidants, plasticizers, and curing agents
- The backing, or carrier, which may be foil, crepe paper, fabric, cellophane, cellulose acetate, plasticized polyvinyl chloride, or any of a number of other flexible materials and may be reinforced with glass or other fibers.

The other two are less recognizable, but equally important, these are:

- The keying coat, or primer, used between the adhesive and backing to insure good adhesion between the two (it may be based on natural or synthetic elastomers and may contain some tackifiers). So Ripex can be seen as a primer coat.
- The release coat, applied to the side of the backing that is away from the adhesive mass, so the roll can be unwound without leaving any residual adhesive.

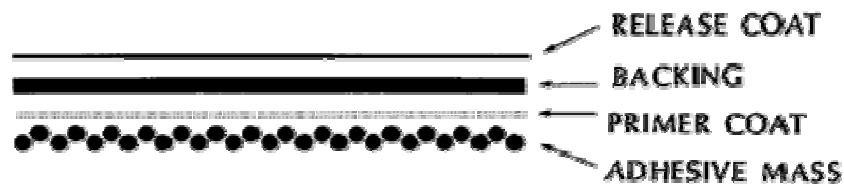


Figure 10.5 Four components of a typical pressure-sensitive tape (Smith et al, 1984)

Three types of production technology can be distinguished (Wolfgang Roessing, 2003):

- Hot Melt technology, based on Styrenic-Block-Copolymers
- Water Borne technology, mainly using Acrylic emulsions
- Solvent technology is mainly based on natural rubber and/ or in case of specialty tapes on Acrylics. Ripex is suitable for the solvent technology.

	2004		2007	
	Demand in Million tons	Share	Demand in Million tons	Share
Western Europe	2.34	76.8%	2.49	75.8%
Eastern Europe	0.70	23.2%	0.79	24.2%
Total	3.04	100%	3.28	100%

Table 10.8 European adhesive demand (FEICA, 2007)

Region	Production in Bsqm in 2003	Growth rate in 2003
Asia Pacific excl. Japan	7.5	10 %
Europe (including Middle East and Africa)	6.0	1 %
USA	6.0	- 4 %
Japan	1.5	1 %

Table 10.9 World production of pressure sensitive tape in 2003 by region (Wolfgang Roessing, 2003)

Conclusion

From the data presented above can be concluded that West Europe is most interesting for Sutek. In all three markets it is expected that there is enough sales potential for Ripex. The paint market is the biggest market and looks most promising for Ripex. In the printing ink and adhesive market there is a growth shift to Eastern Europe. In all three markets are environmental regulations threatening the sales of Ripex. Almost all of the West European countries sold in 2003 more than 200.000 ton paint each. If the researchers use the figures of the CEPE, this would imply for the marine and anticorrosive market (5% share) 10.000 ton sales per country in the year 2003. These figures are large enough to sell the current production capacity of Sutek of 400 ton. In the end product is 5% till 10% Ripex used, so if there is a share of 5% of Ripex in the end product, there must be a production of at least 8000 ton. So it can be concluded that there is enough sales potential in the paint market in Western Europe.

The ink business is complicated for the researchers, because there are different definitions used by Sutek and ink market. Next there are many technologies used, which are unfamiliar to the researchers and Sutek. It is estimated that most of the ink production is currently in Western Europe. This is confirmed by the employee figures from the EuPIA. Because the researchers do not have actual production figures it can not be determined how large the estimated sales for Sutek are. It is reasonable to believe that in West European countries the production per country is high enough to sell the production capacity of Sutek. The prospects for the long term are not promising for the print media, because of the new digital technologies, so it is recommended that Sutek should focus not only on the printing ink market. It is also hard to estimate the size for Ripex in adhesive products, because there is a lack of technical and chemical knowledge. It is not known to the researchers how much Ripex or other resin is used in a square meter. From the data presented above can be seen that the adhesive market in Western Europe is still big with around 75%, but that it is growing slower than Eastern Europe. The solvent technology, in which Ripex is used, is expected to decrease due to environmental regulations. This is a threat for Ripex in the adhesive market.

Attachment 11: Explorative interviews

In this attachment an overview can be found of contact information with ink-, paint- and adhesive manufacturers and distributors in Europe. The selected companies consist of new potential users/ distributors and companies who are already in contact with Sutek. The data is collected through telephone interviews and emails and were explorative. This data is used to give the researchers insight in the use of Ripex and the potential market of it. The first part consists of contact with manufacturers of ink/ coating resins, ink, paints and adhesive. Next to this, associations and information organizations of each industry were contacted. The second part presents contact with chemical distributors.

Manufacturers

Ink and coatings resins

Name: **Hexion**

Address: Haven 1520, Ketenislaan 1C

Postcode: B-9130 Kallo

Country: Belgium

Website: www.hexion.com

Contact person: Kees Kloosterman

Phone: +31620522237

Called on the 9th of August in 2007 with Kees Kloosterman.

Mr. Kloosterman said that Hexion does not use cyclized rubber. Probably is Sun, Siegwerk and Flint still active in cyclized rubber. According to Mr. Kloosterman is cyclized rubber mainly useable in corrosive paint and ink with sharp solvents (like toluene) and special pigments. In Europe the market for cyclized rubber is decreasing, because most of these solvents are not allowed to be used.

Name: **Degussa Colortrend b.v.**

Address: P.O. Box 1076

Postcode: 6201 BB Maastricht

Country: The Netherlands

Website: www.degussa.com

Contact person: Ivonne Lenoir

Phone: +31-43352-7700

Fax:

E-mail: ivonne.lenoir@degusta.com

Degussa is a division of Tego (www.tego.de).

Called and emailed on 31st of July in 2007 and received 24th of August 2007 a reply that Degussa consist of different business units. The business unit Performance Resins produces resins, but not cyclized rubber. After asking several persons it seems that cyclized rubber is very specific product, but because they are not producing it, they can not provide more information.

Name: Cray Valley
Address: 12 Pl DeI Iris La Defense 2
Postcode: Paris 92062
Country: France
Website: www.crayvalley.com
Contact person:
Phone: +33 1 47 96 9850 (general telephone number)
Fax:
E-mail:

Called on the 12th of September in 2007 and spoke with a technical employee of Cray Valley about Crodaprene. This product is not produced anymore, because customers switched to synthetic alternatives. Cray Valley had a plant in the UK, but closed it for this reason. Crodaprene was made of Gum Rosin (from pine trees). Furthermore Cray Valley does not use natural rubber in any of their products. This information is not in line with the information Chimilab Essor provided.

Manufacturers Ink industry

Name: Sun Chemicals
Address: Building 1, Taylor Road
Postcode: Urmston, Manchester M41 7SW
Country: UK
Website: www.sunchemicals.com
Contact person: Mark Hardy
Phone: +44 (0) 1706 889753
Fax: +44 (0) 1706 889674
Email: mark.hardy@eu.sunchem.co.com

Emailed to the European office on the 9th of August in 2007, Sun Chemical is the biggest ink manufacturer in the world. In an email questions were asked about application possibilities of cyclized rubber in ink and market information of the ink industry.

→ No reply

No further contact was made, because KMZ Chemicals already had contact with this company now.

Name: Koninklijke Drukinktfabrieken Van Son B.V.
Address: Postbus 44
Postcode: 1200 AA Hilversum
Country: The Netherlands
Website: www.vanson.nl
Contact person: Mr. van Leeuwen
Phone: +31 35-688 44 11
Fax: +31 35-688 44 04
E-mail: verkoop@vanson.nl

Called on the 6th of August in 2007. He remembered Sutek and said he emailed Sutek, with an explanation why Ripex was not useable. He could not confirm that this was due to high viscosity, but find it likely. He would forward the email, which was sent to Sutek, to the researchers, but due vacation this has not been done.

Name: ICI Printing ink

Address:

Postcode:

Country: Sri Lanka

Website:

Contact person: Jude

Phone: +94714818503

Fax:

E-mail: icilanka@yahoo.com

Manufacturer of screen printing ink for papers, plastics and nylon fabric. They needed Ripex L for screen ink. They have received a sample, but no further contact about evaluation etc. Called on the 3rd of August in 2007, but the phone number was not in use. Therefore an email was sent.

→ No reply

Name: Eurochroma LTD

Address: Inovita Industry Area

Postcode: 32009 Voiotia

Country: Greece

Website: www.eurochroma.gr

Contact person: Elias Voutsas

Phone: +30 22620-32005

Fax: +30 22620-32004

E-mail: www.eurochroma.gr or voutsas@eurochroma.gr

Called on the 3rd of September in 2007. Eurochroma has tested Ripex and the results were satisfactory. This was done for a specific application for a potential client. This order was cancelled by the potential client and therefore they also did not need Ripex.

In the other printing ink applications, they use other resins and never cyclized rubber. Because Eurochroma does not use cyclized rubber, they also don't know if it is still being used in the printing ink, because they have no interest for it.

Name: Armor

Address: 20 rue Chevreul

Postcode: 44105 Nantes

Country: France

Website: www.armor-group.com

Contact person: Marie-Laure Rousseau, not working anymore with Armor

Phone: +33 2 40 38 40 00

Fax: +33 2 40 38 41 02

E-mail: purchasingp@armor-group.com

Called on the 4th of September in 2007, but Ms Marie-Laure Rousseau is not working anymore with Armor. Therefore an email was sent.

→ No reply.

Ink industry information organizations

Name: **Eupia** (European Printing Ink Group)

Address: Av Van Nieuwenhuyse, 4

Postcode: BE - 1160 Brussels

Country: Belgium

Website: www.eupia.org

Contact person:

Phone: +32.(0)2.676.74.80

Fax: +32.(0)2.676.74.90

E-mail:

Received contact information of Mr. Martin Kanert (+496925561354 kanert@vdm.vci.de).

Called on the 6th of August in 2007 and connected with Mr. Martin Schless (schless@vdm.vci.de). He is from the German ink association. He would help in finding the right person for answering the questions. An emailed was sent with questions.

→ No reply

Manufacturers Paint Industry

Name: **Berger paints LTD**

Address: HF 6, Halfar Industrial Estate

Postcode: BBG 06

Country: Malta

Website:

Contact person: Mr. Girish

Phone: +356 2165 8855

Fax: +356 2165 9409

E-mail: girish@berger.co.mt

Called on the 4th of September in 2007, and Mr. Grirish would answer the questions after sending him an email.

→ No reply.

Name: **Chrotex S.A.**

Address: Athens Corinthos

Postcode: PC-19300 Aspropyrgos

Country: Greece

Website:

Contact person: John Voutsinas → Retired in September

Phone: +30 2105539400

Fax: +30210554910

E-mail:

→ Wait for development and Purchase Order. Sent RIPEX L sample (0.5 Kg) May 26, 2006. The lab test result was satisfactory. Last Call September 25, 2006.

Chrotex wanted to order 8 tonnes, but Sutek offered tonnes. After sending the offer there was no further contact.

Called on the 3rd of September in 2007 and had contact with Ms. Paraskivi Archodouli

(archodouli@chrotex.com). She asked to send an email with questions and will try to answer them. On the 6th of September 2007 replied that Ms Maria Moschakou, Chemist MSc, is the appropriate person to answer. She is going to get in touch with the researchers.

→ No reply

Name: **Lackwerke Peters**

Address: Hooghe Weg 13

Postcode: D-47906 Kempen

Country: Germany

Website: www.peters.de

Contact person: Dr. Manfred Suppa

Phone: +49 (0) 2152 2009 0

Fax: +49 (0) 2152 2009 70

E-mail: manfred.suppa@peters.de

Have requested for information on Ripex on 25-07-2006. Sutek replied many times, but no answer. And on 06-09-2006 they have received another fax, because Peters said they did not received anything. Then a sample of Ripex L was sent. No information about the results.

Called with Manfred Suppa on the 3rd of September in 2007. He has tested Ripex L and was satisfactory, but not enough to order. Ripex was stable enough and therefore usable, but the disadvantage was the hardness and brittleness. The intention was to improve the coating. These disadvantages were the reason for not ordering Ripex.

They do not use a rubber type resin. Currently they use a plasticizer but this is not good compatible with Ripex. But the use of plasticizer is difficult without loss of immunity and stability of electricity isolation.

Ripex could be used in the specific paint, which Peters make. They make coating for the electronic market, if it has high electronic isolation.

The rubber resin is a natural raw material, which is a big advantage according to Dr. Suppa. It has good potential properties. There is not a good compatibility with plasticizers or other resins. If there is a good solution with the natural rubber type there could be a good market.

→ The researchers told him it is good in combination with alkyd resin. But a disadvantage of the Alkyd types according to Mr. Suppa is the negative drying properties, like longer drying time.

First there was an established market, but is now small. There are currently also other resins with good properties. The rubber type is natural, which is a good point, because for example no crude oil is used to produce it.

→ There are new regulations, like REACH and VOC, do you think this could be a threat for cyclized rubber? Because it is a natural material, this could be an advantage.

He does not know other applications, but when the researchers said it could also be used in marine and anti corrosive paint, he believed this is good possible if you have a good binder and therefore it is also interesting for coating in the electronic market.

Ripex XL with lower viscosity could be interesting for Peters. They would like to receive information about the product and stage of development it is in. Mr. Tarya is informed about the interest and was asked to send information.

Name: Sigma Kalon Marine & Protective Coatings B.V.

Address: Koprweg 35 – Westerpoot 7615

Postcode: 1047 BP Amsterdam

Country: The Netherlands

Website: www.sigmacoatings.com

Contact person: Wim van Rijswijk

Phone: +31 (0) 20-4075050 or + 316-512 246 94

Fax:

E-mail:

Emailed on the 9th of August in 2007 and received on 17th of August 2007 a reply. Mr van Rijswijk has asked different persons about cyclized rubber, but Sigma is not using cyclized rubber in their products and therefore cannot provide more information.

Name: Akzo Marine paint (International Paint Nederland BV)

Address: Kleidijk 88

Postcode: 3161 HJ Rhon

Country: The Netherlands

Website: www.international-marine.com

Contact person: Mr. Vermeer

Phone: +31 (0) 10 503 3500

Fax: +31 (0) 10 501 4459

E-mail: piet.vermeer@internationalpaint.com

Called on the 9th of August in 2007. Mr. Vermeer said that in the Netherlands there is only a sales office. The production locations are in Sweden and in the UK. Therefore he has a lack of information to answer the questions. After sending an email with questions Mr. Vermeer replied that Akzo can not provide market data of the paint industry. They are aware of the possibilities of rubber in paint products, For further technical details the researchers can contact the R&D organization in the UK (Felling). They can be contacted via the reception (telephone number +44 191 401 2000)

Paint industry information organizations

Name: CEPE Secretariat

Address: Av Van Nieuwenhuyse 4

Postcode: BE - 1160 Brussels

Country: Belgium

Website: www.cepe.org

Contact person:

Phone: +32.(0)2.676.74.80

Fax: +32.(0)2.676.74.90

E-mail: secretariat@cepe.org

The European Council of the Paint, Printing Ink and Artists' Colours Industry (CEPE)

Called on the 1st of August in 2007, but they can not provide statistical information about the market, because this is currently done by Irfab.

Name: Irfab Chemical consultants

Address: J.B. Denayerstraat24

Postcode: 1560 Hoeilaart (Brussels)

Country: Belgium
Website: www.irfab.com
Contact person: Mr Franco Busato, M.Sc
Phone: +32 2 657.35.85 - 657.75.53
Fax: +32 2 657.90.21
E-mail: enquiry@irfab.com

Called on the 1st of August in 2007, but Mr. Busato was on vacation and afterwards emailed.
→ No reply

Name: **PRA coatings Technology Center**
Address: 14 Castle Mews, High street
Postcode: TW12 2NP Middlesex, Hampton
Country: UK
Website:
Contact person: Glenda Thisdell
Phone: + 44 (0) 20 8487 0800
Fax:
E-mail: g.thisdell@pra-world.com

Emailed on the 8th of August in 2007 and on 23rd of August Ms. Thisdell replied that she can not answer the questions. She will forward the questions to someone else within their organization who may be able to help the researchers.
→ No respons

Manufacturers Adhesive industry

Name: **3M - Industrial Adhesives & Tapes Div**
Address:
Postcode: Bldg. 220-5E-06 St. Paul MN-55144-1000
Country:
Website: www.3m.com
Contact person:
Phone: (800) 362-3550
Fax: (877) 369-2923
E-mail:

Called on the 9th of August in 2007. The company is using cyclized rubber. In order to get an answer on which kind of cyclized rubber this is, the researchers have to send an email. This is done.
→ No reply

Name: **TESA**
Address: Quickbornstr No. 24
Postcode: Mail Box No. 665
Country: Germany
Website: www.tesa.com
Contact person: Ralf Ihrig
Phone: +49 (0) 40-4909-4949
Fax: +49 (0) 40-4909-2369
E-mail: Ralf.Ihrig@tesa.com

Tesa requested Ripex and tested it, but did not meet the quality standards. In 3th quarter of 2006 would test Ripex L again, it did not happened and will test it 2007 again, but the product could be expired. Last contact was on 24 November.

Called on the 3rd of September in 2007 and the contact person was on vacation and will return at the 17th of September. His colleague Basir Paqi was not familiar with cyclized rubber, but has heard of Ripex. But due to a lack of knowledge he could not help.

Adhesive industry information organizations

Name: Vereniging Nederlandse Lijmindustrie (VNL)
Address: Postbus 418
Postcode: 2260 AK Leidschendam
Country: The Netherlands
Website: www.nrk.nl
Contact person:
Phone: +31 70 - 4440690
Fax: +31 70 - 4440691
E-mail: vn1@nrk.nl

Emailed VNL on the 20th of August in 2007 and received on the 23rd of August that the VNL could not provide the requested information. The researchers can contact member companies, via www.nrk.nl → branches → VNL.

Other possibility to get information is to contact member companies of the NVR-section Technical Rubber articles, via www.nrk.nl → branches → TRA.

Distributors

Name: **Integrated chemical specialties**
Address: Postbus 302
Postcode: 2160 AH Lisse
Country: The Netherlands
Website: <http://www.icspecialties.nl>
Contact person: Rob de Waart
Phone: +31.252.419020 +31.6.5321.8795
Fax: +31.252.415483
E-mail: rw@icspecialties.nl

Called on 15 August in 2007. Mr. De Waart thought that there could be a market potential for Ripex in the Benelux, but only for specific applications. Although he knew Ripex and was interested in the product, he was not convinced to put more time in it. IC Specialties has had contact with Resine Italiane about Ripex, but it did not worked out.

There are several developments in the chemical market, like acquisition and the environmental regulations VOC and REACH. This means more focus water based technologies. This is a threat for Ripex, because Ripex is not solvable in water. Also the change to meet the VOC and REACH regulations is taking much time and therefore potential buyers have less time in researching the use of new raw materials.

The use of toluene in products in Europe is not done, especially with the VOC and REACH regulation. IC Specialties is doing business in soy and linseed applications, but is not aware of the possible application of Ripex in these solvents.

Mr. De Waard knows Alpex from Cytec, but thinks it is a product, with not much sales. A person who has done research cyclized rubber said that it is less solvable than Alpex. It is a product with small potentials.

A cooperation with Sutek in the future is possible, but for selling the product it is important that much information is provided, like formulations and potential applications.

On 29th of August 2007 contact information of Sutek is emailed to IC Specialties, so that they can contact Sutek. On the 29th of August 2007 Mr. De Waard replied that the market is searching for new products which meet the current European regulations. In Europe/ the Netherlands other regulations apply than in for example Asian countries. This is not always understood by suppliers of raw materials from these countries. The products must meet the REACH regulation and they have to register these raw materials. New developed products are for example aromatic free, water based or high solid. This is the reason why not all solvents are used anymore. Xylene and Toluene is for example not preferred anymore. Sutek has to take this into account. IC Specialties would like to receive updated documentation of Ripex and they would like to know if Sutek is going to register their materials (REACH).

Name: KMZ Chemicals LTD

**Address: Unit 22 Evans Bussiness Centre, Regents Pavilion,
4 Summerhouse Road, Moulton Park**

Postcode: Northampton NN3 6BJ

Country: UK

Website: www.kmzchemicals.ltd.uk

Contact person: Ian Mackridge

Phone: +44 (0) 1604 641235

Fax: +44 (0) 1604 641237

E-mail: ian@kmzchemicals.ltd.uk

Called on the 9th of August in 2007 with Ian Mackridge and asked if the researchers could contact the manufacturers, like Sun, in the UK of the list of Sutek. It is not good to ask what the applications of cyclized rubber can be, because they would say they use chlorinated resin, because it is easier to dissolve. Therefore they do not need cyclized rubber. It is better to ask: if the company has taken in to account that chlorinated resin cost 6 Euro/kg and cyclized rubber around 5 Euro per kg.

Ian Mackridge expects that Rockwood is the distributor of Sun Chemical. He will research in which ink types, produced by Sun Chemicals, Ripex can be used. The use of cyclized rubber in ink is still not clear for Ian Mackridge.

The researchers discussed that, according to Kees Kloosterman of Hexion, cyclized rubber can only be used as a niche market in the anti corrosive paints in Europe. Ian thinks that cyclized rubber can not compete anymore with the "simple" anti corrosive paints (for sea containers), because they are using the cheaper "phenol or vino"(did not understand it well) chlorinated resin. Therefore it is reasonable to research the "stronger" anti corrosive paints for pipe coatings, in oil industries etc.

The researchers discussed with Ian that Alpex has ended his distributorship with Crestchem. Mr. Tarya thinks that the reason for ending this is that Cytec is supplying Alpex direct to the end-user.

Ian however thinks that Tennant (www.tennantsdistribution.com) is likely the new distributor of Alpex in the UK. This is until now not confirmed to the researchers. On the 14th of August the researchers has received new information of Ian Mackridge. KMZ Chemicals has spoken with Sun in Urmston and Rochdale and they don't use cyclized rubber. KMZ has spoken to Yate and they have sent them back to Rochdale! The current status is not known to the researchers. From the contacts provided by the researchers, Quality Colours has taken a sample of Ripex L. They had originally contacted Ade last year when the Alpex was short. This was not a crisis, because they use it as a special resin and are not depended on it. However, Ian thinks they would like to approve Ripex as a second source.

Ian said on 11 October 2007 (without having the details in front of him) that for decent quantities Sutek can produce GSP Form, which significantly reduces the duty. From his memory 6.5% to 3.5%.

Name: Grolman LTD

Address: High Street (Barclays Bank Building)

Postcode: Chepstow NP16 5XQ

Country: UK

Website: www.grolman-group.com

Contact person: David Taylor, Alan Goldsmith

Phone: +44 (1291) 645066, +44 (1291) 645065

Fax: +44 (1291) 625949

E-mail: d.taylor@grolman-group.com

→ UK distributor is also active in the Benelux. Wait for lab test result from customer and development about Exclusivity. Sent RIPEX L sample (1 Kg), November 09, 2006. Last Response April 19, 2007

→ Wanted exclusivity about the distributorship of Ripex in the UK, but when KMZ become the distributor they gave a name of a French company to Sutek.

Called on the 4th of September in 2007 with Mr. Goldsmith (mobile: + 44 7879600413), because Mr. Taylor was on holiday. Ripex has been tested by the customers of Grolman and were satisfactory. Grolman has shown interest in Sutek, because Cray Valley sourced there products first from Italy but they stopped. One of the reasons was the price increase. Because Grolman still wants to deliver cyclized rubber to their current customers they have contacted Sutek. Because the evaluation of the customers of Grolman was taking too long, they could not react earlier. Goldsmith estimates their current market on 20 ton, although he does not know how big the market for the whole UK is.

It is a fact that the use of cyclized rubber is decreasing, because it is an old coating formulation. It has good compatibility in aerosol (spray) paint, it stops stringing.

Mr. Goldsmith said that when you do business with Grolman you will have transparent system, because you will have a monthly update, like: who buys your product, how much, which prices do they charge etc.

Mr. Goldsmith does not want to share more information, because it is the job of the current distributor. Then the researchers told him, that although Sutek already has a distributor in the UK, it is important to have information, because it can be usable for other countries. In these countries Grolman still can play a role. Mr. Goldsmith referred than to the office in Germany and gave the name and initials of Dr. Matthias Brück for further contact.

Name: **Gustav Grolman GmbH & Co. KG** (head office)
Address: Fuggerstrasse 1
Postcode: D - 41468 Neuss
Country: Germany
Website: www.grolman-group.com
Contact person: Dr. Matthias Brück, Product Manager Binders/Additives
Phone: +49 2131 9368 01, + 49 2131 9368 259
Fax:
E-mail: m.brueck@grolman-group.com
Phone:

Emailed on the 4th of September in 2007 to Mathias Brück and he have forwarded this email to Lex Biemans from the Grolman in the Netherlands.

Name: **Grolman NL**
Address: Bertramvaart 14
Postcode: NL-2724 TE Zoetermeer
Country: The Netherlands
Website: www.grolman-group.com
Contact person: Lex Biemans, Plastic/ Rubber department
Phone: +31 79 341 50 65, +316-53151792
Fax: +31 79 341 66 45
E-mail: l.biemans@grolman-group.com

On the 5th of September in 2007 the researchers received a call from Lex Biemans and he wants to know if the cyclized rubber is vulcanized, because if so, it could be used in synthetic grass, which is a big potential market. But because Ripex is used in combination with another resin and being solvable, Mr Biemans thinks it is not vulcanized.

Mr Biemans wants to know the size of Ripex (granulate), appearance and potentials. The researchers has emailed him on the 14th of September and attached the Technical Data Sheet of Ripex S and L. With this information Mr Biemans will research what the potential of Ripex is in the Netherlands and if Grolman can be of importance.

→ No further contact

Name: **Krahn GMBH**
Address: Grimm 10
Postcode: D-20457 Hamburg
Country: Germany
Website: www.krahn.de
Contact person: Frank Noetzel
Phone: +49 (40) 320 92-0, +49 (40) 320 92-298
Fax: +49 (40) 320 92-220
E-mail: f.noetzel@krahn.de

→ Krahn was contacted for distributorship in Germany, but according to them there was not enough sales potential for Ripex.

Emailed on 31st of September in 2007 and asked why there was not enough sales potential. Mr. Noetzel replied that Krahn has made a research in two departments at Krahn, adhesives/sealants and coatings. They have hardly found any customers using cyclized rubber today in both segments in Germany. This was done by asking their customers in direct contact and visits

(approximately 30 contacts).

In printing ink customers substituted cyclized rubber in some cases with Colophony resins. In adhesives it seems that the customers don't use this product in solvent based adhesives, which are anyway not growing according to Mr. Noetzel. Other markets were not explored by Krahn. Due to the very small market size in Germany Krahn decided to stop the project, they have found only 1 customer (Tesa, Hamburg) with 10 tons potential.

Name: Chimilab Eссор

Address: 170 rue du General De Gaulle, Le Point Central

Postcode: 59110 La Medeleine

Country: France

Website:

Contact person: Jean-Pascal Loisy

Phone: +33 (0)3.20.63.15.40

Fax: +33 (0)3.20.21.03.01

E-mail: chimilab@wanadoo.fr

Called on the 3rd of September in 2007 and talked with Jean Pascal Loisy. He can not say much about Ripex, because Chimilab has just received the first samples of Ripex in August 2007 (from KMZ). They were supposed to order directly, but through the advice of Mr. Tarya, they bought it from KMZ. The customer is happy with it now. Samples were received satisfactory at 3 anti-corrosive companies and now these companies are trying it out in there production process. Mr. Loisy will call Sutek after mid October 2007, because until then Chimilab can not give a reasonable feedback on Ripex. Later on this year Chimilab will know more.

Chimilab Eссор was the former distributor of the product Crodaprene. This is the same product as Ripex. This product comes from manufacturer Cray valley. This company always told Chimilab not to invest heavily in their product Crodaprene, because they stopped the production of this product. It was produced in France. This company has 2 facilities in France, 2 in Italy, 1 in Germany and 1 in the US. Jean-Pascal said their sale of Crodaprene was very small. Even smaller than the current sale of Ripex (while Chimilab has just started with Ripex).

The researchers asked Jean Pascal about tariffs, because he mentioned it in emails in January. He believes they have to pay taxes to import Ripex from Indonesia to France. He knows mainly of the use of Ripex for high protection coatings. He thinks it will be more useful for anti corrosive than marine paints. His three customers are all trying Ripex out in anti-corrosive coatings.

Jean-Pascal has never heard of Alpex. The researchers already knew that Ripex can be used in coatings/ink/adhesive, but have also heard of some rumors about applications in abrasives, tires and electronics. Jean Pascal said that he proposed it to a tire producer, but he had no idea if this works out: he is just beginning with it.

It is hard to estimate the market in France for cyclized rubber, because it is too early. He does not want to give a number, because it could be misleading. He said maybe 6 tons/year up to 10 in France from Chimilab.

Name: Cintas Adhesivas Ubis S.A (Caubis)

Address: Pol. Lastaola No.95

Postcode: 20120 Hernani Guipuzcoa

Country: Spain

Website:

Contact person: Tomas Ortega, Laboratory Manager

Phone: +34 943 335077

Fax: +34 943 335223

E-mail: tort@caubis.com

→ Cintas had contact with Sutek in June 2005. Cintas was building a new plant and therefore there was a delay of doing the trial of Ripex. Last contact spring 2006.

Called on the 4th of September in 2007 with Mr. Ortega, he said that the product Ripex is not important for Caubis, because it is just a small part of the total resources needed. Therefore there was no further contact initiated by Caubis. Another reason is that they do not want to order from Indonesia. They prefer a Spanish/European distributor. Nevertheless Mr. Ortega is still interested. He wants an offer for 1000kg Ripex that is distributed from a European company (from UK is no problem for him). The main business of Caubis is the production PSA adhesive tapes.

Mr. Ortega can not answer all the questions of the researchers, because some subjects are confidential. Caubis wanted to use Ripex as a component in adhesive tapes. The researchers asked with which resin he considers to combine with Ripex and in which percentage? He can not give comments. Mr. Ortega expects if they would choose for Ripex they could consume over 5 Tm / year. This could be more if the prices and quality would be convenient. The price, quality and availability of Ripex are main important aspects to Caubis. They can not give comments on what alternatives they can choose instead of using Ripex.

Name: **Resine Italiane**

Address: Via G Garibaldi 8

Postcode: 38020 Casalsérugo

Country: Italy

Website: www.resineitaliane.com

Contact person: Josef Serbenski

Phone: + 39 049 643143

Fax: +39 049 8740380

E-mail: josef.s@resineitaliane.com

Called with Josef Serbenski on 4th of September in 2007. He claims to be the person who invented cyclized rubber and started working on this since 1948. Mr. Siswanto first worked in Sumatra and this is where Mr. Siswanto got in contact with Josef Serbenski. Both studied in England (but not in the same period).

Nowadays cyclized rubber is further developed. Regulation seems the problem, but it does not affect cyclized rubber/ Ripex directly. All companies in the business say the market for Ripex is almost gone. Direct reason is increase in price of natural rubber.

First there was a good market for cyclized rubber, mainly in adhesive. The market for adhesive tape is collapsing in Europe and US. It is all going to Asia now. There are different types of adhesive tape production. Cyclized rubber can only be applied if the production is solvents based, than it is used as a primer. In the Netherlands this business can not be found. There are only applications in ink and paints in the Netherlands, but the market in ink is diminishing and in paint the only market can be found in marine paints.

Market potential depends on goodwill: in how far a company is willing to use Ripex. Also research is needed. A cyclized rubber liquid at 90 degrees (lower than the current melting point of Ripex) can be very useful in mirror packing paints applications. This business is very big in the USA. In this application the colour does not matter much.

Resine Italiane had a few manufacturers in printing ink. They preferred Ripex above Alpex, but are not willing to share the reason of it.

Another hint of Mr. Serbenski was to mix cyclized rubber with natural Rubber for tires. This is an extremely big market (+/- 50gr cyclized rubber per tire). Mr Serbenski said he was cautious at the time to research this application, because if tire companies would know cyclized rubber would improve their tyres, they would produce cyclized rubber themselves and this could put pressure on prices and destroy his company. He said he only had contact with Michelin about it and were extremely interested. The business so complex nowadays that always new possibilities could arise. He has seen this in all the years that he has been around in the business.

The researchers discussed if they could contact the buyers of Ripex from Resine Italiane and he said his buyers do not want to talk about Ripex anymore, because the problem is solved and it not a big issue anymore.

Attachment 12: Marine and anti-corrosion paint manufacturers

The population for further research are manufacturers of marine and anti corrosive coatings in the Benelux and Germany. The starting point of the creation of a workable population is the list of all members of the national coatings association of Germany, the Netherlands and Belgium, (respectively Das Verband der Deutschen Lackindustrie e.V., De Vereniging van Verf en Drukinktfabrikanten and L'Industrie des Vernis et Peintures). These three associations represent respectively 166, 77 and 70 paint or coatings companies in their countries and provide their names and directions on their websites. The researchers also requested the association of Luxembourg a list of all Luxembourg coating manufacturer, but no reply was received.

To create a viable population, some members of the associations were excluded. Firstly the companies that do not produce marine or anti corrosive coatings. Companies of which no signs could be found on the internet that they are manufacturers of marine or anti corrosive coatings were not included in the population. Secondly companies mentioned more than once were undoubled. And thirdly companies with only sales subsidiaries/ distributors etc in the Benelux or Germany are also excluded from the population. Some companies, especially the bigger ones, have subsidiaries in many European countries and these subsidiaries are also on the membership list of the national coatings associations. If traceable only the manufacturing sites of these companies in the Benelux or Germany are included in the population. In case the manufacturing sites of these companies are located in other European countries, the directions are placed in an additional list. Also manufactures of road marking, mirror backing and swimming pool paints are placed in the additional list. These companies are not being researched, but the researchers think that these contacts can be useful for Sutek in the future.

Bias

Unfortunately the eventual population that will be used for further research is biased. First of all there is a possibility that marine or anti-corrosive manufacturers in the Benelux or Germany are not members of the national paint associations in their countries and therefore also not in this researchs' population. For example the Dutch Vereniging van Verf en Drukinktfabrikanten reports on its website, they represent about 95% of the Dutch paint and printing ink industry, but this bias is acceptable. Secondly marine or anti-corrosive manufacturers, with no information about their company available on internet, could have been undeservedly excluded. Also the researchers could have misinterpreted the information that companies provided on their websites. Nevertheless this bias is inevitable, because the researcher have a restricted amount of time. It takes a lot of time to find more marine or anti-corrosive manufacturers in the Benelux or Germany, who are not members of the national paint associations in their countries. It is hard to find out more about companies of which nothing can be found on internet. In addition to this also companies could have been unfair included/ excluded from the research, due to the lack of technological and chemical expertise of the researchers. Also money is a restriction for the researchers, because such list of manufacturers can be bought for a few thousands Euro. However this bias is acceptable, because the outcome is a workable population of companies. Most likely the big and established companies are members of the national associations and young and small companies have not sign on yet. In the preliminary part of the external analysis, the researchers experienced that the market potential of Ripex might not be as high as Sutek's own estimations. Therefore it is important to use a population, which consist of real potential users. This way further research will be more efficient and useful, because no time is lost interviewing non potential users of Ripex. Next to this it is not the objective of this research to make descriptive

statements about the population of marine and anti-corrosive coatings manufacturers. The objective is to locate potential users and know their preferences/ buying behaviour.

Conversation with Akzo Nobel Marine paints

Telephonic interview on the 24th of September 2007

Peter Sinclair

R&D of Akzo Nobel marine paints in Felling, UK

+441914012119

This resin was not bad, but paints with this resin had a bad film and needed another finish layer of paint on top of it. Cyclized rubber Plastoprene was used as a navy protective. That type of product was Silverprimacon of Akzo Nobel, but is long gone. (Another reason was the fact that this product had lead in it). These days coatings system with few coating layer as possible are desirable, because of shorter application time. One layer is not always possible, but less is better. High solid epoxies are doing this job currently well

Historical coaltar pitch was used, but had its limitations. This workhorse was reinforced with epoxy resin. Coal-tar-epoxy was highly water resistant. Nowadays tar free have taken over.

The biggest drives of shift in the industry were caused by VOC regulations. VOC caused many paints to become water-based, but not for many marine paints, because water-based marine paints have their limitations. Important here was to replace the resins with long hair type molecules by smaller compact type molecules. Long hair type molecules imply the substance has a high viscosity, for which many solvents are needed, while VOC regulations restricts manufacturers to low use of solvent. This shift meant the shift to mainly epoxy resins

There are many properties that determine the choice for a specific binder, for example a good adhesive film, speed of drying, toughness, price, viscosity, outside colour. The importance depends on the end use. The main application for marine paints is on new constructions and repairs of ships in for example open docks. The paints are used all over the world. The paints are also used in chemical plants. How a paint looks from the outside is less important inside a tank, than compared with the outside of a ship.

All companies that are involved in the production of paint will have their own technologist. They all know a bit of the market. The manufacturers of resins must have a pretty good feel of how paint is manufactured. Of course they don't know as much as paint manufacturers, but there are a lot of properties of paint that are universal, like time to dry, fast application method etc.

In the purchasing a distinction can be made between the introduction of a novelty product or a substitution of a raw material. An introduction of a novelty product in the marine paints business will take 2 to 3 years. A raw material substitution will take 6 – 18 months. If it is a pigment substitution this time will be short, but in case of a new resin, substitution is relatively a big deal. Resins have great impact on the overall paint properties.

This research time to substitute raw materials will be the same for both big paint manufacturers like Akzo Nobel, as for small companies according to Mr. Sinclair. A marine paint should have a good quality and therefore needs a minimum of evaluation time. This takes time. If the paint is not having the properties/quality expected upfront, there will be very high costs and you'll have a big problem. It brings quite some costs to dock a ship and recoat it, together with the fact that ships need to be out of business to be painted. Not to mention the cost to replace pipes, tanks, bulks, tanks lines. This can cost a fortune. You just don't mess with the paint. Furthermore Akzo

Nobel applies raw material in bulk. If they have a product that is interesting, it first has to be tested in the lab and later on all over the world. It might not be useful in other continents. Also ship trials are needed to find out unforeseen things. For example is 120m on the side of a ship. For a trial batch of 120kg you would need let say 40kg resin for one trial size.

He does not really see a potential for cyclized rubber, but states he is not abreast of the developments as good as the following persons. They can be called, but he is not sure if they have time for a discussion. They know more about the overall developments in the paint industry:

- Dr. Mike Behenkel technical manager in Europe. +44191401 2387
- Dr. Dave Morten Europ lab manager +441914022680
- Peter Sinclair himself +441914012119 (and also +441914696111)

Meeting with Chugoku Marine Paints

Conversation in Heijningen in the Netherlands on the 21st of September 2007.

Albert Koster: Technical manager of the Japanese company Chugoku Marine Paints, Ltd, a.koster@chugoku.nl
+31 (0)167 526100

General information about (Marine) Paints

In the Netherlands are 3 main manufacturers of marine paints: PPG, Sigma and Chugoku. Next to this there are also some small yacht paint manufacturers. Many anti-corrosive paints have become water-based, but marine paints will not become water based paint, because in many applications this paint can not be used under 10°C. You can not simply heat up a ship or a bridge. Below this temperature water-based paint can not create a good film. In many shipbuilding countries, like China, Korea and Japan it is cold. Repairs on offshore constructions are done all over the world. In many cases it is too cold and in warm countries there is generally no regulation and thus no need for water-based marine paints. It is true all paint manufacturers are trying to reduce the amount of solvents used.

For things to rust (iron oxide) you need iron, oxygen, salt liquid and a conductor. For a ship of steel on sea all four are present. So when steel is in contact with the salt water, it will start to rust. There are 2 ways of protecting the steel:

- Passive protection (by putting a layer of paint in between the water and the steel)
- Active protection (adding a metal that is less noble than steel, like sink. The metal that is less noble will rust only)

A coating can only prevent the water to get in touch with the steel up to a certain amount of time. The speed of this depends on the quality of the paint. Next to this the thickness of the paint increases this time. Nevertheless thickness also has limits, because thick layered paint is expensive and can peel off more easily.

Water parts can not go through the pigment parts, but go around it. So the quality of the paint can also be improved if you add pigments parts with a bigger surface: it will take longer before the water gets around the pigment parts. It is also possible to add something non-polar (like certain resins) to the paint to push off polar liquids (like water).

Low viscosity of the resin is desired in paint, because than (1) less solvent is needed to solve the resin, (2) less liquid will stick to the vessel (lower loss of product) and (3) the properties of the production are more favorable: it is easier to mix.

Chugoku has 4 paint lines, based on resin types:

- Alkyd: a simple one-compound paint
- Acrylic: one-compound, can be water-based
- epoxy: two-compounds, easy to work with
- Polyurethane: two-compounds, better film

In one-compound paint the big molecules to prevent the water from getting to the steel already are present in the paint before the painting. In two-compound paint the big molecules from when the object is painted. Two compound paint is qualitative better, because a layer of two compound paint can be seen as one big molecule. According to Mr Kusters it is more likely Ripex will be used in two-compound quality paints, instead of the cheaper one-compound paints.

REACH

REACH is a new European regulation that obligates companies to report all chemicals that they produce or import in the EU. It is implemented on the 1st of June 2007 and all companies have to be ready before 1st of January 2008. It is also applicable for Ripex. Not just the product needs to be reported, but also all the chemicals in the product and their amount need to be reported. So a little bit of phenol in Ripex should also be reported and paid for. Also the application has to be mentioned in the REACH subscription. Eventually it is the importers responsibility. The costs to subscribe REACH increase, when the production/import of Ripex increases. For low EU import quantities, just a low and cheap subscription level is needed. For every substance in the product a subscription is needed.

REACH is a barrier for companies exporting to the EU. It is wise to talk about this with specialized consultancy companies located in the EU. REACH is needed for all paints, except for antifouling, because there are other regulations applicable for antifouling.

VOC

There are many manufacturers that switch(ed) from producing paint on solvent-based to water-based. However not all solvent-based disappears.

Advice

All of Chugoku's R&D on new products is done in Japan. If Chugoku conducts a research for antifouling paint it can take up to five years to design a good receipt. A general anti corrosive paint research in the R&D-lab takes about six months. Marine paints test are hard to relate to the practice: It is hard to imitate practice situations in the lab, so the real testing happens in practice.

Sutek should hire a laboratory worker and test Ripex in different applications themselves. It is important Sutek produces results of tests that prove Ripex is advantageous over alternative resins in some situations. After that Sutek should make a sheet in which multiple applications of Ripex are described. With these test results a marketing/sales representative should tempt potential users to start research on using Ripex in their products. Right now there is no market in marine/ anti-corrosive paints, so there must be a reason for paint manufacturers to start testing Ripex. A company will only research Ripex, if there is a potential return on the research investment. A laboratory test takes a lot time and one hour of a laboratory man costs a around company €100. So it will be costly to research new applications of Ripex in marine/ anti-corrosive paints.

Ripex can be interesting:

- if it improves the quality, by showing test results, because then the manufacturer can ask for a higher selling price
- if the purchasing cost are lower than their current binder, but also show lab results.

The manufacturer must earn the research cost back.

Comments on TDS, HSDS and application sheet

Antifouling paint is specially designed to prevent organism to grow on objects in sea water. These paints contain the pigment Cu₂O. In time the Cu₂O reacts with oxygen to form CuO of which the organism die. The antifouling on the Ripex application sheet is not an antifouling. The Ripex Safety Sheets seems amateurish. It looks like somebody just filled it in, like as a school applications. The Safety Sheets has a European structure with its 16 subdivisions, but does not contain sufficient information. This information might be sufficient in Asia, but in Europe there are tighter regulations. The Ripex TDS he finds very busy, but all the necessary information is available. Anti-corrosive paint is not mentioned as an example on the TDS. The solvent Xylene is used by Chugoku.

Meeting with DSM resins

Conversation in Zwolle in the Netherlands, on the 9th of October 2007.

Mr. Lindemulder NBD Platform Manager metal coatings +31(0)384569363 /
jan-lodewijk.lindemulder@dsm.com

Dr. Hofland Senior Research Chemist +31(0)384569249 / ad.hofland@dsm.com

DSM's cyclized rubber

DSM resins is a company that produces resin for paints and similar products. So in fact DSM is making the raw material for the paint manufacturers. DSM has a real strong market position in polyesters and produces about 150.000 ton per year for the coatings industry. This product has high polarity.

20-30 years ago DSM started to produce cyclized rubber, called Synotex RR 800 and Synotex RR 800 W50. This product was extremely a polar and was used in paints for swimming pools and for road marking. DSM had a Synotex plant in Hoek van Holland in the Netherlands. It was made with phenol and with the very aggressive phosphorpentoxide that reacts heavily with the reactors/pipes/etc. The highly reactive chemicals needed in the process damaged the production facility, so that many parts in the production process had to be replaced every six years. More and more environmental restrictions resulted in necessary higher investments in the plant. So at the end of the 90's a decision had to be made about a new investment of fl 4 million. Because the market was declining and the profit small, the process of cyclized rubber was ended. In the year 2000 Hoechst took over the customers and product of the cyclized rubber of DSM and DSM will not start the production of cyclized rubber anymore, due to the high investments every six years. Next to this a product in which cyclized rubber is used, requires a lot of solvent and also the market for CR is declining. For DSM the road marking business is not a very profitable. They only produce resins if the production capacity allows it. DSM does not apply the simple production methods, because competition can do it too. Therefore DSM focus is on better high-tech solutions.

Applications and Characteristics of cyclized rubber

In the past cyclized rubber was used in a 3 layers coatings system, but this is a very old system that is used anymore today. Ripex can never be used in the topcoat, because cyclized rubber reacts on UV light. So it is not resistant to UV light. The second disadvantage of cyclized rubber is the good solvability in organic substances. For example it can not be applied in car coatings, because gas is organic. A little spill of gas on the outside of a car would solve coatings with a cyclized rubber. An advantage of Ripex is the resistance against hydrolysis and therefore its resistance to water. In the past these (dis)advantages of cyclized rubber resulted to the application

of cyclized rubber in swimming pool paint and road marking paints.

VOC

Nowadays there is only one topic in the paint industry, namely the new VOC regulations. 90% of the R&D activities of DSM are concerned with this. DSM is searching for new water based resins or resins with lower solvents. Not the costs, but environmental restrictions are the main drive behind this. Improving VOC means extra costs, because investments have to be made in new products and ways of production, but the industry is willing to pay for it. DSM is happy with the new VOC regulations, because the market was saturated and this allows them to invest in R&D and make new competitive products.

The business of cyclized rubber is declining because of the VOC regulations. A lower viscosity of the resin will decrease the number of solvent needed and thus lower the VOC of the paint, but for cyclized rubber still a lot of solvent is needed. For cyclized rubber a minimum of 600 to 700 gram solvent/liter product is needed, while levels of current resins are at 400. And the eventual goal of paint manufacturers is around 250. Sutek should work to achieve 250, because VOC of many paints will go down in the future. Otherwise Sutek is again one step too late compared with the competition. Cyclized rubber is a traditional process, which is hard to control. It is hard to control the (spreading of the) molecular weight. If you are able to control this, you still have to find out if the product is still competitive with other alternatives. Sutek can calculate the VOC value of the examples given on the form for application of Ripex them selves. In antifouling the alkyd is the hydrolyser part. See www.internationalpaint.com for more information about antifouling.

There are three possibilities for Ripex/ cyclized rubber to lower VOC

1. High solids.
2. To make it solvable in water (to disperse Ripex in water) for decorative paints
3. To apply it in powder coatings (by heating melting the paint on the object)

Manufacturing Ripex with lower viscosity will lower the eventual VOC of the paint, because than less solvent is needed, which results in relatively high solid paints. There is very low chance that Sutek will be able to work out a solution for Ripex in high solids, because it is hard to control the molecular weight. Only if the VOC value of the paint, in which Ripex is used, can drop to 250 there is a possibility.

The dispersion of cyclized rubber in water should be considered. This can for example be done as follows: First solve cyclized rubber in acetone, than add 5% soap (emulgator) and add water. This results in a white colored emulsion. After this the acetone has to be removed. This results in a product, which is resistant to water. But it is not resistant to solvents/ organic substances, UV light and it will not create a nice film layer. So the product can be used only in applications for objects under water. However marine and protective coatings are never water based, so this application for Ripex solved in water is not realistic. Steel manufacturers add a wash primer on their manufactured steel to make it resistant for the short term (epoxy based Zinc Silicates). Water based coatings are hard to use, because the steel is greasy after all the welding and cutting on a shipyard or construction hall. Secondly in the winter the temperatures even indoors go down to 5 °C where WB systems do not perform well. For water based paints degreasing in advance is very important. Degreasing a ship is very impractical. If Sutek can solve Ripex in water it still will not be resistant to UV light. From Hofland's experience he knows that after 3 months the CR will erode and the pigment will loosen. In marketing if a product has a certain advantage; it will have a possible future. He suspects that if Ripex would be commercially successfully when dispersed in water. But with the knowledge of Vianova, Cytec would surely already have tried this. Therefore Sutek should wonder if it is profitable to research this application. Next to this for a

declining market of cyclized rubber a great effort in R&D is needed to make Ripex solvable in water. The sales volume of cyclized rubber is too small for a serious investment.

To paint object with powder coatings it is very important the environment during the spraying is under control: A special spray cabin has to be used and the temperature has to be constant. These necessities make it not an option for marine and protective coatings because the objects are too big. Next to this in the shipbuilding industry cut and welded steel is not cleaned and therefore dirty, so applying powder coatings in shipbuilding is not very practical. In case the temperatures is 15°C. or higher it can be used in water based swimming pool paints. Another application of cyclized rubber can be in concrete paint. DSM knows somebody from Latexfalt, who knows about cyclized rubber/ Synotex and Hoechst. This is Bert-Jan Lommerts. He is the director of R&D. He can be contacted for the use of cyclized rubber in concrete paint. +31(0)71 3419108 www.latexfalt.com (refer to Helen Ruiter, who worked for Latexfalt)

Improvements TDS & HSDS and advice for Sutek

On the TDS of Ripex at least one application formula should be mentioned and also the test results of this application should be mentioned to get potential buyers interested. Mr Hofland checked the Cas nr, but it was not correct/up-to-date. On the MSDS of Ripex the possibility of dust explosion of Ripex should be mentioned by point 3 hazard identification. This is a neglected danger of these types of products (referring to a big explosion of a fertilizer plant). The document on the application of Ripex looks like a copy of the one of Synotex.

In the paint business there are two ways you can sell your product (a raw material for paint):

You have to push your product	→ The user does not want anything. The manufacturer of the raw material has to show it is a wonderful product
Your product gets pulled	→ The market request for a (new) binder. For example: a big paint manufacturer like Akzo Nobel starts a project to develop a new paint and request samples of all the binders in the markets. Than Akzo Nobel will test them all.

The market for Ripex in the past was a pull market, but currently it is a push market. For this the application of Ripex in product of buyers should be tested first by Sutek. For example the R&D of DSM Resins in Zwolle wants to simulate paint situations and therefore it also has a paint lab where DSM tests their own resins in paint. DSM does not manufacture paints at all, but does have a paint lab, just to find new applications.

It is important to realize not to sell a binder, but a performance. Before researching different applications and technology of Ripex, Sutek should first know the current situation: What products are available and which technology is used. Then Ripex should significantly improve quality or be cheaper than the other products. Otherwise they can not replace the current products and get market share. Sutek has to reach a VOC of at least 250. But if Sutek can reach this level, it still is not a guarantee it can compete with alternatives like epoxy. It is very difficult to achieve a similar level of quality as epoxy with alkyd and cyclized rubber mix on a 50%/50% base. Sutek should find the unique selling point of Ripex. Ripex has a hydrolyzing capability and can also be dispersed in water. It is resistant to water (+), but it is not resistant to (organic) solvents (-).

In Asia there are possibilities for cyclized rubber, because the regulations are not so tight yet, but China also starts to realize they need to lower VOC. There might be possibilities in less developed countries, like Africa.

Research and testing new products

To make a real comparison with paint with Ripex and paint with epoxy, a salt spray test has to be

done. This is done by putting the two paints on two different metal plates. Than the two plates have to be scratched. Than spray it with water, with several salts solved in the water. The plates are compared they react to the salt spray. Sutek should test this their selves. Alkyd will rust soon, while epoxy will hold longer. In fact no binder tops the result of a salt test of epoxy. The epoxy is relatively cheap and good. It cost by estimation € 2,5 per kg. DSM does not belief that the combination of alkyd resin with cyclized rubber has the same results as epoxy. The time to market for a resin is 3-4 years in automotive and 4-5 years in marine paints. A salt spray test is not sufficient. Paint manufacturers like Chugoku will first expose the paint to real life sea water situation for long period of time. Sutek can decide to invest in own test machines that are necessary for research on the application of Ripex. The cost for this are estimated on:

Paint producing machine	€ 2000 - € 3000
Salt spray test machine	€ 20000 - € 30000 (according to ISO standards)

According to Mr Hofland Ripex can also be tested by the Paint Research Association (PRA) in London. They can execute salt tests for small resin and paint companies, for a small amount of money. It is mainly labourcost that have to be paid for and Mr. Hofland estimates that a test cost about 40 pound. If you can show test results executed by the PRA this is seen as reliable.

A quick test with UV light can also be made and 500 hours stands for approximately 5 years in reality.

Contacts marine and anti-corrosive paints in Germany

Bergolin

Kiepelbergstr.14
27721 Ritterhude
Germany

E-mail : info@bergolin.de

www.bergolin.de

The researchers contacted Carsten Zigler (+ 49 42929980) and emailed to (info@bergolin.de). Mr. Zigler forwarded it the head of R&D Mr. Mitzdorf (+ 49 42929940). He will contact the researchers. After no reply, the researchers contacted Mr. Mitzdorf on the 18th of October. He remembered the email, but he find it unusual, because normally a supplier knows what they are selling and then they contact the manufacturer. The researchers asked him if he preferred answering a few questions by email, but he prefers calling. The researchers asked just for 10 minutes of his time, but he does not want to cooperate with the research anymore.

Zuelch

Friedrich-Ebert-Str. 205 – 206
37520 Osterode-Lerbach
Germany

www.zuelch.de

For chemical resistant coatings produce Zuelch the following products:

- 2-K PUR coating
- 2-K epoxy and Tar-epoxy
- 1-K chlorine and cyclized rubber paint

The researchers contacted Dirk Winkels (+ 49 5522 901 528) and emailed to (winkels@zuelch.de). The researchers have called Mr. Winkels but he is not able to speak English very well. He said that cyclized rubber is needed for polypropylene. Zuelch is not much using cyclized rubber. Mr Winkels is concerned with anti-corrosive paint and have therefore not much information about cyclized rubber, but he referred to Mr Niemeyer, who has a factory in

their factory he can maybe answer more technical questions. He can be contacted on + 49 5522 901 527. Mr Niemeyer is contacted on the 18th of October on his mobile (+49 017 055 695 36). He is afraid that he can not give more information about cyclized rubber, but he will ask Mr. Winkels to forward the email to him and he will give notice. → After this no reply.

Wilckens
Schmiedestraße 10
D-25348 Glückstadt
Germany
www.wilckens-paints.com

The researchers contacted Ms. Westphalen (+ 49 4124 6060) and emailed to lab@wilckens.com. Wilckens had used this cyclized rubber to improve alkyd resin paints 20 years ago, but since then they didn't use this type of binder for their products anymore. The company does not produce printing ink or primers for polypropylene films, but only a very small quantity of road marking paint. According Ms. Westphalen cyclized rubber is a good binder for road marking paints. For anti fouling (marine paint) they have never used such a binder and according to Ms. Westphalen blistering will take place and you will get no polishing effect. In Germany Wilckens is the only anti-fouling manufacturer. Now special metallic-acrylic binders are used in anti-fouling paints. For anti-corrosive (marine) primers it's better to take 2-pack epoxy systems to get high film thickness and high volume solid (abt 80 % SV is standard for marine primers). Unfortunately she cannot provide more information about cyclized rubber. After this the researchers have emailed again with more questions, but no reply was given.

Attachment 13: Alpex

A conversation with the Account Sales Manager of Cytec:

On 27th of August 2007 the researchers requested the Technical Data Sheet and Material Safety Data Sheets of the products: ALPEX CK 450/60WS, ALPEX SCK 498/PAST, ALPEX CK 450/PAST, ALPEX CK 514/PAST on the website of Cytec business unit (surface specialities).

On the same day Xavier Dubois, Account Sales Manager of Cytec Surface Specialties France / Benelux (Email: Xavier.Dubois@cytec.com, tel : +33 1 41 80 17 03) replied by email to thank for the interest in the Alpex range. He said he did not know the researchers company and therefore he asked to explain what the researchers' activities are and what was expected from these products. He said to remain available for further information.

After that Xavier Dubois on the 28th of August 2007 was replied by email for several questions about Alpex. In this email the researchers said they were students researching the market of natural rubber based resin and that they found Alpex in a chapter about cyclized natural rubber in the Ullmans' encyclopedia of industrial chemistry (2007). There the product Alpex 450 J is mentioned. This encyclopedia also states that Alpex was originally produced by the company Societe Italiana Resine, but that further searching on the internet lead to Italian information. So it was hard to understand it very well. Furthermore it was mentioned that Surface specialties states; the Key End Markets/Business Drivers of Cytec's brands Alpex and Alnovol are abrasives, tires and electronics. This was mentioned especially, because these applications were not known to the researchers or to Sutek. After this the following question were asked and on the 30th of August Xavier Dubois replied:

1. Is the Alpex from the Societa Italiana Resine the same as Cytec's Alpex? and is Cytec's Alpex a cyclized natural rubber?

→ He explained Alpex is an old brand name of former Chemische Werke Albert (later owned by Hoechst; Vianova; Solutia, etc.) Also he said that Alpex is a cyclized rubber.

2. Can you give me more detailed information about applications of cyclized natural rubber? The main applications for Alpex are:

- | | | |
|---|---|--|
| • <i>Moisture and chemical resistant coatings</i> | • <i>Concrete paints</i> | • <i>Adhesives</i> |
| • <i>Anticorrosive paints</i> | • <i>Printing ink</i> | • <i>Toners</i> |
| • <i>antifouling paints</i> | • <i>Coatings and ink for polyolefins</i> | • <i>Negative photo resist and light sensitive materials</i> |
| • <i>Marine paints</i> | • <i>Heat sealable coatings</i> | • <i>Leather polish</i> |
| • <i>Road marking paints</i> | • <i>Modifier for rubber</i> | • <i>Car polish</i> |

3. For me it is not clear what the difference is between Alpex and Alnovol. Can you elaborate on this?

→ Alnovol is the brand name for phenolic resins of the novolak type

4. Can Alpex be used for all 3 markets (Abrasives, tires and electronics)?

→ Answered by Xavier Dubois with: "Yes, cf 2."

5. Are there more products in which cyclized natural rubber is used?

→ There are no other products in which cyclized natural rubber is used at Cytec.

For the researchers it was quite unsure what Mr. Dubois meant with this last answer on question 4. Because this was a pretty important question, the researchers tried to get in contact with Xavier Dubois 3 more times by phone, but could not reach him. The researchers also tried to get in contact with the Cytec plant in Wiesbaden that produces Alpex. Meanwhile an attempt was made to get in touch with Crestchem, who is the former distributor of Alpex.

Crestchem

Roy Miller +4401494434660

On the 29th of August the researchers contacted Roy Miller of Crestchem, the former UK distributor of Alpex. The researchers were aware of the fact that Crestchem lost the Alpex-distributorship from Cytec and that after this event Crestchem asked Sutek if it was possible to become the distributor of Ripex in the UK.

Crestchem sold Alpex for many years, but now Cytec inherited the business of Alpex. The demand of Alpex has gone down substantially. Now it has become a specialty product. Before Crestchem lost its distributorship of Cytec, they only had four users of Alpex in the UK. Crestchem sold Alpex mainly to manufacturers of hot stamping foils/ heat transfer printing, which is used to make metallic prints on for example greetings card labels. In this technique a multi layer is putted on polyester film, which is later on pressed / transferred on another substrate with heat and pressure. Crestchem sold most of its Alpex to customers that were active in this business. The final applications in greeting card moved to the Far East, because it is cheaper to produce it there. Because the greeting card production moved to China, the hot stamping foil moved there too. Similarly the manufacturing of bike paints moved to China, because bikes are now also made in China, instead of the UK.

The use of cyclized rubber in UK has reduced to very small quantities and it is difficult to see where new applications can be found. There used to be two manufacturers in the UK and one in Holland, but these all shut down. Roy Miller does not know what the total size of the market for cyclized rubber is in EU. He has no idea in which markets or countries Alpex is sold. He estimates the UK market is 20/25ton a year maximum.

Crestchem is not a distributor of Alpex any more, because there were many problems with Alpex. In Germany they brought on stream a new kettle, which was wrong designed. There were also problems with old vessel. Many manufacturers could not get material at all a certain time.

Furthermore applications for Ripex in paint have disappeared, because Ripex is expensive binder. Unless it has particular advantages it can be used. It relatively solves well in polar solvents. Letterpress ink has disappeared especially in the EU. In the business of marine paints, anti corrosive paints there are many other binders.

Because cyclized rubber has low polarity, another application in the UK could be offset metallic ink of Wolstenholme International. Api foils has been acquired by Wolstenholme.

The R&D department at the Alpex plant in Wiesbaden:

Address Cytec plant in Wiesbaden
Industriepark Kalle-Albert
Rheingastr. 190 – 196
D – 65203 Wiesbaden
Germany

Telephone +49 611 962 02
Fax: +49 611 962 9345 / 9334

On the 13th of September 2007 the telephone number on the website of Surfacespecialties was called. It took 13 phone calls before the researchers could talk with the right person about Alpex. In 7 cases no one answered. When Cytec answered they said the researchers should talk to Mr. Brentkoper (+49 6119625990) of R&D, but it still took 5 phone calls to reach Mr. Brentkoper, because Mr. Brentkoper was not available. Eventually the researchers got to speak with Mr. Brentkoper on 2nd of October 2007. The researcher said to be doing a research on the use of natural rubber based products and that they read on internet natural rubber is used in Alpex.

Mr. Brentkoper said that Alpex is a cyclized rubber. It is a polymer product with lower molecular weight and it is made of natural rubber. It is mainly used in coatings, because it has very good properties like water resistance and it is solvable in polar solvents. On the website is stated that the brands AlnovolTM, AlpexTM can be used in the Key End Markets/Business Drivers: abrasives, tires, and electronics. Mr. Brentkoper said that as far as he knows, there are no uses of Alpex in tires, abrasives and electronics. These applications are just for the Alnovol.

There are many customers who use Alpex and the main use is in coatings. He does not know what customers do with it. He could not say anything about market size and so on, because he is not allowed to, but he said that the market for Alpex is a small niche market. The product is used all around the world. Historically they started R&D on natural rubber based resin, but nowadays synthetic alternatives are cheaper. There is no sense to further research. There could be many new uses, but he does not know about this.