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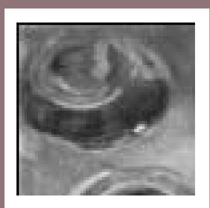
HIGH-TEMPERATURE PLASTICS 2001



The fifth edition of Kline's in-depth study on the global markets for high-temperature plastics

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Kline & Company is pleased to announce the completion of its fifth comprehensive report on polymers for sustained performance at temperatures exceeding 200°C.

The primary objective of this 500+ page report is to provide subscribers with a sound foundation from which to build successful business plans, while taking into consideration such issues as:

- Competition among different polymers, including (for the first time) high-performance PBTs
- (Also for the first time) a market analysis of compounded versions
- Growth opportunities within market segments, especially fast-growing electronics applications
- Changes in supply structure
- Impacts of globalization
- Changing performance/cost needs

Chapters in the report are organized by products, by applications, and by supplier shares. Key elements of each category can be seen in the Table of Contents.

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BACKGROUND

High-temperature plastics represent the most specialized and rapidly growing segment of the plastics market. These polymers, with heat-deflection temperatures exceeding 200°C, have experienced dramatic growth in demand from just $800 million globally in 1984 to $3.1 billion in 1997 (when the fourth edition of this series was issued) and an estimated $4.4 billion in 2000. The prediction for 2005 is $6.8 billion. This represents a compounded growth rate of over 10% annually, as shown in Figure 1.

Despite this rapid growth, the market has absorbed some tough challenges in the last three years. Among these are:

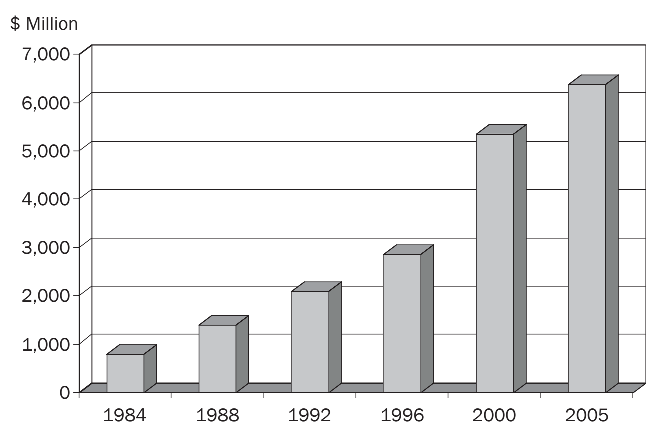
- Intensifying intermaterial competition-not just between different high-temperature polymers and their compounds, but between polymers and metals or ceramics and between HTPs and polymers of lesser thermal resistance.
- Strong price competition, especially among polymers competing in the automotive market.
- Supplier consolidation
- The burgeoning market for syndiotactic polystyrene, which registered barely a blip on the market radar in 1997, but which has grown rapidly since then.

The high-temperature plastics market comprises more than a dozen polymers, including the following:

- Fluoropolymers
- High-performance polyamides (HPPAs)
- Liquid crystal polymers
- Polyamideimides (PAIs)
- Polybenzimidazoles (PBIs)
- Polybutylene terephthalates (PBTs)
- Polyetherimides (PEIs)
- Polyimides (PIs)
- Polyketones
- Polyphenylene sulfides
- Polysulfone derivatives (including polyether sulfone and polyethylene sulfone)
- Polycyclohexane dimethyl-terephthalates (PCTs)
- Syndiotactic polystyrene

Figure 1

GLOBAL DEMAND FOR HIGH-TEMPERATURE PLASTICS



For some of these polymers, growth in demand has been extraordinary over the past few years, with consumption increasing at rates greater than 10% a year. For example, HPPAs grew well over 30% annually through most of the 1990s, as applications in metal replacement, as well as displacement of other engineering plastics, took place. Polymers such as PI and LCP grew by nearly 15% a year as electronic and automotive usage increased.

However, it is not only the excellent temperature capabilities of these polymers and compounds that have caused their high growth. In many applications, their chemical, wear resistance, and other properties are more important.

Despite their high average price in comparison to other engineering plastics, demand for these polymers has been growing dramatically in performance applications, including electrical, automotive, and industrial uses.

Electrical/electronics (E/E) accounted for 40% of the market for high-temperature plastics in 1997 and was on a growth track that has brought it to 47% of an even larger market in 2000. Such trends as electronic component integration, surface mount technology (SMT), and growth in electronics for Internet and broadband applications are driving demand in the electronics sector.

In the automotive market, demands for improved fuel efficiency, lower emissions, and longer maintenance cycles are also favoring more consumption of high-temperature plastics.

In addition to its rapid growth, the market for high-temperature plastics has been transforming in terms of product competition. One of the most important developments of the 1990s was the introduction of syndiotactic polystyrene (SP). This is a high-temperature thermoplastic that was starting to make deep penetration in this market at the time the last edition of this report was released.

In addition, lower-priced LCPs and alloys of PEI have experienced favorable responses in the market. For example, lower-priced LCPs have come into the E/E market. Blends of PEI with polycarbonate (PC) are available for consumer, automotive, and medical applications.

OBJECTIVES

This analysis was conducted with the following primary objectives:

- Reassessing the growth rates projected in 1997 and gauging the base year of 2000 for actual market volume and value
- Developing a forecast for volume and value in this market for 2005
- Evaluating and predicting the impact that new products will have on the high-temperature plastics market, including expected market demand and interpolymer competition
- Analyzing the current and expected competitive positions of the leading global suppliers

SUBSCRIBER BENEFITS

HIGH-TEMPERATURE PLASTICS 2001 will help polymer suppliers focus their efforts to capitalize on emerging opportunities and counteract potential threatening changes and technologies. By subscribing to this report, you will be able to make informed decisions concerning such issues as those shown in Table 1.

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Table 1

Issue	Objective
Product development	To improve positioning of existing products and develop new products to take advantage of changing consumer needs, competitive polymer developments, and expected market growth.
Production planning	To make the necessary capital investment in capacity and/or technology to enable your company to take advantage of future product requirements.
Strategic positioning	To optimize your company's product line and/or acquire or divest business units to meet long-term strategic goals for sales and profits.

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- Brussels, Belgium
- Tokyo, Japan
- Shanghai, China
- Sao Paulo, Brazil

In 1985, Kline conducted its first multiclient analysis of the high-temperature plastics market. As a result of subscriber requests, this very successful analysis was repeated in 1989, 1993, and 1997. Our new edition of this report draws upon the historical demand, pricing, and supply data accumulated for these previous editions in order to make accurate assessments of implications for the next decade.

In addition to our multiclient report expertise, Kline completes approximately 200 proprietary engagements each year. Many of these have focused on business issues in high-temperature plastics. Of the more than 20 proprietary assignments in high-temperature plastics conducted since our last edition of this study was published in 1997, many have focused on the following issues:

- Competitive analysis of a high-temperature plastics product
- Cost economics for the production of high-temperature plastics
- Commercial opportunities for a new high-temperature polymer
- Marketing and distribution strategy for a high-temperature polymer producer

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