

**India Caprolactam Market By Raw Material (Phenol, Cyclohexane), By End Product (Nylon-6 Fibers, Nylon-6 Resins, Others), By Application (Engineering Resins and Films, Industrial Yarns, Textiles and Carpets, Others), By Region, Competition, Forecast and Opportunities, 2019-2029**

Market Report (3 business days) | 2023-10-03 | 87 pages | TechSci Research

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**Report description:**

The India Caprolactam Market achieved a significant milestone by reaching USD 781.68 million in 2023, and it is poised for substantial growth in the upcoming years, with a projected Compound Annual Growth Rate (CAGR) of 2.94% through 2029 and is anticipated to reach at USD 922.51 million by 2029. Caprolactam, a crystalline organic compound, holds a pivotal role as a vital precursor in the production of nylon 6, a synthetic polymer renowned for its remarkable strength and durability. Caprolactam's exceptional solubility in water and select organic solvents endows it with unique properties, making it the ideal candidate for synthesizing nylon 6. This synthesis process involves the polymerization of caprolactam upon heating, resulting in the formation of nylon 6. This inherent reactivity of caprolactam as a cyclic amide enables its participation in various crucial chemical transformations vital to industrial processes. Caprolactam's capacity for ring-opening polymerization is particularly instrumental in the synthesis of nylon, establishing it as a critical component in the production of top-tier nylon fibers.

The driving force behind the caprolactam market in India primarily stems from the burgeoning demand within the textile industry. This industry requires high-strength, lightweight materials, such as nylon-6 fibers, to meet its evolving needs. Furthermore, the automotive sector plays a significant role in the expansion of the market, as it relies on caprolactam for various applications.

Another noteworthy factor contributing to market growth is the utilization of nylon-6 by-products in the packaging industry. Nylon-6's superior mechanical properties and resistance to permeation make it the preferred choice for packaging materials. Additionally, caprolactam plays an integral role in the electronics sector, where it is used to create essential components for electronic devices, further bolstering the demand for caprolactam. Furthermore, caprolactam finds extensive usage in the

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production of industrial yarns, brushes, and fishing line materials. Caprolactam's versatility enables the creation of high-quality materials tailored to meet the specific requirements of diverse industries. This versatility in applications across different sectors contributes significantly to the positive development of the market.

In conclusion, caprolactam plays a pivotal role in the production of nylon 6 and has a significant impact on various industries. Its unique properties and versatility make it an essential component in the manufacturing of high-quality materials, thereby contributing to the market's growth.

## Key Market Drivers

### 1. Growing Use of Caprolactam in the Automotive Industry

The automotive industry is continuously striving to adopt lightweight materials that not only enhance fuel efficiency and reduce carbon emissions but also offer superior performance and durability. Caprolactam, a crucial element in the production of lightweight nylon 6, has emerged as an attractive solution for manufacturers. Its remarkable strength-to-weight ratio and excellent resistance to wear and tear make caprolactam-based materials an ideal choice for creating lighter and more sustainable vehicles. The demand for lightweight materials in the automotive sector continues to rise, driven by the industry's focus on improving efficiency and minimizing environmental impact.

Technological advancements, particularly in electric vehicles (EVs) and the increasing popularity of hybrid vehicles, have further fueled this demand. These advanced vehicles require lightweight and durable materials to optimize performance, range, and overall efficiency. Caprolactam-derived nylon 6, with its exceptional properties, has become the material of choice for various critical components in EVs, including engine covers, battery housings, and electrical connectors.

The Indian automotive industry has experienced remarkable growth, driven by factors such as rising disposable income, favorable government policies, and significant infrastructure development. As more people in India aspire to own vehicles, the demand for caprolactam and its associated high-performance materials continues to grow exponentially. This surge in demand presents a tremendous opportunity for caprolactam manufacturers and suppliers to cater to the expanding automotive market in India, contributing to the industry's sustainable growth.

### 2. Rise in Demand for Caprolactam in the Textile Industry

The textile industry is witnessing a significant surge in demand for high-quality textiles used in the manufacturing of clothing, sportswear, carpets, and more. Nylon fabrics, in particular, have gained immense popularity due to their exceptional strength, durability, and versatility, making them a top choice for various applications. Caprolactam, a vital ingredient, ensures the high-quality production of nylon fabrics that meet customer expectations and industry standards.

The sports industry has played a significant role in driving the demand for nylon fabrics. Sportswear, including activewear, athleisure wear, and performance apparel, relies heavily on the superior properties of nylon fabrics. These fabrics offer excellent moisture-wicking capabilities, stretchability, and durability, making them ideal for enhancing athletic performance and providing utmost comfort to athletes and fitness enthusiasts. The increasing interest in fitness activities, rising sports participation, and the growing athleisure trend have further contributed to the heightened demand for nylon fabrics. As more individuals engage in physical activities and prioritize stylish yet functional sportswear, the demand for nylon fabrics continues to soar, consequently driving the demand for caprolactam.

Additionally, changing consumer preferences and evolving fashion trends have contributed to the rise in demand for caprolactam in the textile industry. Today's consumers increasingly seek sustainable and eco-friendly materials in their clothing choices. Nylon,

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made from caprolactam, offers recyclability and repurposing options, aligning with the growing focus on sustainability. This aspect has significantly boosted the demand for caprolactam in the textile industry, meeting the evolving needs and values of environmentally conscious consumers.

### 3. Growing Demand for Caprolactam in the Construction Industry

The construction industry, which plays a pivotal role in shaping our built environment, demands not only strong but also environmentally resistant materials. Caprolactam, a key component in nylon production, emerges as a vital solution. Nylon exhibits exceptional mechanical properties, including high tensile strength, impact resistance, and abrasion resistance, making it an ideal choice for various construction applications such as pipes, cables, flooring, and insulation.

In India, the country has been experiencing a remarkable surge in infrastructure development. From residential buildings to commercial complexes, bridges, and roadways, diverse construction projects are underway. These projects necessitate the use of reliable and long-lasting materials capable of withstanding heavy loads and harsh weather conditions. Caprolactam-based nylon finds extensive applications in various infrastructure components, including geotextiles, reinforcing bars, and structural elements. The increasing focus on infrastructure development in India continues to drive the demand for caprolactam in the construction sector.

Furthermore, the construction industry is in a constant state of evolution, adopting new technologies and techniques to enhance efficiency and sustainability. Caprolactam-based materials, such as nylon fibers and composites, are now being utilized in innovative construction technologies like 3D printing, modular construction, and lightweight structures. The versatility of caprolactam enables the development of advanced construction materials that offer improved performance and durability, while also contributing to energy efficiency.

In line with global trends, the construction industry in India is increasingly highlighting the importance of sustainability and eco-friendly practices. Caprolactam-based materials, such as nylon, emerge as valuable contributors to sustainable construction due to their recyclability and longevity. By incorporating caprolactam in the production of eco-friendly building materials, the construction industry in India aligns with the growing demand for sustainable construction practices.

#### Key Market Challenges

##### 1. Lack of Availability of Raw Materials

The caprolactam market heavily relies on petroleum-based feedstocks, such as benzene and cyclohexane, which are derived from crude oil. The availability and price of these feedstocks are subject to market dynamics and global fluctuations in crude oil prices, influenced by factors such as supply and demand, geopolitical tensions, and environmental regulations. Disruptions in the supply chain, such as natural disasters or political conflicts in major oil-producing regions, can have a significant impact on the availability and cost of raw materials, affecting caprolactam production.

Geopolitical tensions and trade disputes between nations can also greatly influence the availability of raw materials for the caprolactam industry. Restrictions on imports or exports, tariffs, and geopolitical instability can disrupt the supply chain and lead to shortages of critical raw materials. For example, trade tensions between major caprolactam producers and consumers can result in trade barriers or export restrictions, making it challenging to ensure a steady supply of raw materials.

Moreover, the caprolactam industry faces challenges related to limited infrastructure for the production and storage of raw materials. Insufficient storage facilities, transportation constraints, and inadequate logistical networks can hinder the efficient flow of raw materials from producers to manufacturers. This can lead to delays, increased costs, and difficulties in maintaining a

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steady supply of raw materials for caprolactam production. Developing robust infrastructure and improving logistical capabilities are crucial for ensuring a reliable and efficient supply chain in the caprolactam industry.

## Key Market Trends

### 1. Surging Demand for Sustainable and Bio-Based Products

Consumers and businesses are increasingly recognizing the significant environmental impact of their choices, leading to a shift towards the adoption of sustainable products and materials with minimal ecological footprints. Caprolactam, a critical component in nylon production, is undergoing transformation to meet the demand for sustainable and bio-based alternatives. These products offer numerous advantages over conventional ones, as they are derived from renewable resources, reduce greenhouse gas emissions, and have a significantly lower carbon footprint.

To drive innovation and foster the development of sustainable solutions, industry players, academia, and research institutions are collaborating closely. Through such collaborative efforts, stakeholders can effectively share knowledge, resources, and expertise, accelerating the progress and widespread adoption of sustainable and bio-based caprolactam products.

## Segmental Insights

### End Product Insights

Within the category of end products, the Nylon-6 fibers segment emerged as the dominant player in the Indian Caprolactam Market in 2022. The growth of the nylon 6 fibers market segment is attributed to its increasing use in the textile industry. Nylon 6 fibers, known for their exceptional durability and strength, have become a preferred choice for various textile applications, including carpets, industrial yarns, and tire cords in the automotive sector. The versatility of nylon 6 continues to drive demand across industries, resulting in steady growth for nylon 6 fibers and subsequently contributing to the market's expansion.

Similarly, there is a growing demand for nylon 6 resins. These resins find versatile applications in packaging, textiles, and the automotive industry. Renowned for their outstanding strength, heat resistance, and chemical resistance properties, nylon 6 resins are increasingly chosen for various manufacturing needs. As demand continues to surge across these sectors, the nylon 6 resins market segment is set to witness significant growth, driven by these sector-specific demands.

### Application Insights

The Industrial Yarns segment is projected to experience rapid growth during the forecast period. This growth is driven by the rising demand for industrial applications and the need for high-strength, durable materials. Technological advancements in yarn manufacturing processes play a pivotal role in bolstering this market segment. Consequently, the industrial yarn market is poised for substantial growth, supported by these key drivers.

On the other hand, the demand for engineering resins and films is on the rise, particularly in the automotive and aerospace industries. There is a growing need for lightweight materials in these sectors. Additionally, there is an increasing call for high-performance films in packaging, driven by evolving regulations that emphasize improved product safety and durability. Consequently, the engineering resins and films market segment is experiencing upward trends as it caters to these evolving industry needs. Overall, both the industrial yarn and engineering resins and films markets are witnessing positive growth trajectories, driven by the demand for advanced materials and the continuous pursuit of enhanced performance and safety in various industries.

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West India emerged as the dominant player in the India Caprolactam Market in 2022, holding the largest market share in terms of both value and volume. The western region of India, particularly states like Gujarat and Maharashtra, is widely recognized for its well-developed industrial infrastructure. These states have fostered a highly favorable business environment characterized by robust logistical networks, an abundant pool of skilled labor, and supportive government policies, attracting both domestic and international investors. This conducive setting has established the western region of India as a prime destination for industrial development and investment.

### Key Market Players

Triveni Aromatics and Perfumery Private Limited

Polyarn Agencies Private Limited

Integral International Trading Company Limited

Manali Chemicals India Private Limited

Growell Resources & Management Private Limited

Parigon Exports Private Limited

### Report Scope:

In this report, the India Caprolactam Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

#### □ India Caprolactam Market, By Raw Material:

o □ Phenol

o □ Cyclohexane

#### □ India Caprolactam Market, By End Product:

o □ Nylon-6 Fibers

o □ Nylon-6 Resins

o □ Others

#### □ India Caprolactam Market, By Application:

o □ Engineering Resins and Films

o □ Industrial Yarns

o □ Textiles and Carpets

o □ Others

#### □ India Caprolactam Market, By Region:

o □ North India

o □ East India

o □ West India

o □ South India

### Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the India Caprolactam Market.

### Available Customizations:

India Caprolactam Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

#### Company Information

□ Detailed analysis and profiling of additional market players (up to five).

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