

Isocyanate Market by Type (MDI, TDI, Aliphatic, Others) & Application (Rigid Foam, Flexible Foam, Paints & Coatings, Adhesive & Sealants, and Elastomers & Binders) - Global Trends & Forecast to 2019

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Abstracts

Isocyanates are used to make various products, ranging from flexible or rigid lightweight foams to tough, stiff, and strong elastomers. This enables their use in variety of consumer and industrial applications. Some of the examples are thermal insulation of buildings, refrigerators, household furniture, automotive seating, packaging, cushioning, shoe soles. The major application of isocyanate is rigid foam, which accounts for a majority of their usage, followed by flexible foam, paints & coatings, adhesives & sealants, elastomers & binders, and other applications.

Of the three main isocyanate, methylene diphenyl diisocyanate (MDI) has been the most successful, as demonstrated by BASF (Germany). This success story is now spurred on by increased investment in the sector. TDI and aliphatic isocyanate are the sectors that have received the most funding, as the companies are investing to increase their isocyanate capacities by establishing new plants and expanding the capacities of the existing ones. BASF (Germany) and Bayer MaterialScience (Germany) appear to be breaking out as emerging winners. The share of aliphatic isocyanate and other isocyanate such as NDI is also increasing, driven by increased usage of paints & coatings, and adhesives & sealants.

The isocyanate market has a significant number of small as well as few big manufacturers. The companies in isocyanate market are segmented according to type of isocyanate produced by them. Some of the manufacturers focus on producing aromatic isocyanate (TDI & MDI), while others focus on producing aliphatic isocyanate



(HDI, IPDI) In the isocyanate market, the companies are focusing on geographic expansion to increase their presence around the globe. Major isocyanate producers are expanding their operations in emerging Asia-pacific countries, which are driving the isocyanate demand on account of the rise in their economic condition.

The isocyanate market has a specific set of raw materials, which are based on crude oil derivatives. Every isocyanate manufacturer uses different type of raw materials and ingredients to manufacture different types of isocyanate. The industry also lacks the need for bulk suppliers. The raw materials that are used in bulk are aniline, propylene, toluene, and benzene. These materials are not difficult to source, but their supply depends on crude oil production and price. The crude oil prices are very volatile and depend on various geo-political factors, so any rise in the price of crude oil will increase the price of raw materials for isocyanate. Price increases in raw materials force the manufacturers to increase the price of isocyanate-based products, which creates a threat of reduction in the demand.

This report analyzes various marketing trends and establishes the most effective growth strategy in the market. It identifies market dynamics such as the drivers, restraints, opportunities, burning issues, and winning imperatives. Major companies such as Ashai Kasei (Japan), BASF SE (Germany), Bayer MaterialScience (Germany), Chemtura Corporation (U.S.), Dow Chemical Company (U.S.), Evonik Industries (Germany), Hebei Cangzhou Dahua Group Co. Ltd (China), Huntsman Corporation (U.S.), Kumho Mitsui Chemicals Inc (South Korea), Mitsui Chemicals Inc (Japan), Vencorex (France), and Yantai Wanhua Polyurethanes Co. Ltd. (China) have also been profiled in this report.

Scope of the report

On the basis of region: Asia-Pacific China

Japan

India

Europe

Germany

Isocyanate Market by Type (MDI, TDI, Aliphatic, Others) & Application (Rigid Foam, Flexible Foam, Paints & Coa...



Italy

Belgium

U.K.

Russia

North America U.S.

Canada

The Middle East & Africa

Latin America

On the basis of types of Isocyanate: Methylene diphenly di-isocyanate (MDI)

Toluene di-isocyanate (TDI)

Aliphatic isocyanate

Others

On the basis of application: Rigid foam

Flexible foam

Paints & coatings

Adhesives & sealants



Elastomers & binders

Others



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About

The global isocyanates market has been segmented into major geographical regions—Asia-Pacific, Europe, North America, Latin America, and the Middle East & Africa—under various major applications such as rigid foams, flexible foams, paints & coatings, adhesives & sealants, elastomers & binders, and others. The types of isocyanates that are identified and included are MDI, TDI, aliphatic isocyanates, and others.

MDI is predominantly used to manufacture rigid polyurethane foams, and it is used in non-foam applications such as paints & coatings, adhesives & sealants, and elastomers. PU rigid foams are the largest application for MDI and have significantly greater market share than the MDI non-foam applications market share. These rigid foams are predominantly used in construction applications for insulation. Other applications include consumer appliances, packaging, industrial, and insulation. TDI is predominantly used to manufacture flexible polyurethane foams and a small part of it is used to manufacture rigid foams, coatings, adhesives & sealants, and elastomers. Flexible foams are used as cushioning material in furniture and transportation applications, mainly in beds and car seats.

Aliphatic isocyanates are used in the manufacture of paints & coatings, adhesives & sealants, and elastomers. These products have decent demand in construction, housing, packaging, electronics, and transportation industries. There are other isocyanates also such as NDI (naphthalene 1, 5-diisocyanate), m-TMXDI (m-tetramethylenexylene diisocyanate), PPDI (p-phenylene diisocyanate), and MIC (methyl isocyanate). These isocyanates are used in diverse applications such as production of pesticides, rubbers, elastomers, and adhesives. The isocyanates market size in terms of value was \$XX million in 2013.

Isocyanates are not only highly toxic and hazardous, and they also result in polyurethanes being heavily dependent on fossil fuels. This poses a serious sustainability issue for market participants which are not only looking to reduce dependence on fossil fuels to reduce environmental impact in order to maintain business continuance.

The highly volatile crude oil price is forcing the isocyanates manufacturers to increase the price of their MDI, TDI, aliphatic isocyanates, and derivatives based on them, which may further result in decrease in demand. Increasing global demand and unrest in the



Middle East in recent times have been primarily responsible for this. On the other hand, the market is constantly shifting towards a tighter regulatory structure with prominent regulatory bodies such as the EPA (Environmental Protection Agency) and REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) setting stringent guidelines for industry participants.

Research is already underway to develop toxic-free manufacturing processes for the production of diisocyanates. A prime example of this is market participants such as Dow Chemicals, BASF, and Huntsman have been exploring phosgene free routes to MDI. This will include processes such as by synthesis of methyl phenyl carbamate (MPC) from aniline and dimethyl carbonate (DMC) feedstock and condensation of MPC with formaldehyde to form dimethyl methylene diphenyl dicarbamate (MDC). Also, market leaders, such as Bayer MaterialScience, have been focussing on bio-based polyols that are used to produce polyurethanes. This trend for sustainable polyurethane solutions is expected to strengthen in the next five years as the industry moves towards an environment-friendly business model.



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