



Business Area
Polyurethane Chemicals

MDI



Demand for MDI

Global polyurethane use continues to grow rapidly. As demand for polyurethane increases, so does the need for isocyanates, key raw materials used in polyurethane production. MDI (methylene diphenyl diisocyanate) products are isocyanates commonly used to manufacture rigid foams, coatings, adhesives and elastomers.

Working with Chematur Engineering

Chematur offers state-of-the-art MDI technology to meet modern manufacturers' needs. MDI competencies include polymeric and pure MDA, polymeric MDI, MDI purification and modification, and brine purification technologies. Chematur services are available for a wide range of related processes, such as nitric acid, nitrobenzene, aniline, dinitrotoluene, toluene diamine and TDI.

Clients have full freedom to commercialize plant products. Service is customized, ranging from simple licensing to full turnkey projects. Finally, Chematur brings more than 40 years of experience designing and constructing plants that handle hazardous materials.

The MDI Process

The diagram on the opposite page breaks the MDI process into four main sections:

In the Polymeric MDA section (Wet Side), polymeric MDA, a mixture of MDA and its oligomers, is manufactured from aniline and formaldehyde by a continuous, liquid-phase process using HCl as catalyst. The brine byproduct is purified for sale.

In the Crude MDI section (Dry Side), phosgene is produced from carbon monoxide and chlorine. Crude MDI is produced by the continuous phosgenation of polymeric MDA in an aromatic solvent solution. In a series of separators, strippers and distillation columns, byproduct HCl, solvent, excess phosgene and impurities are removed from the reactor product. Recovered solvent and phosgene are recycled while the HCl is purified for sale and internal use.

In the final two sections, pure and polymeric MDI are obtained by continuous distillation of the Crude MDI. Liquid MDI and MDI prepolymers are made by highly flexible batch processes.

Plant Benefits

- Safe – Because it is consumed as quickly as it is produced, pure phosgene is never liquefied or stored. Redundant emergency systems are provided. Ambient air monitoring is provided to verify a safe operating environment is being maintained.
- Environmentally sound – Process materials are recovered from waste streams wherever possible. Remaining vent streams are cleaned to the required standards. Steam is produced from the incineration of liquid organic waste streams. The purified byproduct brine stream can be recycled to a chlor-alkali plant.
- No restrictions on production or sale of products – Chematur is a technology supplier, not a producer of MDI products.
- Flexible – Plants can be adjusted as needed to meet changing product split requirements.
- Quality oriented – Plants are designed to meet modern product quality standards.
- Derivatives – Plants include units for the conversion of pure MDI into liquid MDI and MDI prepolymers.
- Reduced staffing costs – Plants are designed and instrumented to minimize staffing requirements.

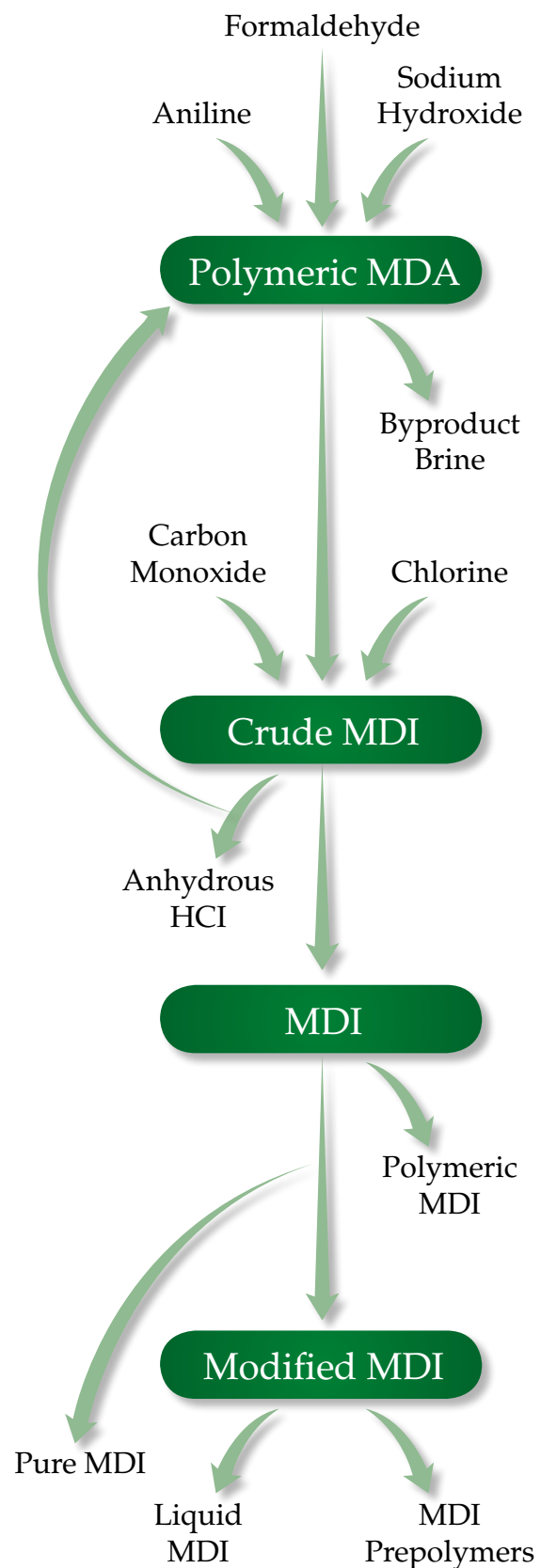
The Bottom Line

Chematur has been designing and constructing chemical plants for over 80 years. We specialize in working on global projects involving hazardous materials, and provide customized engineering services. Chematur engineers help clients with plant needs.

Chematur has always remained committed to finding ways to continuously improve its processes. No part of a process is considered insignificant. Chematur's isocyanate processes are continuously upgraded to increase safety (for operators, the community and the environment), improve product quality and reduce operating costs. The MDI process is highly flexible, so producers can adjust product splits as sales demand changes.

The result? In addition to reliably producing high-quality MDI products, Chematur plants are extremely cost-effective. If you are considering MDI production, research Chematur.

MDI Process



Chematur Engineering AB, a member of the Chematur Engineering Group, is an independent engineering company whose main activities are marketing of process know-how and supply of chemical plants. Chematur Engineering is equipped with full capabilities for implementing entire plant projects on a turnkey basis. Altogether the Chematur Engineering Group companies have supplied more than 1000 plants to customers worldwide.

Proprietary technologies and licence agreements secure a state of the art technology base, giving the Chematur Engineering Group the advantage of being able to offer our clients complete processes in many fields.

