Introduction to Modified MDI

What is modified MDI

As a derivative of the MDI series products, modified MDI is currently commonly used technical extension of pure MDI and polymeric MDI, which could be widely used in such sectors as slab polyols, elastomers, coatings and adhesives by providing its special properties of usage and processing due to differences of product structure design and synthesis process.

There are various kinds of modified MDI, and several MDI manufacturers giants have also been stepping up the research and development of modified MDI, which has enriched modified MDI types. And the products that have been produced and used in a large scale are as followed:

1. C-MDI
C-MDI, which is also called liquefaction MDI in the market, is formed by the self-aggregation of 44-MDI. Currently, various MDI manufacturers have their own products and brands, such as 100LL of Wanhua Chemical, MM103C of BASF and 2020 of Huntsman which all belong to this series. (This kind of modified MDI is excluded and is called liquefaction MDI according to general understanding in the market)

2. Polyols Modification

Polyols Modification is also known as carbamate modification and is formed by reaction of 44-MDI and 24-MDI in a certain proportion.

3. Blended Modification

Blended Modification is usually formed by the mix of polymeric MDI and pure MDI, 24-MDI and polyols modification MDI or C-MDI in a certain proportion.

-China Modified MDI Market to Have a Prospective Growth-

⚠️ Comparison between modified MDI and TM system
Modified MDI has higher production-tolerance level and lower odour than TM system. In current context of requirement for low-odour automobile interior, the modified MDI has very bright application prospects. Though with a low expansion ratio, modified MDI can fully meet the requirement for the density of car seats of 40–45 kg/m³. In addition, thanks to its resistance to low-temperature crystallization and high safety level, modified MDI can make up for pure MDI's deficiency of inconvenience in storage and transportation.

The big obstacle to application of modified MDI is its high costs. In the formulation, modified MDI has lower proportion of PMDI to polyol mixture than the TM system. But which one is cheaper under the circumstance that prices of both PMDI and TDI are at high level? The following is the cost calculation of raw materials aimed at figuring out which one is cheaper.

Comparison between raw-material costs of modified MDI and TM system(Take the prices on September 12 as an example)

<table>
<thead>
<tr>
<th></th>
<th>Modified MDI</th>
<th>TM system (taking TM50 as the example)</th>
</tr>
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<tbody>
<tr>
<td>Price of polyol mixture (RMB 1,000 /ton)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Price of PMDI (RMB1,000 /ton)</td>
<td>32</td>
<td>TDI 40 + MDI 42</td>
</tr>
<tr>
<td>Proportion of PMDI to polyol mixture</td>
<td>100 : 60</td>
<td>100 : 45</td>
</tr>
<tr>
<td>Raw materials cost</td>
<td>21.375</td>
<td>23.068</td>
</tr>
</tbody>
</table>
From the comparison, it can be seen that modified MDI is cheaper than TM. If the high price level of MDI and TDI stays, the advantage of using modified MDI will become more prominent.

**Demand Side**

<table>
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<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017E</th>
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<tr>
<td>Consumption/kt</td>
<td>43</td>
<td>47</td>
<td>70</td>
<td>78</td>
<td>87</td>
<td>105</td>
</tr>
<tr>
<td>Growth rate</td>
<td>16.22%</td>
<td>9.30%</td>
<td>48.94%</td>
<td>11.86%</td>
<td>10.01%</td>
<td>20%</td>
</tr>
</tbody>
</table>

From the table, it can be seen that first, modified MDI has seen rapid growth in recent years, with double-digit growth most of the time; Second, the explosive growth in 2014 was a result of the increased investment in MDI production capacity by manufacturers. Only when the supply is expanded, can the demand for modified MDI be spurred; Third, new capacities of Tosoh Silica, Wanhua Chemical and Huntsman will be released in 2017, resulting in an estimated growth of over 20%.

**Supply Side**

Over the past few years, BASF and Covestro have firmly occupied the first and second places in supplying modified MDI by relying on the imports from
abroad. With Wanhua Chemical's ongoing release of its new production capacity of modified MDI, the company will overtake BASF as the largest supplier of modified MDI in China in 2017. And Huntsman, a well-known modified MDI producer, is also making continuous efforts to overtake its rivals. Its new MDI capacity will be released at the end of the year. Thus it is expected that the company will overtake BASF as the second largest supplier of modified MDI in China. Besides, some of the domestic manufacturers with mature polyurethane technologies, such as Dongda Inov and Dongguan Hongdi, have a relatively stable market share and are still expanding.

⚠️ **Downstream Application**

Modified MDI is mainly used for producing moulded foam, which is primarily used to make car seats, high-grade toys, furniture and cushions. In addition, it is used for making shoes as well as adhesive and elastomer. With strict downstream requirement for odour and VOC (volatile organic compounds), there is large room for the growth of modified MDI, particularly in the field of water blown polyurethane foams.
To sum up, both the continuous release of new capacities and the growing downstream demand indicate a bright prospect for the growth of modified MDI.
From the above analysis, it can be seen that the domestic modified MDI market is developing rapidly. But how about the current market demand for the modified MDI? You need a detailed report! To meet the requests of our customers and let them know more about the market of modified MDI, PUDaily specially prepares the Research Report on the Market of Modified MDI. It will give more detailed analysis of the present and future modified MDI market, thus enabling you to have a comprehensive understanding of the market with "one book"!
1 Introduction: Modified MDI Products

1.1 Production Process (8019,2412,1333,5412)

1.2 Application (Footwear, Model foam and CASE)

2 Raw Materials Market in 2017

2.1 Pure MDI

2.1.1 Supply/Demand

2.1.2 Price Trend

2.1.3 Demand Breakdown

2.2 MDI-50

2.2.1 Supply/Demand

2.2.2 Price Trend

2.2.3 Demand Breakdown
2.3 Polymeric MDI

2.3.1 Supply/Demand

2.3.2 Price Trend

2.3.3 Demand Breakdown

3 China Modified MDI Supply in 2017

3.1 Modified MDI Supply Situation in 2017

3.1.1 Major Modified MDI Manufacturers and Capacity and Output

3.1.1.1 Wanhua Chemical

3.1.1.2 Covestro

3.1.1.3 BASF

3.1.1.4 Huntsman

3.1.1.5 Tosoh

3.1.1.6 Dow Chemical

3.1.1.7 Shandong INOV

3.1.1.8 Chemtura (Nanjing)

3.1.2 Market Share (For 8019, 2412, 1333, 5412, etc.)

3.2 Marketing Strategy Comparison among Major Modified MDI Suppliers

3.2.1 Wanhua Chemical
a) Pricing Strategy

b) Marketing Channel
   - Direct Sale and Distributors
   - Name of Distributors

c) Targeted Market Segment (Application Fields)

d) Product Development

3.2.2 Covestro

a) Pricing Strategy

b) Marketing Channel
   - Direct Sale and Distributors
   - Name of Distributors

c) Targeted Market Segment (Application Fields)

d) Product Development

3.2.3 BASF

a) Pricing Strategy

b) Marketing Channel
   - Direct Sale and Distributors
   - Name of Distributors
c) Targeted Market Segment (Application Fields)

d) Product Development

3.2.4 Huntsman

a) Pricing Strategy

b) Marketing Channel

• Direct Sale and Distributors

• Name of Distributors

c) Targeted Market Segment (Application Fields)

d) Product Development

3.2.5 Tosoh

a) Pricing Strategy

b) Marketing Channel

• Direct Sale and Distributors

• Name of Distributors

c) Targeted Market Segment (Application Fields)

d) Product Development

3.2.6 Dow Chemical

a) Pricing Strategy
b) Marketing Channel

- Direct Sale and Distributors
- Name of Distributors

c) Targeted Market Segment (Application Fields)

d) Product Development

3.2.7 Shandong INOV

a) Pricing Strategy

b) Marketing Channel

- Direct Sale and Distributors
- Name of Distributors

c) Targeted Market Segment (Application Fields)

d) Product Development

3.2.8 Chemtura (Nanjing)

a) Pricing Strategy

b) Marketing Channel

- Direct Sale and Distributors
- Name of Distributors

c) Targeted Market Segment (Application Fields)
d) Product Development

3.3 China Modified MDI Import and Export

3.3.1 Import by Manufacturer and Downstream Factories

3.3.2 Export by Manufacturer

4 China Modified MDI Demand in 2017

4.1 Price Trend (by the case of the kind of Wanhua 8019)

4.2 Cost and Profit (by the case of the kind of Wanhua 8019)

4.3 Modified MDI Downstream Consumption (Footwear, Model foam and CASE)

4.3.1 Footwear

- Polyether Polyols based Prepolymer

  a) Current Industry Situation

  b) Major Modified MDI Suppliers: Product, Supply Volume, Market Share

  c) Brief Introduction to Major Producers

  d) Percentage of Self-formulation of Modified MDI

  e) Future Development Trend

- Polyester Polyols based Prepolymer (same as 4.3.1)
4.3.2 PU Molded Foam in

- Automobile (same as 4.3.1)
- Furniture & Bedding (same as 4.3.1)

4.3.3 Engineering Elastomer

- Gasket (same as 4.3.1)
- Padding (same as 4.3.1)

4.3.4 Adhesive

- Rubber Binder (Running Track) (same as 4.3.1)
- Foam Binder (same as 4.3.1)
- Wood Binder (same as 4.3.1)
- Panel Binder (same as 4.3.1)

5 China Modified MDI Future Five Years Trend

5.1 China Modified MDI Future Supply Trend

5.2 China Modified MDI Future Demand Trend
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This article only displays the contents of the report. The report will give you more detailed and professional analysis. If you want to know more about the report, please call our analyst responsible for analyzing the modified MDI market. He will discuss with you the future modified MDI market! We're waiting for you!

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