At Dow Polyurethanes, our goal is simple:

To make a difference in everyday living, through the power of people, science products, and services.

Through the power of polyurethanes (PU) chemistry, you possess the potential to create unlimited value within your industry. Dow Polyurethanes’ global resources and expertise can help you design products that provide comfort, convenience, and safety.

Making a difference means more than being the largest global supplier of polyurethane materials. It also means having in-depth local market knowledge, providing exceptional quality, and responding efficiently to your needs. A commitment to innovation, combined with a long-term investment in the industry, makes Dow a leader in technology, safety, environmental awareness, and industry advancement.

We can make a difference!
Products That Meet Your Specific Applications

By working closely with our customers to develop products that meet or exceed the demands of a variety of applications, Dow Polyurethanes has built one of the broadest product portfolios in the industry. As a global supplier of rigid and flexible foams, adhesives, sealants, coatings, elastomers, agrifibers – and more – we provide the right products and excellent service 24 hours a day, seven days a week.

In addition, Dow is the world’s largest producer of polyether polyols, a leading supplier of quality aromatic isocyanates (e.g., MDI and TDI), and the world’s largest producer of propylene oxide, an essential component of polyether polyols. We have the products and services you need to succeed in a variety of applications and markets, including:

- Appliances
- Automotive
- Bedding
- Biocomposite binders
- Carpet backing
- Construction
- Furniture
- Packaging
- Recreation

Innovation That Makes a Difference to Your Bottom Line

If you want products and solutions that can make a difference in your business and to your customers, count on Dow Polyurethanes. As a pioneer in polyurethane technology, Dow is committed to developing innovative polyurethane applications that enrich the quality of life while improving your bottom line.

And by getting everything you need from just one supplier, you cut costs and save time.

Enhancing safety and the environment

Committed stewardship and safe management of our world’s resources are important global considerations that we take seriously. That’s why Dow provides innovative solutions, including unique low volatile organic compound products/materials, and economically viable recycling options to help all our customers be a part of the environmental effort.

Dow also offers new technologies for making your business more efficient – and improving employee health and safety. Our technical support team is ready to assist you in developing new technologies and improving worker safety procedures.

Making a difference with new ideas

If you’re interested in exploring new growth opportunities and developing new ideas for polyurethanes, contact Dow. We’ll work with you to develop new materials, applications, formulations, and processes that can differentiate your products and sharpen your competitive edge.

For your convenience, information on specific Dow polyurethane materials for your applications is included in the pocket of this brochure.
Business Vision and Initiatives

Customer Interface
Dow is constantly researching and finding innovative ways to leverage our existing expertise across new marketplaces, and in so doing, integrating electronic technology into everything we do – how we work, how we buy, how we sell, and how we’ll grow.

As Dow embraces electronic technology, we are able to offer our customers value in the form of convenient new capabilities, efficiencies, and solutions.
- Around-the-clock availability of product information, resources, and contact information
- Easy access to product information and technical data sheets
- Immediate access to news about Dow innovations and new products

Providing the Ultimate in Customer Convenience
MyAccount@Dow is a secure, customer-specific, interactive sales channel that offers online access to customer relationship information:
- Order entry
- Check the real-time status of any order you’ve placed in the last 90 days
- Order, sales, payment reports
- Purchase history
- Secure drop box for electronic file exchange
- Easy access to technical information, product information, and safety guidelines
- External net-meeting capability
- Flexible order-entry change or repeat orders, rather than re-entering them, with just a mouse-click
- EZ Pay-Electronic Funds Transfer (EFT) capabilities that allow you to pay invoices and receive credits electronically with options to track invoices

Available 24 hours a day, seven days a week and fully integrated into SAP for access to real-time global data, MyAccount@Dow acts as a direct channel for customer communication and collaboration. It dramatically expands the possibilities to enhance our existing customer relationships and expand our reach.

MyAccount@Dow is an upgrade in how we do business. It creates yet another choice for our customers, making it easier and more convenient to do business with Dow.

Quality Policy
Quality performance is a commitment to excellence by each Dow employee. It is achieved by teamwork and a process of continuous improvement.

We are dedicated to being the leader in providing quality products and services that meet or exceed the expectations of our customers.

Quality management plays an important role by ensuring that Dow can produce and deliver the quality products and services expected by its customers.

Six Sigma
In addition to a number of specific quality programs, Dow embraces Six Sigma in pursuit of business excellence. Six Sigma coordinates with and builds on other quality initiatives, with the goal of creating an environment in which anything less than Six Sigma quality is unacceptable.

Dow is one of the few premier companies that focuses on customers as the basis of its Six Sigma efforts. Our objective is to create customer loyalty based on Six Sigma level quality. The desired outcome is unparalleled business excellence.
VORANATE T-80 TDI Products

VORANATE* toulene diisocyanates are ideal for flexible slabstock and flexible molded foam applications. Choose from two types: low acidity (Type I), and high acidity (Type II).

Both VORANATE T-80 products are well suited for use in high resilience molding, TDI molding, formulating (systems), and flexible slabstock applications. And both are produced in accordance with exacting standards of quality and product purity.

*Trademark of The Dow Chemical Company
VORANATE T-80 TDI Products

VORANATE T-80
Type I TDI

VORANATE T-80 (Type I) TDI may be used in automotive seating, furniture cushioning, mattress cushioning, and specialty foams applications.

<table>
<thead>
<tr>
<th>Product</th>
<th>Weight % NCO</th>
<th>Functionality</th>
<th>Isocyanate Equiv. Wt.</th>
<th>Flash Point°</th>
<th>Density lb/gal (g/cc)</th>
<th>Viscosity°</th>
<th>Viscosity</th>
<th>Viscosity</th>
<th>Viscosity</th>
</tr>
</thead>
<tbody>
<tr>
<td>VORANATE T-80</td>
<td>48.2</td>
<td>2.0</td>
<td>87.1</td>
<td>260 (°C)</td>
<td>10.2 (127)</td>
<td>2.5</td>
<td>2.2</td>
<td>1.3</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Note: These are typical properties only, and are not to be regarded as sales specifications.

° PMCC

° Viscosity is measured in centistokes.
**VORANATE T-80**

**Type II TDI**

High-acidity VORANATE T-80 (Type II) TDI is well suited for use in automotive seating, furniture applications, mattress cushioning, and specialty foams.

<table>
<thead>
<tr>
<th>Product</th>
<th>Weight % NCO</th>
<th>Functionality</th>
<th>Isocyanate Equiv. Wt.</th>
<th>Flash Point°F (°C)</th>
<th>Density lb/gal (g/cc)</th>
<th>Viscosity @ 77°F</th>
<th>Viscosity @ 100°F</th>
<th>Viscosity @ 150°F</th>
<th>Viscosity @ 210°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>VORANATE T-80 (Type II)</td>
<td>48.2</td>
<td>2.0</td>
<td>87.1</td>
<td>260 (127)</td>
<td>10.2 (1.22)</td>
<td>2.5</td>
<td>2.2</td>
<td>1.3</td>
<td>1.0</td>
</tr>
</tbody>
</table>

*Note: These are typical properties only, and are not to be regarded as sales specifications.*

1. PMCC
2. Viscosity is measured in centistokes.
Dow MDI-Based Products

From high density foams, adhesives and sealants, elastomers and coating applications, Dow MDI-based isocyanate products can be used in a wide array of applications. Choose from ISONATE* MDI polymers, or PAP* polymeric MDI products to meet your specific needs.

*Trademark of The Dow Chemical Company
ISONATE MDI-Based Products

ISONATE MDI Isocyanates

ISONATE MDI isocyanates are characterized by their viscosity, purity, low acidity and reproducible reactivity. These functional products are key ingredients in preparing prepolymers for polyurethane processing. ISONATE MDI products are designed for the manufacture of thermoplastic polymers suitable for extrusion, injection molding, or solution applications in adhesives, sealants, and elastomers.

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Weight % NCO</th>
<th>Functionality</th>
<th>Isocyanate Equiv. Wt</th>
<th>Flash Point(°F (°C))</th>
<th>Density lb/gal (g/cc)</th>
<th>Viscosity(°F) @ 77°F</th>
<th>Viscosity @ 100°F</th>
<th>Viscosity @ 150°F</th>
<th>Viscosity @ 210°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISONATE 181</td>
<td>MDI prepolymer</td>
<td>23.0</td>
<td>2.0</td>
<td>182</td>
<td>&gt;351 (&gt;177)</td>
<td>10.2 (1.22)</td>
<td>770</td>
<td>300</td>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>ISONATE 240</td>
<td>MDI prepolymer</td>
<td>18.7</td>
<td>2.0</td>
<td>225</td>
<td>&gt;351 (&gt;177)</td>
<td>10.2 (1.22)</td>
<td>1,500</td>
<td>550</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>ISONATE 125M</td>
<td>Pure MDI</td>
<td>33.5</td>
<td>2.0</td>
<td>125.5</td>
<td>&gt;351 (&gt;177)</td>
<td>9.9 (1.18)</td>
<td>solid</td>
<td>5</td>
<td>2.8</td>
<td>1.5</td>
</tr>
<tr>
<td>ISONATE 125MDR</td>
<td>Pure MDI</td>
<td>33.5</td>
<td>2.0</td>
<td>125.5</td>
<td>&gt;351 (&gt;177)</td>
<td>9.85 (1.18)</td>
<td>solid</td>
<td>5</td>
<td>2.8</td>
<td>1.5</td>
</tr>
<tr>
<td>ISONATE 143L</td>
<td>Modified MDI</td>
<td>29.2</td>
<td>2.1</td>
<td>144.5</td>
<td>&gt;351 (&gt;177)</td>
<td>10.1 (1.21)</td>
<td>33</td>
<td>20</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>ISONATE 50 O,P’</td>
<td>Pure MDI</td>
<td>33.5</td>
<td>2.0</td>
<td>125.5</td>
<td>&gt;351 (&gt;177)</td>
<td>10.0 (1.20)</td>
<td>10</td>
<td>4.1</td>
<td>3.6</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Note: These are typical properties only, and are not to be regarded as sales specifications.

(1) PMCC
(2) Viscosity is measured in centistokes.

Consider ISONATE MDI products for these applications:

- Thermoplastic Polyurethanes
- Fibers
- Sealants
- Coatings
- Automotive Bumpers, Fenders, Fascia
- Integral-skin Plastics
- Tires and Wheels
- Industrial Wheels
- Shoe Soles
- Recreational Goods
- Mechanical Goods
Dow offers PAPI polymeric MDI products for a full range of low- to high-density semi-rigid foams, rigid foams, and structural RIM processing. They offer good resistance to heat distortion, and excellent strength properties at low densities.

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Weight % NCO</th>
<th>Functionality</th>
<th>Isoyanate Equiv. Wt.</th>
<th>Flash Point °F (°C)</th>
<th>Density lb/gal (g/cc) @ 77°F</th>
<th>Viscosity @ 77°F</th>
<th>Viscosity @ 100°F</th>
<th>Viscosity @ 150°F</th>
<th>Viscosity @ 210°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAPI 20</td>
<td>Polymeric MDI</td>
<td>30.4</td>
<td>3.2</td>
<td>138</td>
<td>&gt;400 (&gt;204)</td>
<td>10.4 (1.24)</td>
<td>1,800</td>
<td>1,000</td>
<td>420</td>
<td>–</td>
</tr>
<tr>
<td>PAPI 27</td>
<td>Polymeric MDI</td>
<td>31.4</td>
<td>2.7</td>
<td>134</td>
<td>&gt;400 (&gt;204)</td>
<td>10.3 (1.23)</td>
<td>180</td>
<td>65</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>PAPI 94</td>
<td>Polymeric MDI</td>
<td>32.0</td>
<td>2.3</td>
<td>131.5</td>
<td>&gt;400 (&gt;204)</td>
<td>10.2 (1.23)</td>
<td>50</td>
<td>26</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>PAPI 95</td>
<td>Polymeric MDI</td>
<td>31.5</td>
<td>2.3</td>
<td>133.5</td>
<td>&gt;400 (&gt;204)</td>
<td>10.2 (1.23)</td>
<td>85</td>
<td>40</td>
<td>10</td>
<td>–</td>
</tr>
<tr>
<td>PAPI 901</td>
<td>Polymeric MDI</td>
<td>31.8</td>
<td>2.3</td>
<td>132</td>
<td>&gt;400 (&gt;204)</td>
<td>10.2 (1.22)</td>
<td>55</td>
<td>27</td>
<td>9</td>
<td>3.5</td>
</tr>
<tr>
<td>PAPI 580N</td>
<td>Polymeric MDI</td>
<td>30.5</td>
<td>3.0</td>
<td>136.5</td>
<td>&gt;400 (&gt;204)</td>
<td>10.3 (1.24)</td>
<td>700</td>
<td>300</td>
<td>130</td>
<td>–</td>
</tr>
</tbody>
</table>

Note: These are typical properties only, and are not to be regarded as sales specifications.

PMCC
Viscosity is measured in centistokes.

Choose PAPI polymeric MDI products for numerous applications, including:

- Automotive Interior Trim
- Automotive Seating
- Building
- Industrial
- Coatings
- Adhesives
- Packaging
- Structural Foam
- Pour-in-place Insulation
- Laminated Panel Cores
- Burnstock Polyisocyanurate
- Furniture
Dow provides a wide variety of VORANOL® polyether polyols with an extensive selection of performance and processing attributes. Designed to meet your needs, this large family of polyols is sure to provide the balance of properties needed within rigid and molded foam and isocyanate product formulations.

*Trademark of The Dow Chemical Company
## VORANOL Polyether Polyols

### VORANOL Diol Polyether Polyols

The diol line of VORANOL polyether polyols are well suited for use in numerous applications, including microcellular reaction injection molding (RIM), prepolymers, sealants, and other polyol blends.

<table>
<thead>
<tr>
<th>Product</th>
<th>OH Number</th>
<th>Functionality</th>
<th>Average Mol. Wt.</th>
<th>Initiator</th>
<th>Flash Point°C</th>
<th>Density lb/gal (g/cc)</th>
<th>Viscosity @ 77°F</th>
<th>Viscosity @ 100°F</th>
<th>Viscosity @ 150°F</th>
<th>Viscosity @ 210°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>VORANOL 220-028</td>
<td>28</td>
<td>2.0</td>
<td>4,000</td>
<td>propylene glycol</td>
<td>446 (230)</td>
<td>8.36 (1.00)</td>
<td>880</td>
<td>465</td>
<td>140</td>
<td>53</td>
</tr>
<tr>
<td>VORANOL 220-056N</td>
<td>56</td>
<td>2.0</td>
<td>2,000</td>
<td>propylene glycol</td>
<td>390 (199)</td>
<td>8.34 (1.00)</td>
<td>300</td>
<td>160</td>
<td>60</td>
<td>23</td>
</tr>
<tr>
<td>VORANOL 220-094</td>
<td>94</td>
<td>2.0</td>
<td>1,200</td>
<td>propylene glycol</td>
<td>435 (224)</td>
<td>8.43 (1.01)</td>
<td>175</td>
<td>92</td>
<td>31</td>
<td>13</td>
</tr>
<tr>
<td>VORANOL 220-110N</td>
<td>110</td>
<td>2.0</td>
<td>1,000</td>
<td>propylene glycol</td>
<td>360 (182)</td>
<td>8.37 (1.00)</td>
<td>160</td>
<td>80</td>
<td>28</td>
<td>11</td>
</tr>
<tr>
<td>VORANOL 220-260</td>
<td>260</td>
<td>2.0</td>
<td>432</td>
<td>propylene glycol</td>
<td>330 (165)</td>
<td>8.43 (1.01)</td>
<td>75</td>
<td>33</td>
<td>12</td>
<td>4.7</td>
</tr>
<tr>
<td>VORANOL 220-530</td>
<td>530</td>
<td>2.0</td>
<td>212</td>
<td>aniline</td>
<td>325 (163)</td>
<td>8.39 (1.00)</td>
<td>solid</td>
<td>6,000</td>
<td>200</td>
<td>13</td>
</tr>
<tr>
<td>VORANOL 222-029</td>
<td>29</td>
<td>2.0</td>
<td>4,000</td>
<td>propylene glycol</td>
<td>420 (216)</td>
<td>8.49 (1.02)</td>
<td>790</td>
<td>410</td>
<td>168</td>
<td>62</td>
</tr>
<tr>
<td>VORANOL 222-056</td>
<td>56</td>
<td>2.0</td>
<td>2,000</td>
<td>propylene glycol</td>
<td>&gt;420 (&gt;216)</td>
<td>8.46 (1.01)</td>
<td>321</td>
<td>168</td>
<td>63</td>
<td>25</td>
</tr>
</tbody>
</table>

**Note:** These are typical properties only, and are not to be regarded as sales specifications.

* PMCC
* Viscosity is measured in centistokes.

### Key to Six-Digit Product Numbers for VORANOL Polyether Polyols

<table>
<thead>
<tr>
<th>First Cluster</th>
<th>Second Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>First digit:</td>
<td>Three digits:</td>
</tr>
<tr>
<td>2</td>
<td>OH (hydroxyl number)</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Example**

**VORANOL 220-056**
- Used for elastomers
- Diol
- All propylene oxide
- Hydroxyl number of 56
Twenty-three different products comprise this family of triol polyether polyols. Choose from a broad range of molecular weights, viscosities, hydroxyl contents, densities, and flash points to better meet your specifications for polyurethane applications.

| Product       | OH Number | Functionality | Average Mol. Wt. | Initiator | Flash Point°F (°C) | Density lb/gal (g/cc) | Viscosity@ 77°F | Viscosity@ 100°F | Viscosity@ 150°F | Viscosity@ 210°F |
|---------------|-----------|---------------|------------------|-----------|-------------------|-----------------------|----------------|----------------|----------------|----------------|--------------------|
| VORANOL 225   | 673       | 3.0           | 250              | glycerine | 370 (188)         | 9.07 (1.016)          | 850            | 285            | 40             | 11             |
| VORANOL 230-056 | 56       | 3.0           | 3,000             | glycerine | 440 (227)         | 8.43 (1.01)           | 475            | 235            | 77             | 28             |
| VORANOL 230-112 | 112     | 3.0           | 1,500             | glycerine | 350 (177)         | 8.46 (1.01)           | 297            | 135            | 43             | 17             |
| VORANOL 230-238 | 238     | 3.0           | 700              | glycerine | 500 (260)         | 8.59 (1.03)           | 238            | 90             | 29             | 10             |
| VORANOL 230-660 | 673      | 3.0           | 250              | glycerine | 370 (188)         | 9.07 (1.02)           | 850            | 210            | 46             | 11             |
| VORANOL 232-027 | 28       | 3.0           | 6,000             | glycerine | 435 (224)         | 8.48 (1.01)           | 1,180          | 640            | 220            | 86             |
| VORANOL 232-034 | 34       | 3.0           | 4,900             | glycerine | 365 (185)         | 8.49 (1.01)           | 860            | 435            | 147            | 61             |
| VORANOL 232-035 | 34       | 3.0           | 4,900             | glycerine | 435 (224)         | 8.45 (1.02)           | 860            | 440            | 140            | 52             |
| VORANOL 235-056 | 56       | 3.0           | 3,000             | glycerine | 430 (221)         | 8.45 (1.012)          | 450            | 225            | 90             | 38             |
| VORANOL 270    | 238       | 3.0           | 700              | glycerine | 500 (260)         | 8.59 (1.03)           | 238            | 90             | 29             | 10             |
| VORANOL 271    | 34        | 3.0           | 4,900             | glycerine | 365 (185)         | 8.49 (1.02)           | 860            | 435            | 147            | 61             |
| VORANOL 280    | 280       | 7.0           | 1,402             | sucrose/ glycerine | 380 (193) | 9.17 (1.009)       | 3,311          | 1,055          | 190            | 50             |
| VORANOL 415    | 28        | 3.0           | 6,000             | glycerine | 435 (224)         | 8.48 (1.01)           | 1,180          | 640            | 220            | 86             |
| VORANOL 550    | 541-564   | 4.9           | 500              | sucrose/ glycerine | 320 (160) | 9.54 (1.143)       | 29,000         | 6,900          | 775            | 91             |
| VORANOL 3010   | 56.5      | 3.0           | 3,000             | glycerine | 430 (221)         | 8.45 (1.01)           | 475            | 250            | 87             | 33             |
| VORANOL 3136   | 54        | 3.0           | 3,100             | glycerine | >392 (>200)       | 8.48 (1.02)           | 460            | 250            | 85             | 34             |
| VORANOL 3512A  | 48        | 3.0           | 3,500             | glycerine | 449 (232)         | 8.48 (1.02)           | 555            | 285            | 97             | 40             |

Note: These are typical properties only, and are not to be regarded as sales specifications.

PMCC

Viscosity is measured in centistokes.

Continued on next page
### VORANOL Triol Polyether Polyols – continued

<table>
<thead>
<tr>
<th>Product</th>
<th>OH Number</th>
<th>Functionality</th>
<th>Average Mol. Wt.</th>
<th>Initiator</th>
<th>Flash Point⁽¹⁾ °F (°C)</th>
<th>Density lb/gal (g/cc) @ 77°F</th>
<th>Viscosity⁽²⁾ @ 100°F</th>
<th>Viscosity @ 150°F</th>
<th>Viscosity @ 210°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>VORANOL 4701</td>
<td>34</td>
<td>3.0</td>
<td>4,900 glycerine</td>
<td>365 (185)</td>
<td>8.49</td>
<td>860</td>
<td>435</td>
<td>147</td>
<td>61</td>
</tr>
<tr>
<td>VORANOL 4703</td>
<td>34</td>
<td>3.0</td>
<td>4,900 glycerine</td>
<td>435 (224)</td>
<td>8.45</td>
<td>860</td>
<td>440</td>
<td>140</td>
<td>52</td>
</tr>
<tr>
<td>VORANOL 5815</td>
<td>28</td>
<td>3.0</td>
<td>6,000 glycerine</td>
<td>435 (224)</td>
<td>8.48</td>
<td>1,180</td>
<td>640</td>
<td>220</td>
<td>86</td>
</tr>
</tbody>
</table>

**Note:** These are typical properties only, and are not to be regarded as sales specifications.

⁽¹⁾PMCC  
⁽²⁾Viscosity is measured in centistokes.

### Key to Six-Digit Product Numbers for VORANOL Polyether Polyols

**First Cluster**
- **First digit:** 2 = elastomers, sealants, coatings, adhesives market areas
- **Second digit:** Nominal functionality  
  - 2 = Diol  
  - 3 = Triol, etc.  
- **Third digit:** 0 = All P.O. (propylene oxide)  
  - 1 = Less than 10% E.O. (ethylene oxide) capped  
  - 2 = Less than 20% E.O. capped  
  - 3 = Less than 30% E.O. capped  
  - 4 = More than 30% E.O. capped  
  - 5 = Internal E.O.

**Second Cluster**
- **Three digits:** OH (hydroxyl) number

**Example**
- VORANOL 220-056  
  - Used for elastomers  
  - Diol  
  - All propylene oxide  
  - Hydroxyl number of 56

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For additional information about Dow Polyurethanes, including specific product data sheets, safety & handling guidelines, or Material Safety Data (MSD) sheets, contact The Dow Chemical Company Customer Information Group for your area:

- U.S. and Canada: 1-800-441-4DOW(4369)  
- Mexico: 00-52-5-201-4700  
- Latin America: 55-115-1889-222  
- Europe: 32-3-450-2240  
- Pacific: 60-3-7958-3392  
- Brazil: 55-115-1889-222  
- www.polyurethanes.com

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Published January 2003
The specialty line of VORANOL*, VORALUX* and SPECFLEX* polyether polyols gives you a wide variety of functionalities, offering sucrose/glycerine-initiated products, amine-initiated products, and copolymer polyols designed to meet the exacting requirements of your foam applications.

*Trademark of The Dow Chemical Company
### Specialty Polyether Polyols

#### Sucrose/Glycerine-Initiated Products

The large family of sucrose/glycerine-initiated VORANOL polyether polyols offers numerous differentiated products to meet your specific needs for rigid and molded foam applications. SPECFLEX polyether polyols are designed for high-resilience seat cushions, low-density backrests, and other molded foam uses.

<table>
<thead>
<tr>
<th>Product</th>
<th>OH Number</th>
<th>Functionality</th>
<th>Average Mol. Wt.</th>
<th>Initiator</th>
<th>Flash Point(^\text{(*)}) °F (°C)</th>
<th>Density lb/gal (g/cc)</th>
<th>Viscosity(^\text{(*)}) @ 77°F</th>
<th>Viscosity @ 100°F</th>
<th>Viscosity @ 150°F</th>
<th>Viscosity @ 210°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>VORANOL 280</td>
<td>280</td>
<td>7.0</td>
<td>1,380</td>
<td>sucrose/ glycerine</td>
<td>380 (193)</td>
<td>9.19 (1.10)</td>
<td>3,310</td>
<td>1,060</td>
<td>172</td>
<td>50</td>
</tr>
<tr>
<td>VORANOL 360</td>
<td>360</td>
<td>4.5</td>
<td>728</td>
<td>sucrose/ glycerine</td>
<td>325 (163)</td>
<td>9.05 (1.08)</td>
<td>3,600</td>
<td>1,310</td>
<td>170</td>
<td>37</td>
</tr>
<tr>
<td>VORANOL 370</td>
<td>370</td>
<td>7.0</td>
<td>1,040</td>
<td>sucrose/ glycerine</td>
<td>335 (168)</td>
<td>9.27 (1.11)</td>
<td>30,580</td>
<td>6,550</td>
<td>614</td>
<td>97</td>
</tr>
<tr>
<td>VORANOL 446</td>
<td>446</td>
<td>4.5</td>
<td>566</td>
<td>sucrose/ glycerine</td>
<td>375 (191)</td>
<td>9.25 (1.11)</td>
<td>6,510</td>
<td>1,820</td>
<td>270</td>
<td>41</td>
</tr>
<tr>
<td>VORANOL 490</td>
<td>490</td>
<td>4.3</td>
<td>460</td>
<td>sucrose/ glycerine</td>
<td>380 (193)</td>
<td>9.26 (1.11)</td>
<td>5,500</td>
<td>1,800</td>
<td>210</td>
<td>37</td>
</tr>
<tr>
<td>VORANOL 520</td>
<td>520</td>
<td>5.1</td>
<td>550</td>
<td>sucrose/ glycerine</td>
<td>390 (199)</td>
<td>9.4 (1.13)</td>
<td>36,000</td>
<td>7,500</td>
<td>630</td>
<td>100</td>
</tr>
<tr>
<td>VORANOL 550</td>
<td>541-564</td>
<td>4.9</td>
<td>500</td>
<td>sucrose/ glycerine</td>
<td>320 (160)</td>
<td>9.54 (1.143)</td>
<td>29,000</td>
<td>6,900</td>
<td>775</td>
<td>91</td>
</tr>
<tr>
<td>SPECFLEX NC 630</td>
<td>31</td>
<td>–</td>
<td>–</td>
<td>sucrose/ glycerine</td>
<td>400 (204)</td>
<td>8.63 (1.03)</td>
<td>1,250</td>
<td>605</td>
<td>200</td>
<td>–</td>
</tr>
</tbody>
</table>

Note: These are typical properties only, and are not to be regarded as sales specifications.
\(^\text{(*)}\) PMCC
\(^\text{(**)}\) Viscosity is measured in centistokes.

#### Amine-Initiated Products

Amine-initiated VORANOL polyether polyols may be utilized in a wide variety of applications, including rigid foams and cast elastomers. Choose from a useful assortment of functionalities, molecular weights, hydroxyl contents, viscosities, and densities to match your requirements.

<table>
<thead>
<tr>
<th>Product</th>
<th>OH Number</th>
<th>Functionality</th>
<th>Average Mol. Wt.</th>
<th>Initiator</th>
<th>Flash Point(^\text{(*)}) °F (°C)</th>
<th>Density lb/gal (g/cc)</th>
<th>Viscosity(^\text{(**)}) @ 77°F</th>
<th>Viscosity @ 100°F</th>
<th>Viscosity @ 150°F</th>
<th>Viscosity @ 210°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>VORANOL 391</td>
<td>391</td>
<td>4.0</td>
<td>575</td>
<td>aromatic amine</td>
<td>425 (218)</td>
<td>9.06 (1.09)</td>
<td>4,740</td>
<td>1,290</td>
<td>48</td>
<td>29</td>
</tr>
<tr>
<td>VORANOL 800</td>
<td>800</td>
<td>4.0</td>
<td>278</td>
<td>aliphatic amine</td>
<td>405 (207)</td>
<td>8.75 (1.05)</td>
<td>17,310</td>
<td>3,550</td>
<td>270</td>
<td>40</td>
</tr>
</tbody>
</table>

Note: These are typical properties only, and are not to be regarded as sales specifications.
\(^\text{(*)}\) PMCC
\(^\text{(**)}\) Viscosity is measured in centistokes.
Copolymer Polyols

VORANOL and SPECFLEX copolymer polyols are most often used in such flexible foam applications as furniture arm rests, seat cushions, and automotive seating.

<table>
<thead>
<tr>
<th>Product</th>
<th>OH Number</th>
<th>Functionality</th>
<th>Average Mol. Wt.</th>
<th>Initiator</th>
<th>Flash Point(^{(1)}) °F (°C)</th>
<th>Density (^{(2)}) lb/gal (g/cc)</th>
<th>Viscosity(^{(3)}) @ 77°F</th>
<th>Viscosity @ 100°F</th>
<th>Viscosity @ 150°F</th>
<th>Viscosity @ 210°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECFLEX NC 700</td>
<td>21.5</td>
<td>–</td>
<td>–</td>
<td>glycerine/SAN</td>
<td>335 (169)</td>
<td>8.77 (1.05)</td>
<td>5,500</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>VORANOL 3943A</td>
<td>31</td>
<td>–</td>
<td>–</td>
<td>glycerine/SAN</td>
<td>335 (169)</td>
<td>8.70 (1.04)</td>
<td>5,300</td>
<td>1,500</td>
<td>774</td>
<td>295</td>
</tr>
<tr>
<td>VORALUX HL430</td>
<td>31</td>
<td>–</td>
<td>–</td>
<td>glycerine/SAN</td>
<td>335 (169)</td>
<td>8.70 (1.04)</td>
<td>7,250</td>
<td>3,560</td>
<td>1,090</td>
<td>450</td>
</tr>
</tbody>
</table>

Note: These are typical properties only, and are not to be regarded as sales specifications.

\(^{(1)}\) PMCC

\(^{(2)}\) Viscosity is measured in centistokes unless otherwise noted as cp for centipoise.
For more information, contact The Dow Chemical Company Customer Information Group for your area:

U.S. and Canada: 1-800-441-4DOW(4369)
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