Enable Electronics Processing
The Dow Chemical Company (Dow) combines science and technology knowledge to develop premier materials science solutions that are essential to human progress. Dow has one of the strongest and broadest toolkits in the industry, with robust technology, asset integration, scale and competitive capabilities that enable it to address complex global issues. Dow’s market-driven, industry-leading portfolio of advanced materials, industrial intermediates, and plastics businesses deliver a broad range of differentiated technology-based products and solutions for customers in high-growth markets such as packaging, infrastructure, and consumer care.
Customized Electronic-Grade Products and Strong Quality Control

• Focused on electronic market and holistically serving our customers
• Various electronic grade materials to serve diverse needs
• Continuous improvement of processes at all levels of our operations
• Clean room with Inductively Coupled Plasma Mass Spectrometer (ICP-MS)
• Dedicated logistic processes to minimize contamination

Chemical know-how and technical support
• Multiple pilot plants and research labs
• 80+ years of research and application expertise on our core molecules
• Leading analytical capabilities with reliable analytical services
• Real time technical support to optimize the use of Dow materials and make our customers more successful
• Innovative product joint development with strategic customers
Dow Industrial Solutions Products Highlight

Dow Industrial Solutions combines the power of different product groups, including Amines & Chelants, Oxygenated Solvents and Polyglycols, Surfactants & Fluids. We customize selected products to the standard which meet specific electronics application requirements:

- Controlled low metal concentration
- High purity
- Consistent quality control

Our product offerings include, but not limited to, below highlighted products.
Dow offers the world’s largest portfolio of oxygenated solvents, including a wide selection of alcohols, esters, ketones and ethylene- and propylene-based glycol ethers. We provide excellent solvency, high dilution ratios, low surface tension and a broad range of evaporation rates, which help you formulate differentiated products for semiconductor, display and printed circuit board industries. We are capable to supply consistent quality-controlled solvents with low metal concentration and high purity.

### Oxygenated Solvents Chemical Nomenclature

<table>
<thead>
<tr>
<th>Oxygenated Solvents</th>
<th>Chemical Nomenclature</th>
<th>Structural Formula</th>
<th>CAS Number</th>
<th>Molecular Weight, g/mol</th>
<th>Boiling Point °C at 760 mm Hg</th>
<th>Flash Point °C</th>
<th>Evaporation Rate</th>
<th>Specific Gravity at 20°C/25°C</th>
<th>Viscosity at 25°C/100°C</th>
<th>Vapor Pressure (mm Hg)</th>
<th>Surface Tension, dynes/cm at 25°C</th>
<th>Dispersion</th>
<th>H-Bonding</th>
<th>Properties in Water</th>
<th>Properties in Water</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOWANOL™ PM Glycol Ether</td>
<td>Propanol Glycol Methyl Ether</td>
<td>C₃H₇OCH₂CH₂OH</td>
<td>107-98-2</td>
<td>90.1</td>
<td>120</td>
<td>31°C</td>
<td>0.82</td>
<td>0.919</td>
<td>1.7</td>
<td>8.7</td>
<td>27.7</td>
<td>15.6</td>
<td>7.3</td>
<td>13.6</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>DOWANOL™ PM Glycol Ether</td>
<td>Butanol Glycol Methyl Ether</td>
<td>C₄H₉OCH₂CH₂OH</td>
<td>111-76-2</td>
<td>120.1</td>
<td>194</td>
<td>76°C</td>
<td>0.33</td>
<td>0.951</td>
<td>3.7</td>
<td>3.8</td>
<td>28.4</td>
<td>15.5</td>
<td>4.0</td>
<td>10.3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>DOWANOL™ PM Glycol Ether</td>
<td>Hexanol Glycol Methyl Ether Acetate</td>
<td>C₆H₁₃OCH₂CH₂OOCCH₃</td>
<td>111-90-0</td>
<td>134.2</td>
<td>202</td>
<td>98°C</td>
<td>0.21</td>
<td>0.883</td>
<td>2.4</td>
<td>1.5</td>
<td>25.4</td>
<td>15.3</td>
<td>4.9</td>
<td>11.2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>DOWANOL™ PM Glycol Ether</td>
<td>Octanol Glycol Methyl Ether Acetate</td>
<td>C₈H₁₇OCH₂CH₂OOCCH₃</td>
<td>29911-27-1</td>
<td>176.3</td>
<td>213</td>
<td>88°C</td>
<td>0.014</td>
<td>0.919</td>
<td>3.9</td>
<td>0.06</td>
<td>27.8</td>
<td>15.0</td>
<td>2.8</td>
<td>6.2</td>
<td>19.6</td>
<td>20.5</td>
</tr>
<tr>
<td>DOWANOL™ PM Glycol Ether</td>
<td>Decanol Glycol Methyl Ether Acetate</td>
<td>C₁₀H₂₁OCH₂CH₂OOCCH₃</td>
<td>5131-66-8</td>
<td>222.3</td>
<td>230</td>
<td>63°C</td>
<td>0.093</td>
<td>0.978</td>
<td>2.8</td>
<td>0.85</td>
<td>27.5</td>
<td>15.2</td>
<td>4.2</td>
<td>10.5</td>
<td>5.5</td>
<td>15.5</td>
</tr>
<tr>
<td>DOWANOL™ PM Glycol Ether</td>
<td>Dodecanol Glycol Methyl Ether Acetate</td>
<td>C₁₂H₂₅OCH₂CH₂OOCCH₃</td>
<td>823-84-7</td>
<td>260.5</td>
<td>243</td>
<td>119°C</td>
<td>0.003</td>
<td>1.082</td>
<td>25.2</td>
<td>0.01</td>
<td>38.1</td>
<td>17.4</td>
<td>5.3</td>
<td>11.5</td>
<td>1.0</td>
<td>6.0</td>
</tr>
<tr>
<td>DOWANOL™ PM Glycol Ether</td>
<td>Butanol Glycol Diisobutyl Ether</td>
<td>C₄H₉OCH₂CH₂OOC(CH₃)₂</td>
<td>108-85-6</td>
<td>122.2</td>
<td>146</td>
<td>42°C</td>
<td>0.33</td>
<td>0.966</td>
<td>1.1</td>
<td>2.8</td>
<td>28.9</td>
<td>15.6</td>
<td>5.6</td>
<td>6.6</td>
<td>16.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**Oxygenated Solvents Chemical Nomenclature Structural Formula CAS Number Molecular Weight, g/mol Boiling Point °C at 760 mm Hg Flash Point °C Evaporation Rate Specific Gravity at 20°C/25°C Viscosity at 25°C/100°C Vapor Pressure (mm Hg) Surface Tension, dynes/cm at 25°C Dispersion H-Bonding Properties in Water Properties in Water Features**

---

These properties are typical of the product, but should not be confused with, or regarded as, sales specifications.

1. Satisfies Method (Closed Cup) 2. Tag Closed Cup (TCC) --- Miscible
Dow offers versatile family of ethanamines, isopropanolamines and alkyl alkanolamines, which are diversified, polyfunctional molecules that combine the characteristics of amines and alcohols. They can provide alkalinity, corrosion inhibition, photoresist removal and cleaning function in various formulations. We are classified, polyfunctional molecules that combine the characteristics of amines and alcohols. They can provide alkalinity, corrosion inhibition, photoresist removal and cleaning function in various formulations. We are hereby presenting the Dow portfolio of alkaline and amine-based cleaning agents that can be used in a variety of electronics processing applications.

### Amines & Chelants

Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities.

#### Dow Polyglycols, Surfactants and Fluids

| Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. | Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities. |

### Polyglycols, Surfactants and Fluids

Dow Polyglycols, Surfactants and Fluids include some of the most familiar anionic and nonionic surfactants, polyglycols, EO/PO copolymers and solder assistant fluids. Dow surfactants and polyglycols are known for excellent wetting, emulsification, dispersion, and foam control. Water-soluble UCON™ fluids are well-suited as base solder assist fluids. With Dow polyglycols, surfactants and fluids, you can also receive a wide range of available chemistries, extensive applications expertise, a global technical support network and stable product supply from world-class manufacturing facilities.
For more information about Dow products, please contact Dow Customer Information Group (CIG):

**Asia Pacific:**

Toll Free: 400 889 0789 (China)
800 7776 7776 (except China, Indonesia and Viet Nam)
Tel: + 86-21-38514988 (China)
+ 603-7965 5392 (except China)
Fax: + 86-21-5895 4612 (China)
+ 603-7958 5598 (except China)

Dow Chemical (China) Investment Company Limited
936 Zhangheng Road Zhangjiang High-Tech Park
Shanghai 201203, China
Tel: + 86-21-3851 1000
Fax: + 86-21-5895 1818

**For All Other Regions:**

Tel: + 1-989-832-1556
Fax: + 1-989-832-1465

www.dow.com

**NOTICE:** No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer’s use and for ensuring that Customer’s workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

Form No: ‘70-000419-0818

®™Trademark of The Dow Chemical Company (“Dow”) or an affiliated company of Dow