Formasil™ WS Additive / Catalyst 50WS

Water Repellent System

Description
Formasil WS additive/Catalyst 50WS is a two component water repellent system for use on textiles, paper and leather.

Key Features and Typical Benefits
- Forms a flexible water repellent film
- Water repellency can be controlled by changing dosage
- Can be considered as replacement of fluoro-based chemicals

Typical Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Formasil WS additive</td>
</tr>
<tr>
<td></td>
<td>Catalyst 50WS</td>
</tr>
<tr>
<td>Appearance</td>
<td>Pale yellow clear liquid</td>
</tr>
<tr>
<td>Viscosity (25 °C) mPa-s</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Specific Gravity (25 °C)</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>0.86</td>
</tr>
<tr>
<td>Active Content, %</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Diluent</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Isopropyl alcohol</td>
</tr>
</tbody>
</table>

Typical properties are average data and are not to be used as or to develop specifications.

Potential Applications
- Clothing (Cotton, Polyester, etc), leather, fabrics for umbrellas, paper, glass, synthetic resins

General Considerations for Use

1. Dilute Formasil WS additive with an appropriate solvent to obtain the desired concentration (typical level is 2-5% solids content).
2. Add the same amount of Catalyst 50WS to the diluted Formasil WS additive.
3. Immerse the substrate into above solution bath or spray onto the substrate, so that there is complete saturation.
4. Air-dry it to evaporate absorbed solvent. Solvent evaporation can be accelerated by heating to 40-50 °C.
5. After solvent evaporation, cure for one day at room temperature.
6. In case water repellency is not sufficient, repeat steps 3 to 5 above.

Note: Since viscosity increase or gelation may occur by reaction with moisture in the air, close the Catalyst 50WS container tightly to avoid contact with moisture.

**Typical Performance Test Data**

**Water Repellency Test: JIS L-1092**

**Test Method**

1. Apply 1% Formasil WS additive / Catalyst 50WS Isopropyl alcohol solution onto cotton cloth, and dry.
2. Attach the cloth to apparatus.
3. Add 250ml Water to the funnel and spray onto the cloth.
4. Observe and score the water repellency by comparing with standard reference.

---

Test results. Actual results may vary.
Water Repellency Test Equipement

Water Repellency Test

Test Method

1. Apply 4% Formasil WS additive / Catalyst 50WS isopropyl alcohol solution onto substrate until it is entirely wet, and dry overnight.
2. Observe the water repellency by dropping colored water.

Polyester treated with Formasil WS additive treated

Genuine leather treated with Formasil WS additive

Cotton treated with Formasil WS additive

Polyester (Control)

Genuine leather (Control)

Cotton (Control)

*Formasil™ is a trademark of Momentive Performance Materials Inc.*
Packaging

- Currently available each 15kg cans

Patent Status
Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage
Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at www.momentive.com or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations
Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

Contact Information
Email
commercial.services@momentive.com

Telephone

<table>
<thead>
<tr>
<th>Americas</th>
<th>Latin America</th>
<th>EMEAI- Europe, Middle East, Africa &amp; India</th>
<th>ASIA PACIFIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>+1 800 295 2392</td>
<td>Brazil</td>
<td>Europe</td>
<td>China</td>
</tr>
<tr>
<td>Toll free*</td>
<td>+55 11 4534 9650</td>
<td>+390510924300</td>
<td>800 820 0202</td>
</tr>
<tr>
<td>+704 805 6946</td>
<td>Direct Number</td>
<td>Direct number</td>
<td>Toll free</td>
</tr>
<tr>
<td>Direct Number</td>
<td></td>
<td></td>
<td>+86 21 3860 4892</td>
</tr>
</tbody>
</table>

*All American countries

<table>
<thead>
<tr>
<th>Mexico</th>
<th>India, Middle East &amp; Africa</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>+52 55 2169 7670</td>
<td>+ 91 44 71212207</td>
<td>800 820 0202</td>
</tr>
<tr>
<td>Direct Number</td>
<td>Direct number*</td>
<td>Toll free</td>
</tr>
</tbody>
</table>

+86 21 3860 4892 | Direct number

+81 3 5544 3111 | Direct number

*Formasil™ is a trademark of Momentive Performance Materials Inc.
DISCLAIMER:

THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC. AND ITS SUBSIDIARIES AND AFFILIATES (COLLECTIVELY “SUPPLIER”), ARE SOLD SUBJECT TO SUPPLIER’S STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING ITS PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. EXCEPT AS PROVIDED IN SUPPLIER’S STANDARD CONDITIONS OF SALE, SUPPLIER AND ITS REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN. Each user bears full responsibility for making its own determination as to the suitability of Supplier’s materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Supplier’s products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Supplier’s standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Supplier. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Supplier covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

*Formasil™ is a trademark of Momentive Performance Materials Inc.

The use of the “™” symbol designates registered or unregistered trademarks of Momentive Performance Materials Inc. or its affiliated companies. Momentive and the Momentive logo are trademarks of Momentive Performance Materials Inc.