HumiSeal®

PRODUCT GUIDE
What's inside the machine?

AUTOMOTIVE

CENTRAL LOCKING
POWER SUNROOF CONTROL
CLIMATE CONTROLS
FUEL LEVEL SENSING
KEYLESS ENTRY
AIRBAG CONTROL MODULES
PARKING SENSORS
STEERING SYSTEMS
POWER SEAT CONTROL
ENTERTAINMENT SYSTEM
TYRE PRESSURE MONITOR

USER JORS I TVOLCM TF
TSTEVELITESSEQUAENIUILS
UARURQUHUMISEALELTNIUEERLRR
ISSOSCIPITLABORIOSMTISLUTOLI
ADKEYLESSENTRYQUISNOSTYUMRXELCIRATS
POWERSATECTRLBOREETDOLOSEMAANAATAEALTQAA
TETURADIPISEVELITSEDQUIANOGNUMQALAMVIUNMOD
YELISQUPOWERSUNROOFCONTROLMNUIADOLOREITOMETC
CIUNTNEQUEPOGRCONFORMALCOATINGSATIONELOLCPATATE
JCTAENTERTAINMENTSYSTEMMIAMPSRMVOLUPTECDYSBOECLKQPF
ARCHIOBITATAEVITAEDIWDIEBCYFIKSPKCHEKVTENIAXU
AREIAMEALQKIPSAQUAEBILLOENVENTOREVIRINATASETQAA
SEDUTYREPRESSUREMONITORNTSISTENATUSSNRRSRSMTVOLU
ICIAIRBAGCONTROLMODULESUFEJROCSITVGLUITAIEMACC
APNTIUMDTAMNEMLJ
UNDEOMUPGATC
Automotive electronic assemblies continue to become an increasingly sophisticated and important aspect of both the functionality and reliability of modern automobiles. These assemblies continue to be placed in ever more demanding end-use environments, where the risk of degradation in performance, due to extraneous factors such as humidity, salt-spray, noxious gases and other sources of corrosion continues to increase rapidly.

The costs of failure (both direct fiscal from recalls and longer-term to brand equity) and the competitive need to provide longer warranties and greater levels of reliability, drive the need to increase the Mean Time Between Failures (MTBF) to the maximum possible duration.

Increasingly, conformal coating is becoming one of the most important methodologies requested by Original Equipment Manufacturers (OEMs) and used by Tier 1 – Tier 3 automotive electronics suppliers to prevent corrosion and degradation of assemblies in use.

HumiSeal is a leading supplier of conformal coatings to the automotive industry for in-cabin electronics, under-hood electronics and exterior electronic applications, supplying every major OEM and multiple Tier 1 – Tier 3 suppliers.

Today, electronics manage critical automotive controls guiding power train, safety, comfort, entertainment, and navigation systems. Many mechanical components, such as hydraulic power steering and hydraulic power brakes, are being replaced with innovative electronics.

With the widest range of high performance conformal coatings, from every major type of protective chemistry, including acrylic, urethane and silicone, you can be certain that HumiSeal has a high-performance solution for your specific application. With recent changes in OEM requirements related to new car outgassing and ISO14001 compliance requirements amongst their subcontractors, HumiSeal has a wide range of environmentally compliant, low-outgassing, solvent-free materials, in addition to a wide range of traditional solvent-borne chemistries. Whatever your requirements, HumiSeal has the solution.

**SELECTION**

HumiSeal offers the industry’s widest range of high performance coatings, drawn from the widest range of chemistries and they can be applied by any of the common application methodologies. This will enable you to select the product that best meets your project needs, production throughput, floor space, and capital equipment requirements. Whether you are upgrading an existing product, transferring a production process from another facility, or are working on a new product introduction.

Whatever your requirements, HumiSeal has the solution.
<table>
<thead>
<tr>
<th>QUALIFICATIONS</th>
<th>MIL-I-46058C</th>
<th>IPC CC-830B</th>
<th>UL746E</th>
<th>UL94</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available as an Aerosol</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Pending</td>
</tr>
<tr>
<td>Solids Contents (%w/w)</td>
<td>29</td>
<td>35</td>
<td>29.5</td>
<td>29.5</td>
</tr>
<tr>
<td>Viscosity (MAX)/cPs</td>
<td>250</td>
<td>275</td>
<td>270</td>
<td>130</td>
</tr>
<tr>
<td>Flash Point °C /°F</td>
<td>7 (45)</td>
<td>-1 (30)</td>
<td>-1 (30)</td>
<td>28 (83)</td>
</tr>
<tr>
<td>VOC (grammes/litre)</td>
<td>645</td>
<td>592</td>
<td>660</td>
<td>531</td>
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<tr>
<td>Drying Time</td>
<td>24 hrs</td>
<td>24 hrs</td>
<td>24 hrs</td>
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<tr>
<td>Optimum Properties</td>
<td>1 week</td>
<td>1 week</td>
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<td>1 week</td>
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<tr>
<td>Shelf Life at RT</td>
<td>24 hrs</td>
<td>24 hrs</td>
<td>24 hrs</td>
<td>24 hrs</td>
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<tr>
<td>Coverage m²/litre (25 microns thickness)</td>
<td>13</td>
<td>14</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

**Continuous Use Operating Range °C**

- Acrylics: -65 to 125
- Urethanes: -65 to 125
- UV Cure: -65 to 125
- Synthetic Rubber & Silicones: -65 to 125

**Thermal Shock °C**

- Acrylics: -65 to 125
- Urethanes: -65 to 125
- UV Cure: -65 to 125
- Synthetic Rubber & Silicones: -65 to 125

**Glass Transition Temperature (Tg) °C**

- Acrylics: 10
- Urethanes: 70
- UV Cure: 150
- Synthetic Rubber & Silicones: 150

**CTE (x 10^6 / °C)**

- Below Tg: 170
- Above Tg: 340

**Dielectric Constant (1MHz @ 25°C)**

- Acrylics: 2.5
- Urethanes: 2.6
- UV Cure: 2.5
- Synthetic Rubber & Silicones: 2.5

**Dissipation Factor (1MHz @ 25°C)**

- Acrylics: 0.01
- Urethanes: 0.01
- UV Cure: 0.01
- Synthetic Rubber & Silicones: 0.01

**Dielectric Withstand Voltage V (1 minute)**

- Acrylics: >1500
- Urethanes: >1500
- UV Cure: >1500
- Synthetic Rubber & Silicones: >1500

**Insulation Resistance Per MIL-I-46058C (Ω)**

- Acrylics: 8.0 x 10^14
- Urethanes: 8.0 x 10^14
- UV Cure: 8.0 x 10^14
- Synthetic Rubber & Silicones: 8.0 x 10^14

**Resistance to chemicals and solvents**

- Acrylics: Poor
- Urethanes: Poor
- UV Cure: Excellent
- Synthetic Rubber & Silicones: Excellent

**Recommended Thinner (Clip & Brush/Spray)**

- Acrylics: 503, 521, 521(EU), 903, 905
- Urethanes: 521(EU), 521(EU)/73
- UV Cure: 521(EU), 521(EU)/73
- Synthetic Rubber & Silicones: 521(EU), 521(EU)/73

**Recommended Stripper**

- Acrylics: 1080, 1081(RU), 1081(EU)
- Urethanes: 1080(EU)
- UV Cure: 1080(EU)
- Synthetic Rubber & Silicones: 1080(EU)

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What’s inside the machine?

HUMISEAL®, THE WORLD’S LEADING FORMULATOR OF PROTECTIVE COATINGS FOR ELECTRONIC CIRCUITS