Scotch-Weld™
Multi-Material & Composite Urethane Adhesives
DP6310NS and DP6330NS

Product Description

3M™ Scotch-Weld™ Multi-Material & Composite Urethane Adhesives DP6310NS and DP6330NS are multi-purpose urethane adhesives for bonding a variety of composites, plastics, metals and wood. They are high-strength bonders with some flexibility to accommodate thermal expansion and contraction differences with dissimilar material bonding.

3M™ Scotch-Weld™ Multi-Material & Composite Urethane Adhesives DP6310NS and DP6330NS can replace rivets and screws in attaching composites to other substrates, providing a more aesthetically-pleasing, fatigue-resistant bond line. They also bond well to most metals without requiring priming.

Note: The following data are taken from tests conducted on a limited number of production runs. 3M will continue to test samples from additional manufacturing lots and issue a new technical data sheet if the results change.

Note: Unless otherwise indicated, all properties measured at 72°F (22°C).

Features

- Ability to bond most composites and dissimilar substrates
- Primerless to most surfaces
- Non-sag formulation resists running and slumping of adhesive
- 3M™ Scotch-Weld™ Multi-Material & Composite Urethane Adhesive DP6330NS meets the following OEM strength requirements:
  - Freightliner; Standard No. 49-00093 Revision C
  - PACCAR; Specification No. CMT0038
- Excellent water and humidity resistance, very good chemical resistance.
- Solvent-free adhesive system
- Convenient hand-held applicator
- Room temperature cure
- Cure can be accelerated with heat
- Available in bulk

Note: The data in this sheet were generated using the 3M™ EPX™ Applicator System equipped with an EPX static mixer, according to manufacturer’s directions. Thorough hand-mixing will afford comparable results.
### Typical Uncured Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Base (B)</td>
<td>Green</td>
</tr>
<tr>
<td></td>
<td>Accelerator (A)</td>
<td>Off-White</td>
</tr>
<tr>
<td>Viscosity(^1)</td>
<td>Base (B)</td>
<td>15,000-35,000 cP</td>
</tr>
<tr>
<td></td>
<td>Accelerator (A)</td>
<td>12,000-20,000 cP</td>
</tr>
<tr>
<td>Density (lbs/gal)</td>
<td>Base (B)</td>
<td>10-11</td>
</tr>
<tr>
<td></td>
<td>Accelerator (A)</td>
<td>10.5-11.5</td>
</tr>
<tr>
<td>Mix ratio</td>
<td>By volume</td>
<td>1 : 1</td>
</tr>
<tr>
<td></td>
<td>By weight</td>
<td>1:1.09</td>
</tr>
<tr>
<td>Open time(^2)</td>
<td>10 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Time to handling strength(^3)</td>
<td>45 minutes</td>
<td></td>
</tr>
</tbody>
</table>

1. Viscosity measured using Brookfield RTV, spindle #7, 20 RPM @ 80°F (27°C)
2. Maximum time allowed after applying adhesive to one substrate before bond must be closed and fixed in place.
3. Minimum time required to achieve 50 psi of overlap shear strength.

### Typical Mixed Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Full strength cure time</td>
<td>24 hours at 72°F (22°C)</td>
<td>7 days at 72°F (22°C)</td>
</tr>
<tr>
<td>Mixed Viscosity</td>
<td>Non-sag paste</td>
<td>Non-sag paste</td>
</tr>
<tr>
<td>Modulus(^1)</td>
<td>86,000 PSI</td>
<td>142,000 PSI</td>
</tr>
<tr>
<td>Elongation at Break(^1)</td>
<td>12%</td>
<td>7%</td>
</tr>
<tr>
<td>Stress at Break(^1)</td>
<td>2700 PSI</td>
<td>2900 PSI</td>
</tr>
<tr>
<td>Glass Transition temperature</td>
<td>60°C(^2) (RT Cure)</td>
<td>TBD</td>
</tr>
</tbody>
</table>

1. Stress/Strain properties for DP6330NS measured after 2 months room temp cure.
2. Measured via double cantilever DMA; 15 Hz
### Typical Cured Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

#### Overlap Shear (psi)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Carbon Fiber Epoxy (IPA/abrade/IPA)</td>
<td>3200 CF</td>
<td>3360 SF</td>
</tr>
<tr>
<td>SMC (IPA/abrade/IPA)</td>
<td>900 SF</td>
<td>1000 SF</td>
</tr>
<tr>
<td>Glass Filled Epoxy LW (IPA/abrade/IPA)</td>
<td>2400 CF</td>
<td>3000 SF</td>
</tr>
<tr>
<td>Glass Filled Polyester (IPA/abrade/IPA)</td>
<td>1000 SF</td>
<td>1200 SF</td>
</tr>
<tr>
<td>Kalix™ 9950 (glass fiber nylon composite) (IPA wipe)</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Phenolic/Cotton Fiber Composite (IPA/abrade/IPA)</td>
<td>1200 SF</td>
<td>1200 SF</td>
</tr>
<tr>
<td>Aluminum (MEK/abrade/MEK)</td>
<td>2600 CF</td>
<td>3300 CF</td>
</tr>
<tr>
<td>Cold-rolled steel (MEK/abrade/MEK)</td>
<td>1900 AF</td>
<td>2100 AF</td>
</tr>
<tr>
<td>Stainless Steel (MEK/abrade/MEK)</td>
<td>3000 CF</td>
<td>3000 CF</td>
</tr>
<tr>
<td>Galvanized steel (MEK/abrade/MEK)</td>
<td>1200 AF</td>
<td>1700 AF</td>
</tr>
<tr>
<td>PC (IPA wipe)</td>
<td>710 AF</td>
<td>1100 SF</td>
</tr>
<tr>
<td>ABS (IPA wipe)</td>
<td>230 AF</td>
<td>650 AF</td>
</tr>
</tbody>
</table>

SF: Substrate Failure  
AF: Adhesive Failure  
CF: Cohesive Failure  
MF: Mixed failure modes

#### Overlap Shear (psi); Etched Aluminum, at Temperature

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>-40°F (-40°C)</td>
<td>3500</td>
<td>3600</td>
</tr>
<tr>
<td>73°F (23°C)</td>
<td>3600</td>
<td>3600</td>
</tr>
<tr>
<td>120°F (49°C)</td>
<td>1700</td>
<td>1700</td>
</tr>
<tr>
<td>180°F (82°C)</td>
<td>900</td>
<td>1000</td>
</tr>
</tbody>
</table>
7. Overlap shear values measured using ASTM D1002; adhesives allowed to cure for 7 days at room temperature; ½” overlap; 0.005” bond line thickness; samples pulled at 0.1 in/min for metals and 2 in/min for plastics; all surfaces prepared with light abrasion and solvent clean; substrates used were 1/16” thick aluminum and 1/8” thick plastics; composites varied.

### Environmental Resistance, Percent Retention of Strength, 30 day exposure except as noted

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Control</td>
<td>SMC</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>65°C/80% RH</td>
<td>SMC</td>
<td>75%</td>
<td>80%</td>
</tr>
<tr>
<td>Salt Spray (14 days)</td>
<td>SMC</td>
<td>65%</td>
<td>90%</td>
</tr>
<tr>
<td>Gasoline</td>
<td></td>
<td>85%</td>
<td>90%</td>
</tr>
<tr>
<td>Antifreeze</td>
<td></td>
<td>TBD</td>
<td>100%</td>
</tr>
</tbody>
</table>

8. Values indicate overlap shear test performance retained after 1,000 hours of continuous exposure relative to a control sample left at room temperature; samples conditioned for 7 days at room temperature and 50% relative humidity prior to tests.

### Floating Roller Peel (lb/inch width), etched Aluminum

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Etched Aluminum</td>
<td>20 lbs/inch width</td>
<td>20 lbs/inch width</td>
</tr>
</tbody>
</table>

9. Floating roller peel values measured using ASTM D3167; allowed to cure for 24 hours at room temperature; 1” wide samples; 0.017” bond line thickness. The testing jaw separation rate was 6 in. per minute. The bonds are made with 0.064 in. bonded to 0.025 in. thick adherends.

AF: adhesive failure   CF: cohesive failure   SF: substrate failure

### Directions For Use

1. To obtain the highest strength structural bonds, paint, oxide films, oils, dust, mold release agents, and all other surface contaminants must be completely removed. The amount of surface preparation depends on the required bond strength and environmental aging resistance desired by user. For suggested surface preparations on common substrates, see the section on surface preparation.

2. Mixing
   **For Duo-Pak Cartridges**
   Store cartridges with cap end up to allow any air bubbles to rise towards the tip. To use, simply insert the cartridge into the EPX applicator and start the plunger into the cylinders using light pressure on the trigger. Then remove the cap and expel a small amount of adhesive to ensure material flows freely from both sides of cartridge. For automatic mixing, attach an EPX mixing nozzle to the cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of adhesive and mix thoroughly. Mix approximately 15 seconds after obtaining a uniform color.

   **For Bulk Containers**
Mix thoroughly by weight or volume in the proportion specified on the product label or in the typical uncured properties section. Mix approximately 15 seconds after obtaining a uniform color.

3. Apply adhesive and join surfaces within the open time listed for the specific product. Larger quantities and/or higher temperatures will reduce this working time.

4. Allow adhesive to cure at 60°F (16°C) or above until completely firm. Applying heat up to 200°F (93°C) will increase cure speed.

5. Keep parts from moving during cure. Apply contact pressure or fixture in place if necessary. Optimum bond line thickness ranges from 0.005 to 0.020 inch; shear strength will be maximized with thinner bond lines, while peel strength reaches a maximum with thicker bond lines.

6. Excess uncured adhesive can be cleaned up with ketone type solvents.*

*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer’s precautions and directions for use.
Storage
Store product at 73°F (21°C). Do not freeze. Allow product to reach room temperature prior to use.

Shelf Life
3MTM Scotch-Weld™ Multi-Material & Composite Urethane Adhesives DP6310NS and DP6330NS have a shelf life of 12 months from date of manufacture in unopened, original containers kept at recommended storage conditions.

Precautionary Information
Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or 651-737-6501.

For Additional Information

Technical Information
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