

# Technical Data Sheet

## 3M™ Scotch-Weld™ Multi-Material & Composite Urethane Adhesives DP6310NS

### Product Description

3M™ Scotch-Weld™ Multi-Material & Composite Urethane Adhesive DP6310NS is a multi-purpose urethane adhesive for bonding a variety of composites, plastics, metals and wood. It is a high-strength bonder with some flexibility to accommodate thermal expansion and contraction differences with dissimilar material bonding

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

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

### Product Features





- Ability to bond most composites and dissimilar substrates
- Primerless to most surfaces
- Non-sag formulation resists running and slumping of adhesive
- 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.

### Technical Information Note


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

### Typical Mixed Physical Properties

Property	Values	Additional Information
Open Time	10 min	<a href="#">View</a> 
Notes: POR=Pop Off Rubber		
Worklife	9 min	<a href="#">View</a> 
Notes: Maximum time that adhesive can remain in a static mixing nozzle and still be expelled without undue force on the applicator. Cure times are approximate and depend on adhesive temperature.		
Worklife	9 min	<a href="#">View</a> 
Notes: Maximum time that adhesive can remain in a static mixing nozzle and still be expelled without undue force on the applicator. Cure times are approximate and depend on adhesive temperature.		
Set Time (min)	45 min	<a href="#">View</a> 

Temp C: 23C  
Temp F: 73F

Notes: Minimum time required to achieve 50 psi of overlap shear strength. Cure times are approximate and depend on adhesive temperature.

Time to Full Cure	24 hr	<a href="#">View</a> 
Temp C: 23C Temp F: 73F		

### Typical Uncured Physical Properties


Property	Values	Additional Information
Base Color	Green	


Accelerator Color	Off-White	
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Base Density	10 to 11 lb/gal	
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Accelerator Density	10.5 to 11.5 lb/gal	
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Viscosity	Non-sag paste	
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Base Viscosity	15000 to 35000 cP	<a href="#">View</a> 
Test Method: 3M C1d		
Temp C: 27C Temp F: 80F		
Notes: Procedure involves Brookfield RVF, #7 spindle, 20 rpm. Measurement taken after 1 minute rotation.		

Accelerator Viscosity	12000 to 20000 cP	<a href="#">View</a> 
Test Method: 3M C1d		
Temp C: 27C Temp F: 80F		
Notes: Procedure involves Brookfield RVF, #7 spindle, 20 rpm. Measurement taken after 1 minute rotation.		

Base Viscosity	15,000-35,000 cP	<a href="#">View</a> 
Temp C: 27C Temp F: 80F		
Notes: Viscosity measured using Brookfield RTV, spindle #7, 20 RPM		





Accelerator Viscosity	12,000-20,000 cP	<a href="#">View</a> 
Temp C: 27C		

Temp F: 80F

Notes: Viscosity measured using Brookfield RTV, spindle #7, 20 RPM






Base Net Weight	10 to 11 lb/gal
Accelerator Net Weight	10.5 to 11.5 lb/gal
Mix Ratio by Volume (B:A)	1:1
Mix Ratio by Weight (B:A)	1:1.09

### Typical Cured Characteristics

Property	Values	Additional Information
Modulus	86000 lb/in <sup>2</sup>	View 
Dwell/Cure Time: 2.0 Dwell Time Units: month Temp C: 23C Temp F: 72F		
Shore D Hardness	77	View 
Test Method: ASTM D2240  Temp C: 23C Temp F: 73F		
Stress at Break	2700 lb/in <sup>2</sup>	View 
Dwell/Cure Time: 2.0 Dwell Time Units: month Temp C: 23C Temp F: 73F		
Elongation at Break	12 %	View 
Dwell/Cure Time: 2.0 Dwell Time Units: month Temp C: 23C Temp F: 72F		


### Typical Performance Characteristics

Property	Values	Additional Information
Elongation at Break	0.12 %	
Modulus	86000 lb/in <sup>2</sup>	

Bell Peel	20 lb/in width	View 
<p>Test Method: ASTM D3167</p> <p>Dwell/Cure Time: 24.0 Dwell Time Units: hr Temp C: 23C Temp F: 72F Substrate: Etched Aluminum</p> <p>Notes: 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.</p>		
Overlap Shear Strength 7day Aluminum	2600 lb/in <sup>2</sup>	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0 Dwell Time Units: day Temp C: 23C Temp F: 73F Environmental Condition: 50%RH Substrate: Aluminum Surface Preparation: MEK/Abrade/MEK Failure Mode: CF</p> <p>Notes: 1in wide 1/2in overlap specimens. 2 panels of 0.05-0.064in x 4in x 7in 2024T-3 clad aluminum bonded and cut to 1in wide samples after 24hr. Jaw separation 0.1 in/min, 0.005-0.008in bondline. Cohesive (CF), Adhesive (AF), and Substrate (SF) Failure</p>		
Overlap Shear Strength 7day Cold Rolled Steel	1900 lb/in <sup>2</sup>	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0 Dwell Time Units: day Temp C: 23C Temp F: 73F Environmental Condition: 50%RH Substrate: Cold Rolled Steel Surface Preparation: MEK/Abrade/MEK Failure Mode: AF</p> <p>Notes: Overlap shear (OLS) strengths were measured on 1in wide 1/2in overlap specimens on 1in x 4in x .060in substrates. Jaw separation 0.1 in/min. 0.005-0.008in bondline. Cohesive (CF), Adhesive(AF), and Substrate(SF) Failure</p>		
Overlap Shear Strength 7day Stainless Steel	3000 lb/in <sup>2</sup>	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0 Dwell Time Units: day Temp C: 23C Temp F: 73F Environmental Condition: 50%RH Substrate: Stainless Steel Surface Preparation: MEK/Abrade/MEK Failure Mode: CF</p> <p>Notes: Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1" x 4" x 0.060" substrate Jaw Separation 0.1in/min Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)</p>		
Overlap Shear Strength 7day Fiber-Reinforced Plastic	900 lb/in <sup>2</sup>	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0</p>		

Dwell Time Units: day  
Temp C: 23C  
Temp F: 73F  
Environmental Condition: 50%RH  
Substrate: Fiber-Reinforced Plastic  
Surface Preparation: IPA Wipe/Abrade/IPA Wipe  
Failure Mode: SF

Notes: Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. 1" x 4" x 0.125" substrate Jaw separation 2 in/min; 0.005-0.008in bondline. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)

Overlap Shear Strength 7day Galvanized Steel 1200 lb/in<sup>2</sup> View 


Test Method: ASTM D1002

Test Name: Overlap Shear Strength  
Dwell/Cure Time: 7.0  
Dwell Time Units: day  
Temp C: 23C  
Temp F: 73F  
Environmental Condition: 50%RH  
Substrate: Galvanized Steel  
Surface Preparation: MEK/Abrade/MEK  
Failure Mode: AF

Notes: 0.5in overlap, 0.1 in/min for metals and 2 in/min for plastics, substrates lightly abraded and solvent wiped, substrates used were 1/16in thick, 0.010in bondline Substrate (SF), Adhesive (AF), Cohesive (CF), and Mixed (MF) Failure modes

Overlap Shear Strength 710 AF lb/in<sup>2</sup> View 


Substrate: Polycarbonate (PC)

Overlap Shear Strength 7day Glass Filled Epoxy LW 2400 lb/in<sup>2</sup> View 

Test Method: ASTM D1002

Test Name: Overlap Shear Strength  
Dwell/Cure Time: 7.0  
Dwell Time Units: day  
Temp C: 23C  
Temp F: 73F  
Environmental Condition: 50%RH  
Substrate: Glass Filled Epoxy LW  
Surface Preparation: IPA Wipe/Abrade/IPA Wipe  
Failure Mode: CF


Notes: 1/2" overlap; samples pulled at 0.1 in/min for metals and 2 in/min for plastics; all surfaces prepared with light abrasion and solvent clean; 0.005-0.008in bondline. SF: Substrate Failure AF: Adhesive Failure CF: Cohesive Failure MF: Mixed failure modes

Overlap Shear Strength 7day Glass Filled Polyester 1000 lb/in<sup>2</sup> View 

Test Method: ASTM D1002

Test Name: Overlap Shear Strength  
Dwell/Cure Time: 7.0  
Dwell Time Units: day  
Temp C: 23C  
Temp F: 73F  
Environmental Condition: 50%RH  
Substrate: Glass Filled Polyester  
Surface Preparation: IPA Wipe/Abrade/IPA Wipe  
Failure Mode: SF

Notes: 1/2" overlap; samples pulled at 0.1 in/min for metals and 2 in/min for plastics; all surfaces prepared with light abrasion and solvent clean; 0.005in bondline AF: Adhesive Failure CF: Cohesive Failure MF: Mixed failure modes

Overlap Shear Strength 7day Polycarbonate (PC) 710 lb/in<sup>2</sup> View 

Test Method: ASTM D1002


Test Name: Overlap Shear Strength

Dwell/Cure Time: 7.0  
 Dwell Time Units: day  
 Temp C: 23C  
 Temp F: 73F  
 Environmental Condition: 50%RH  
 Substrate: Polycarbonate (PC)  
 Surface Preparation: MEK/Abrade/MEK  
 Failure Mode: AF

Notes: 0.5in overlap, 0.1 in/min for metals and 2 in/min for plastics, substrates lightly abraded and solvent wiped, substrates used were 1/16in thick, 0.010in bondline Substrate (SF), Adhesive (AF), Cohesive (CF), and Mixed (MF) Failure modes

Overlap Shear Strength 7day ABS	230 lb/in <sup>2</sup>	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength          Dwell/Cure Time: 7.0          Dwell Time Units: day          Temp C: 23C          Temp F: 73F          Environmental Condition: 50%RH          Substrate: ABS          Surface Preparation: MEK/Abrade/MEK          Failure Mode: AF</p> <p>Notes: Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. Bonds made with 1 in x 4 in x 0.125in pieces of substrate with a 0.005-0.008in bondline. Jaw Separation 2in/min Cohesive (CF), Adhesive (AF), Substrate (SF) Failure</p>		

### Electrical and Thermal Properties

Property	Values	Additional Information
Glass Transition Temperature (Tg)	60 °C	View 
Notes: Measured at one week via DMA		

### Typical Physical Properties

Property	Values	Additional Information
Full Strength	24 hr	

### Product Uses

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### Storage and Shelf Life

Store product at 73°F (21°C). Do not freeze. Allow product to reach room temperature prior to use.  
 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.

### Industry Specifications

[EN 45545 test report for details \(ISO 5659-2, ISO 9239-1, ISO 5660-1, ISO 5658-2\)](#)

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Except where prohibited by law, 3M and seller will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

## Bottom Matter

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## Trademarks

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## For Additional Information

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To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit [www.3M.com/compositebonding](http://www.3M.com/compositebonding). Address correspondence to 3M Industrial Adhesives and Tapes Division, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55144-1000. Our fax number is 651-778-4244. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

## Automotive Disclaimer

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## Handling/Application Information

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### 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.

#### Surface Preparation

3MTM Scotch-Weld™ Multi-Material & Composite Urethane Adhesive DP6310NS is designed to be used on composites, metal, wood, and most plastic surfaces. The following cleaning methods are suggested for common surfaces:

##### Steel:

1. Wipe free of dust and dirt with pure solvent such as acetone or isopropyl alcohol.\*
2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with clean solvent to remove loose particles.\*
4. For best results, apply a primer to bare steel before bonding, such as an epoxy-based primer or 3M™ Adhesion Promoter 111.

##### Aluminum:

1. Wipe free of dust and dirt with pure solvent such as acetone or isopropyl alcohol.\*
2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with clean solvent to remove loose particles.\*

##### Plastics/Rubbers/Paints/Coatings:

1. Wipe with isopropyl alcohol.\*
2. Abrade using fine grit abrasives.
3. Wipe with isopropyl alcohol.\*

##### Glass:

1. Solvent wipe surface using acetone or MEK.\*
2. Apply a thin coating of a silane adhesion promoter to the glass surfaces to be bonded and allow to dry completely before bonding.

\*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

## References

Property	Values
3m.com Product Page	<a href="https://www.3m.com/3M/en_US/p/d/b40072315/">https://www.3m.com/3M/en_US/p/d/b40072315/</a>
Safety Data Sheet SDS	<a href="https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&amp;msdsLocale=en_US&amp;co=ptn&amp;q=DP6310NS">https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&amp;msdsLocale=en_US&amp;co=ptn&amp;q=DP6310NS</a>

## 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.

## Information



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