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English-EU
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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 Uncured Physical Properties

Attribute Name	Value
Mix Ratio by Weight (B:A)	1:1.09
Mix Ratio by Volume (B:A)	1:1
Viscosity	Non-sag paste

Attribute Name	Temperature	Value
Base Color		Green
Accelerator Color		Off-White
Base Density		1.2 — 1.32 g/cm³
Accelerator Density		1.26 — 1.38 g/cm³
Base Viscosity	27 °C	11,000-35,000 cP [1]
Accelerator Viscosity	27 °C	9,000-25,000 cP [1]

[1] Viscosity measured using Brookfield RTV, spindle #7, 20 RPM

Typical Mixed Physical Properties

Attribute Name	Temperature	Value
Worklife		9 min [1]
Open Time		10 min [2]
Time to Full Cure	23 °C	24 h
Time to Handling Strength		45 min

[1] 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.

[2] Max time allowed after applying adhesive to a substrate before bond must be closed and fixed. Cure times approximate and depend on adhesive temperature. Hotmelts: The approx. bonding range of a 3.2 mm (1/8 in) bead of molten adhesive on a non-metallic surface.

Typical Cured Characteristics

Temperature: 23 °C

Attribute Name	Test Method	Value
Young's Modulus	DIN EN ISO 527-2	543 MPa [1]
Elongation at Break	DIN EN ISO 527-2	54 % [1]
Shore D Hardness	ASTM D2240	77
Stress at Break	DIN EN ISO 527-2	18.5 MPa [1]

[1] Tested according to DIN EN ISO 527-2 Sample type 1B. Specimens were cut using a waterjet. Test rate was 1% / minute.

Typical Performance Characteristics

Overlap Shear Strength

Temperature: 23 °C
Dwell Time: 7 d
Test Method: ASTM D1002, ISO 4587

Substrate	Surface Prep	Value
Aluminum	MEK/Abrade/MEK	18.5 MPa [1]
Cold Rolled Steel	MEK/Abrade/MEK	15.7 MPa [1]
Stainless Steel	MEK/Abrade/MEK	21.5 MPa [1]
Galvanized Steel	MEK/Abrade/MEK	8.3 MPa [1]
Polycarbonate (PC)	MEK/Abrade/MEK	4.9 MPa [1]
Fiber-Reinforced Plastic	IPA Wipe/Abrade/IPA Wipe	6.2 MPa [1]
ABS	MEK/Abrade/MEK	1.6 MPa [1]
Glass Filled Epoxy LW	IPA Wipe/Abrade/IPA Wipe	16.5 MPa [1]
Glass Filled Polyester	IPA Wipe/Abrade/IPA Wipe	6.9 MPa [1]

[1] 25 mm (1") wide, 12.7 mm (1/2") overlap samples, 25 mm (1") x 102 mm (4") substrates, bondline thickness: 0.13-0.20 mm (5-8 mil)
Separation rate 2.5 mm/min (0.1 in/min) metal, 51 mm/min (2 in/min) plastic, 510 mm/min (20 in/min) rubber.
Substrate thickness: steel 1.5 mm (60 mil), other metal 1.3-1.6 mm (50-64 mil), rubber and plastic 3.2 mm (125 mil)
Cohesive Failure (CF), Adhesive Failure (AF), Mixed Failure (MF), Substrate Failure (SF)

Substrate: Etched Aluminum
Temperature: 23 °C
Dwell Time: 24 h

Attribute Name	Test Method	Value
Bell Peel	ASTM D3167	49 N/cm [1]

[1] 25 mm (1 in) wide samples; 0.4 mm (0.017 in) bond line thickness. The testing jaw separation rate was 15 cm/min (6 in/min). The bonds are made with 1.6 mm (0.064 in) bonded to 0.64 mm (0.025 in) thick adherends.

Electrical and Thermal Properties

Attribute Name	Value
Glass Transition Temperature (Tg)	41 °C [1]

[1] Measured at one week via DMA

Product Uses

Unless stated otherwise in 3M's product literature, packaging inserts or product packaging for individual products, 3M warrants that each 3M product meets the applicable specifications at the time 3M ships the product. Individual products may have additional or different warranties as stated on product literature, package inserts or product packages. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's application. If the 3M product is defective within the warranty period, your exclusive remedy and 3M's and seller's sole obligation will be, at 3M's option, to replace the product or refund the purchase.

Handling/Application Information

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.

Industry Specifications

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

Storage and Shelf Life

Store under normal conditions of 16° to 27°C (60° to 80°F) and 40 to 60% relative humidity in the original packaging, out of direct sunlight. For best performance, use this product within 12 months from date of manufacture.

Product Family

This product is a part of the the Composite Urethane Family which includes: 3M™ Scotch-Weld™ Multi-Material Composite Urethane Adhesive DP6310NS, 3M™ Scotch-Weld™ Multi-Material Composite Urethane Adhesive DP6330NS

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

Automotive Disclaimer

Intended Use: 3M™ Scotch-Weld™ Multi-Material & Composite Urethane Adhesive DP6310NS and DP6330NS are intended for use in general industrial bonding applications to metals, high surface energy plastics, and composites, when used in accordance with the guidance provided by 3M in this Technical Data Sheet and other product instructions. Since there are many factors that can affect a product's use, the customer remains responsible for determining whether the 3M product is suitable and appropriate for the customer's specific application and system, including customer conducting an appropriate risk assessment and evaluating the 3M product in customer's application and system.

Restricted Use: 3M advises against the use of this 3M product in any application other than the stated intended use(s), since other applications have not been evaluated by 3M and may result in an unsafe or unintended condition.

Information

Precautionary Information: Refer to product label and Material Safety Data Sheet for health and safety information before using the product. For information, please contact your local 3M Office. You can click or scan QR code to see contact detail or visit www.3M.com Important Information: All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method or application. All questions of liability relating to this product are governed by the terms of the sale subject, where applicable, to the prevailing law. Values presented have been determined by standard test methods and are average values not to be used for specification purposes. Our recommendations on the use of our products are based on tests believed to be reliable but we would ask that you conduct your own tests to determine their suitability for your applications. This is because 3M cannot accept any responsibility or liability direct or consequential for loss or damage caused as a result of our recommendations.

Warranty, Limited Remedy, and Disclaimer

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.

For Additional Information

To request additional product information or to arrange for sales assistance, please contact your local 3M office.

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