English-EU

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Technical Data Sheet

3M™ Scotch-Weld™ Nylon Bonder Structural Adhesive DP8910NS

Product Details

Product Description

3M™ Scotch-Weld™ Nylon Bonder Structural Adhesive DP8910NS is a black, non-sag, two-part structural acrylic adhesive. 8910 creates a structural bond to nylon (polyamides) and other engineered plastics as well as aluminum and other metals without the need for extensive surface preparation such as plasma or flame treatment

Product Features

- Excellent bond strength, durability, and environmental resistance on Nylon and metals
- Contains ceramic beads to control bond line thickness

Technical Information Note

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

Note: The following data is taken from tests conducted on limited production runs. 3M will continue to test samples from additional product runs and will issue a new data page if the test results change.

Typical Uncured Physical Properties

Attribute Name	Value
Mix Ratio by Weight (B:A)	10:1
Mix Ratio by Volume (B:A)	10:1

Attribute Name	Temperature	Value
Base Color		Black
Accelerator Color		Grey
Base Net Weight		1.03 g/cm³
Accelerator Net Weight		1.07 g/cm³
Base Viscosity	23 °C	60,000 – 120,000 cps cP [1]
Accelerator Viscosity	23 °C	5,000 – 20,000 cps cP [1]
Base Density		1.1 g/cm³
Accelerator Density		1 g/cm³

[1] Viscosity measured using cone-and-plate viscometer; reported viscosity at 3.8 sec^{-1} shear rate.

Typical Mixed Physical Properties

Attribute Name	Value
Viscosity	55,000 — 111,000 cps @ 3.8 sec-1 cP

Attribute Name	Temperature	Value
Open Time		10 min [1]
Time to Handling Strength	23 °C	15-20 min [2]
Time to Full Cure	23 °C	24 hrs h

[1] 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.

[2] Minimum time required to achieve 0.3 MPa (50 psi) of overlap shear strength. Cure times are approximate and depend on adhesive temperature.

Typical Physical Properties

Attribute Name	Temperature	Value
Cured Color		Black
Mixed Color		Black
Flow Characteristics - Thickness	49 °C	the end user for suitability. mm [1]

[1] 25 x 25 x 3.2 mm (1 x 1 x 1/8 in) specimen under 4.5 kg (10 lb) compression for 24 hours.

Typical Cured Characteristics

Attribute Name	Test Method	Temperature	Value
Modulus	ASTM D638, ISO 527	23 °C	110 ksi lb/in² [1]
Tensile Strain at Break			79 % [2]

[1] 3 mm (1/8") thick Type I test specimens; samples pulled at 5 mm/min (0.2 in/min). 2 week dwell at 22 °C (72 °F)

[2] 3 mm (1/8 in) thick Type I test specimens; samples pulled at 5 mm/min (0.2 in/min)

Typical Performance Characteristics

Overlap Shear Strength

Temperature: 23 °C
Test Condition: 23 °C
Dwell Time: 24 h
Test Method: ASTM D1002, ISO 4587

Substrate	Surface Prep	Value
Aluminum	Etched	24 MPa [1]
Nylon 12		6.8 MPa [1]
Nylon 6		6 MPa [1]
Nylon 6,6		8.1 MPa [1]

[1] 1 min open time, 12.7 mm (0.5 in) overlap, 0.25 mm (0.010 in) bond line thickness, separation rate 2.5 mm/min (0.1 in/min) metals, 51 mm/min (2 in/min) plastics, abraded and solvent wiped substrates, 1.6 mm (1/16 in) metals, 0.8 mm (1/8 in) plastics
Cohesive (CF), Adhesive (AF), and Substrate (SF) Failure

Overlap Shear Strength

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

Substrate	Surface Prep	Value
Cold Rolled Steel	MEK/Abrade/MEK	15 MPa [1]
ABS	IPA Wipe/Abrade/IPA Wipe	4.4 MPa [1]
Polycarbonate (PC)	IPA Wipe/Abrade/IPA Wipe	0.9 MPa [1]
Acrylic (PMMA)	IPA Wipe/Abrade/IPA Wipe	5.4 MPa [1]
Fiber-Reinforced Plastic	IPA Wipe/Abrade/IPA Wipe	19.2 MPa [1]
Polyvinyl chloride (PVC)	IPA Wipe/Abrade/IPA Wipe	2.9 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: Aluminum
Surface Prep: Etched
Temperature: 23 °C
Test Condition: 23 °C

Attribute Name	Test Method	Value
Bell Peel	ASTM D3167	63 N/cm [1]

[1] Floating roller peel; adhesives allowed to cure for 24 hours @RT; 25 mm (1 in) wide samples;
Samples pulled at 15 mm/min (6 in/min)
Cohesive (CF), Adesive (AF) and Substrate (SF) Failure

Attribute Name	Value
Tensile Strength	2422 psi lb/in² [1]
Additional Test notes	Note: This adhesive also has relatively low adhesion to low surface energy plastics (such as polypropylene)

[1] 3 mm (1/8 in) thick Type I test specimens; samples pulled at 5 mm/min (0.2 in/min)

Typical Environmental Performance

Overlap Shear Strength

Test Condition: 23 °C
Dwell Time: 500 h
Test Method: ASTM D1002, ISO 4587

Temperature	Environmental Condition	Substrate	Value
23 °C	Diesel Fuel Submersion	Aluminum	96 % [1]
23 °C	Gasoline Submersion	Aluminum	19 % [1]
23 °C	Water Submersion	Aluminum	68 % [1]
23 °C	Salt water (5 wt% in water)	Aluminum	73 % [1]
85 °C	85%RH	Aluminum	52 % [1]
49 °C	80%RH	PVC	97 % [1]

[1] Performance % to control sample @RT. Samples were cured @RT for at least 24h prior to Environmental Exposure.
Overlap shear (OLS) strengths were measured on 1in wide 1/2in overlap specimens on 1in x 4in x .060in substrates.
Jaw separation 0.05 in/min. 10 mil bondline.

Overlap Shear Strength

Substrate: Aluminum
Dwell Time: 30 min
Test Method: ASTM D1002, ISO 4587

Temperature	Test Condition	Value
-40 °C	-40 °C	74 % (17.6 MPa) [1]
49 °C	49 °C	51 % (12.1 MPa) [1]
82 °C	82 °C	38 % (9.1 MPa) [1]
200 °C	200 °C	2 % (0.45 MPa) [1]
200 °C	23 °C	61 % (14.7 MPa) [1]

[1] Performance % to control sample @RT. Samples were cured @RT for at least 24h prior to Environmental Exposure.
Overlap shear (OLS) strengths were measured on 1in wide 1/2in overlap specimens on 1in x 4in x .060in substrates.
Jaw separation 0.05 in/min. 10 mil bondline.

Dispense Properties

Attribute Name	Value
200-400ml Cartridge Low Waste Nozzle	Helical (Green), 24 element, 137mm, 6.3ml, #7100066351
45-50ml Cartridge Nozzle	Quadro (Orange), 16 element, 90mm, 1.7ml, #7100202930
200-400ml Cartridge Nozzle	Helical (Orange), 18 element, 222mm, 13.0ml, #7100304367

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. Nylon surfaces to be bonded must be thoroughly cleaned with isopropyl alcohol.

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 150°F (66°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

3M™ Scotch-Weld™ Acrylic Adhesives are designed to be used on painted/coated metals, most bare metals, and most plastics and composite materials. The following cleaning methods are suggested for common surfaces: Painted/coated metals: 1. Wipe surface free of dust and dirt with clean cloth and pure isopropyl alcohol.* 2. Sandblast or lightly abrade using clean fine grit abrasives. Do not completely remove the paint layer or coating down to bare steel. 3. Wipe again with clean cloth and pure isopropyl alcohol to remove loose particles.* Bare metals: 1. Wipe surface free of dust and dirt with clean cloth and pure acetone.* 2. Sandblast or lightly abrade using clean fine grit abrasives. 3. Wipe again with clean cloth and pure acetone to remove loose particles.* Plastics and composite materials: 1. Wipe surface free of dust and dirt with clean cloth and pure isopropyl alcohol.* 2. Lightly abrade using fine grit abrasives. 3. Wipe again with clean cloth and pure isopropyl alcohol to remove loose particles.* *Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer’s precautions and directions for use. To prepare nylon surfaces, flood the surfaces to be bonded with isopropyl alcohol, let sit for a few seconds, then wipe in a single direction with a clean cloth. Repeat this step. Allow the surfaces to completely dry before applying adhesive.

Storage and Shelf Life

Store under normal conditions of 16° to 27°C (60° to 80°F) in the original packaging, out of direct sunlight. Refrigeration at 40°F (4°C) will help extend shelf life. Do not freeze. Allow product to reach room temperature prior to use. Use duo-pak containers within 18 months from date of manufacture. Bulk shelf life may vary; please consult your local 3M contact.

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

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.

ISO Statement

This product was manufactured under a 3M quality system registered to ISO 9001 standards.

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