



Technical Data Sheet

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



[Product Details](#)



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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/cm ³ (8.6 lb/gal) |
| Accelerator Net Weight | | 1.07 g/cm ³ (8.9 lb/gal) |
| Base Viscosity | 23 °C (73 °F) | 60,000 - 120,000 cps cP ¹ |
| Accelerator Viscosity | 23 °C (73 °F) | 5,000 - 20,000 cps cP ¹ |
| Base Density | | 1.1 g/cm ³ |
| Accelerator Density | | 1 g/cm ³ |

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 (73 °F) | 15-20 min ² |
| Time to Full Cure | 23 °C (73 °F) | 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 (120 °F) | 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 (73 °F) | 110 ksi lb/in ² 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 (73 °F)

Test Condition: 23 °C

Dwell Time: 24 h

Test Method: ASTM D1002, ISO 4587

| Substrate | Surface Prep | Value |
|-----------|--------------|---|
| Aluminum | Etched | 24 MPa (3465 lb/in ²) ¹ |
| Nylon 12 | | 6.8 MPa (992 lb/in ²) ¹ |
| Nylon 6 | | 6 MPa (867 lb/in ²) ¹ |
| Nylon 6,6 | | 8.1 MPa (1179 lb/in ²) 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 (73 °F)

Dwell Time: 7 d

Test Method: ASTM D1002, ISO 4587

| Substrate | Surface Prep | Value |
|--------------------------|--------------------------|--|
| Cold Rolled Steel | MEK/Abrade/MEK | 15 MPa (2172 lb/in ²) ¹ |
| ABS | IPA Wipe/Abrade/IPA Wipe | 4.4 MPa (635 lb/in ²) ¹ |
| Polycarbonate (PC) | IPA Wipe/Abrade/IPA Wipe | 0.9 MPa (131 lb/in ²) ¹ |
| Acrylic (PMMA) | IPA Wipe/Abrade/IPA Wipe | 5.4 MPa (786 lb/in ²) ¹ |
| Fiber-Reinforced Plastic | IPA Wipe/Abrade/IPA Wipe | 19.2 MPa (2779 lb/in ²) ¹ |
| Polyvinyl chloride (PVC) | IPA Wipe/Abrade/IPA Wipe | 2.9 MPa (414 lb/in ²) 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 (73 °F)
 Test Condition: 23 °C

| Attribute Name | Test Method | Value |
|----------------|-------------|---------------------------------|
| Bell Peel | ASTM D3167 | 63 N/cm (36 lb/in) 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), Adhesive (AF) and Substrate (SF) Failure

| Attribute Name | Value |
|-----------------------|---|
| Tensile Strength | 2422 psi lb/in ² 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 (73 °F) | Diesel Fuel Submersion | Aluminum | 96 % ¹ |
| 23 °C (73 °F) | Gasoline Submersion | Aluminum | 19 % ¹ |
| 23 °C (73 °F) | Water Submersion | Aluminum | 68 % ¹ |
| 23 °C (73 °F) | Salt water (5 wt% in water) | Aluminum | 73 % ¹ |
| 85 °C (185 °F) | 85%RH | Aluminum | 52 % ¹ |
| 49 °C (120 °F) | 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 °F) | -40 °C | 74 % (17.6 MPa) (2555 lb/in ²) ¹ |
| 49 °C (120 °F) | 49 °C | 51 % (12.1 MPa) (1763 lb/in ²) ¹ |
| 82 °C (180 °F) | 82 °C | 38 % (9.1 MPa) (1320 lb/in ²) ¹ |
| 200 °C (392 °F) | 200 °C | 2 % (0.45 MPa) (65 lb/in ²) ¹ |
| 200 °C (392 °F) | 23 °C | 61 % (14.7 MPa) (2129 lb/in ²) 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

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