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Technical Data Sheet

3M™ Scotch-Weld™ Low Odor Acrylic Adhesive DP8710NS

English-US

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Product Details

Regulatory Info/SDS

Product Description

3M™ Scotch-Weld™ DP8710 Adhesive is a low odor, non-flammable, two-part acrylic structural adhesives with a 10:1 mix ratio.

Product Features

- Low-odor, non-flammable acrylic formulation
- Non-sag formulation resists running and slumping of adhesive
- Room temperature cure
- Contains spacer 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
Color	Black [1]
Mix Ratio by Volume (B:A)	10:1
Mix Ratio by Weight (B:A)	10:1

[1] Colors may vary from nearly white to yellow/amber. Adhesive performance is not affected by color variation.

Attribute Name	Temperature	Value
Base Color		Black
Accelerator Color		Gray
Base Viscosity	23 °C (73 °F)	15000 — 80000 cP [1]
Accelerator Viscosity	23 °C (73 °F)	5000 — 20000 cP [1]
Base Density		1.07 g/cm³
Accelerator Density		1 g/cm³

[1] Viscosity measured using cone-and-plate viscometer; reported viscosity at 4 sec^{-1} shear rate.

Typical Mixed Physical Properties

Attribute Name	Temperature	Value
Density (mixed)		1 g/cm³
Viscosity		40,000 cP
Worklife		8 — 10 min [1]
Open Time		10 — 12 min [2]
Set Time (min)	23 °C (73 °F)	12 — 14 min [3]
Time to Structural Strength		15 — 20 min [4]
Time to Full Cure	23 °C (73 °F)	24 h

[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.

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

[4] Minimum time required to achieve 6.9 MPa (1,000 psi) of overlap shear strength. Cure times are approximate and depend on adhesive temperature.

Typical Physical Properties

Attribute Name	Value
Mixed Color	Black
Cured Color	Black

Typical Cured Characteristics

Attribute Name	Test Method	Temperature	Value
Modulus	ASTM D638, ISO 527	23 °C (73 °F)	44.2 MPa (6410 lb/in²) [1]
Tensile Strain at Break			113 % [2]
Shore D Hardness	ASTM D2240	23 °C (73 °F)	65

[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 Method: ASTM D1002, ISO 4587

Dwell Time	Test Condition	Substrate	Surface Prep	Value
7 d		Aluminum	MEK/Abrade/MEK	14.5 MPa (2101 lb/in²) [1]
7 d		Cold Rolled Steel	MEK/Abrade/MEK	14 MPa (2031 lb/in²) [1]
24 h	23 °C	ABS	Light Abrasion and Solvent Clean	5.8 MPa (846 lb/in²) [1]
24 h	23 °C	Acrylic (PMMA)	Light Abrasion and Solvent Clean	4 MPa (582 lb/in²) [1]
24 h	23 °C	Epoxy Resin (fiber-reinforced)	Light Abrasion and Solvent Clean	13.4 MPa (1948 lb/in²) [1]
24 h	23 °C	Polyester (PET)	Light Abrasion and Solvent Clean	4.5 MPa (651 lb/in²) [1]
24 h	23 °C	Polycarbonate (PC)	Light Abrasion and Solvent Clean	1.2 MPa (168 lb/in²) [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	105 N/cm (60 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), Adesive (AF) and Substrate (SF) Failure

Attribute Name	Value
Tensile Strength	7.2 MPa (1051 lb/in²) [1]

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

Attribute Name	Value
Additional Test notes	Note: This adhesive also has relatively low adhesion to low surface energy plastics (such as polypropylene, polyethylene, TPO, and PTFE). Applications involving any of these materials should be carefully evaluated by the end user for suitability. Note: The presence of oxygen inhibits the cure of acrylic structural adhesives. Therefore, any exposed surfaces of the mixed adhesive will cure much more slowly than adhesive contained within the bond line. With methyl methacrylate (MMA) acrylic adhesives, any uncured adhesive on the surface flashes off immediately, leaving a surface that feels dry to the touch. With this low odor acrylic adhesive, uncured adhesive on exposed surfaces does not evaporate away as quickly, leaving a tacky film of partially cured material. For manufacturing processes that need a tack-free surface quickly, such as for subsequent sanding or painting operations, consider instead using a standard MMA acrylic adhesive.

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	79 % [1]
23 °C (73 °F)	Gasoline Submersion	Aluminum	12 % [1]
23 °C (73 °F)	Water Submersion	Aluminum	60 % [1]
23 °C (73 °F)	Salt water (5 wt% in water)	Aluminum	71 % [1]
85 °C (185 °F)	85 %RH	Aluminum	83 % [1]
49 °C (120 °F)	80 %RH	PVC	98 % [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	228 % (33 MPa) (4787 lb/in²) [1]
49 °C (120 °F)	49 °C	65 % (9.4 MPa) (1369 lb/in²) [1]
82 °C (180 °F)	82 °C	33 % (4.8 MPa) (690 lb/in²) [1]
200 °C (392 °F)	200 °C	5 % (0.65 MPa) (95 lb/in²) [1]
200 °C (392 °F)	23 °C	103 % (15 MPa) (2171 lb/in²) [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
Cleaning Recommendation	Excess uncured adhesive can be cleaned with methyl ethyl ketone (MEK)
Fillers	Product contains ceramic particles from 0.002" to 0.010"
Packaging	45ml & 490ml cartridges 5 gallon pails 55 gal drums
Thixotropic Index	3.8
45-50ml Cartridge Nozzle	Quadro (Orange), 16 element, 90mm, 1.7ml, #7100202930
490ml 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.

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.

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 15 months from the date of manufacture. Bulk shelf life may vary; please consult your local 3M contact.

Product Family

This product is a part of the the Low Odor Acrylic Adhesive 87 Family which includes: 3M™ Scotch-Weld™ Low Odor Acrylic Adhesive DP8705NS, 3M™ Scotch-Weld™ Low Odor Acrylic Adhesive DP8710NS, 3M™ Scotch-Weld™ Low Odor Acrylic Adhesive DP8725NS

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

Select Automotive Applications:
This product is an industrial product and has not been designed or tested for use in certain automotive applications, such as automotive electric powertrain battery or high voltage applications, which may require the product to be manufactured in a IATF certified facility, meet a Ppk of 1.33 for all properties, undergo an automotive production part approval process (PPAP), or fully adhere to automotive design or quality system requirements (e.g., IATF 16949 or VDA 6.3). Customer assumes all responsibility and risk if customer chooses to use this product in these applications.

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