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Technical Data Sheet

3M™ Scotch-Weld™ Flexible Acrylic Adhesive DP8610NS

V-9 | English-US
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Additional Info

Regulatory Info/SDS

Product Description

3M™ Scotch-Weld™ DP8610 Adhesive is a flexible, low odor, non-flammable, two-part acrylic structural adhesives with a 10:1 mix ratio.

Product Features

- Low-odor, non-flammable acrylic formulation
- 140 % Tensile Elongation at Break
- 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.

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)	35,000-100,000 cP [1]
Accelerator Viscosity	23 °C (73 °F)	8000-18000 cP [1]
Base Density		1.1 g/cm³
Accelerator Density		1.1 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)		1.1 g/cm³
Viscosity		32.500 a 92.500 cP cP
Worklife		7 min [1]
Open Time		8 min [2]
Time to Handling Strength	23 °C (73 °F)	20 min [3]
Time to Full Cure	23 °C (73 °F)	48 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.

Typical Physical Properties

Attribute Name	Value
Cured Color	Black
Mixed Color	Black

Typical Cured Characteristics

Test Method: ASTM D638, ISO 527

Attribute Name	Dwell Time	Temperature	Value
Modulus		23 °C (73 °F)	25 MPa (3735 lb/in²) [1]
Peak Stress	7 d	23 °C (73 °F)	0.2 MPa (30 lb/in²) [2]
Elongation at Break	7 d		140 % [3]

[1] 1.5 mm (1/16") thick Type IV dog-bone specimens, samples pulled at 100 mm/min (4 in/min). 2 week dwell in CTH room at 22 °C (72 °F)

[2] Tested in accordance with ASTM D638 test method, Type IV dogbone. Jaw separation 100 mm/min. Sample removed from a dry condition and tested after equilibriation at 25 °C / 50%RH for 40 hrs.

[3] Tested in accordance with ASTM D638 test method, Type IV dogbone. Jaw separation 102 mm/min. Sample removed from a dry condition and tested after equilibriation at 25 °C / 50%RH for 40 hrs.

Temperature: 23 °C (73 °F)

Attribute Name	Test Method	Value
Shore D Hardness	ASTM D2240	38

Typical Performance Characteristics

Overlap Shear Strength

Temperature: 23 °C (73 °F)
Test Condition: 23 °C
Dwell Time: 72 h
Test Method: ASTM D1002, ISO 4587

Substrate	Surface Prep	Value
Aluminum	MEK / Abrade / MEK	6.8 MPa (983 lb/in²) [1]
Cold Rolled Steel	MEK / Abrade / MEK	5.6 MPa (816 lb/in²) [1]
ABS	Solvent Wipe (IPA)	5.6 MPa (807 lb/in²) [1]
Polycarbonate (PC)	Solvent Wipe (IPA)	3.7 MPa (542 lb/in²) [1]
Acrylic (PMMA)	Solvent Wipe (IPA)	4.8 MPa (698 lb/in²) [1]
PVC	Solvent Wipe (IPA)	4.8 MPa (691 lb/in²) [1]
Epoxy Resin (fiber-reinforced)	MEK / Abrade / MEK	10.1 MPa (1462 lb/in²) [1]
Polyester resin (fiber-reinforced)	MEK / Abrade / MEK	5.2 MPa (755 lb/in²) [1]

[1] 25 mm by 12.7 mm (1" x 1/2"), bondline thickness: 0.07-0.25 mm (3-10 mil). Substrate size: 102mm x 25mm (1" x 4"). Separation rate 1.2 mm/min (0.05 in/min) for metal, 51 mm/min (2 in/min) for plastic, 510 mm/min (20 in/min) for rubber.

Substrate: Aluminum
Surface Prep: Light Abrasion and Solvent Clean
Temperature: 23 °C (73 °F)
Test Condition: 23 °C

Attribute Name	Test Method	Value
Bell Peel	ASTM D3167	11 N/mm (63 lb/in) [1]

[1] Bonds are made with a 1.6mm thick, 178 mm long (1/16" thick, 7" long) substrate, bonded to a 0.5 mm thick, 254 mm long (20 mil thick, 10" long) substrate. 25 mm (1") wide bonds. Bondline thickness: 0.04 mm (17 mil). Separation rate 1.2 mm/min (6 in/min pull rate)
Cohesive Failure (CF), Adhesive Failure (AF), Mixed Failure (MF), Substrate Failure (SF)

Substrate: Aluminum
Surface Prep: MEK/Abrade/MEK
Test Condition: Pendulum Impact

Attribute Name	Test Method	Value
Impact Shear Strength	ASTM D950	16J [1]

[1] 21.7J Hammer

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 some acrylic structural adhesives. Therefore, any exposed surfaces of the mixed adhesive will cure more slowly than adhesive within the bond line. With this acrylic adhesive, uncured adhesive that remains on exposed surfaces, will leave 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
85 °C (185 °F)	85 %RH	Aluminum	87 % [1]
23 °C (73 °F)	Salt water (5 wt% in water)	Aluminum	67 % [1]
23 °C (73 °F)	Water Submersion	Aluminum	68 % [1]
23 °C (73 °F)	Gasoline Submersion	Aluminum	1 % [1]
23 °C (73 °F)	Diesel Fuel Submersion	Aluminum	92 % [1]
49 °C (120 °F)	80 %RH	PVC	87 % [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	179 % (12.1 MPa) (1756 lb/in²) [1]
49 °C (120 °F)	49 °C	43 % (2.9 MPa) (427 lb/in²) [1]
82 °C (180 °F)	82 °C	24 % (1.7 MPa) (239 lb/in²) [1]
200 °C (392 °F)	200 °C	10 % (0.7 MPa) (103 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.

Electrical and Thermal Properties

Attribute Name	Value
Glass Transition Temperature (Tg)	27 °C [1]

[1] Measured at one week via DMA

Attribute Name	Value
Thermal Conductivity	Conductivity: 0.235 W/mK

Coefficient of Thermal Expansion

Test Condition	Value
Below Tg	146.8 µm/(m° C)
Above Tg	218.9 µm/ (m° C)

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
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 16 °C (60 °F) or above until completely firm. Applying heat up to 66 °C (150 °F) 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 4 °C (40 °F) will help extend shelf life. Do not freeze. Allow product to reach room temperature prior to use. For dual-pack containers within 18 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 Flexible Acrylic Family which includes: 3M™ Scotch-Weld™ Flexible Acrylic Adhesive DP8610NS, 3M™ Scotch-Weld™ Flexible Acrylic Adhesive DP8625NS

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

Intended Use: This product is intended for bonding of materials specified and described in its Technical Data Sheet, when used in accordance with the guidance provided by 3M in such 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.

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ISO Statement

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

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