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Technical Data Sheet

3M™ Scotch-Weld™ Acrylic Adhesive DP8410NS Green

Product Details

Regulatory Info/SDS

Product Description

3M™ Scotch-Weld™ Acrylic Adhesives are high performance, two-part acrylic adhesives that offer excellent shear, peel, and impact performance. These toughened products provide improved adhesion to many plastics and metals, including those with slightly oily surfaces. These durable products feature a fast rate of strength build, providing structural strength in minutes.

Review UL File QOQW2. MH17478 and Sign Components Manual (SAM) File E464624 for certification of these adhesive systems in electrical equipment.

DP8410NS Green has been tested for surface flammability, smoke, toxic gas generation, and caloric content per ASTM E162, ASTM E662, ASTM E1354, Bombardier SMP 800-C, and Boeing BSS 7239 test methods. DP8405NS Green and DP8425NS Green should yield similar results.

Product Features

- Toughened
- Variety of open times available
- Excellent shear strength
- Increased cure speed with applied heat
- Outstanding peel and impact strength
- Contain glass beads (0.010” diameter) to control bond line thickness
- 10:1 mix ratio control bond line thickness

Note: Unless otherwise indicated, all properties measured at 72°F (22°C).

Technical Information Note

The following technical information and data should be considered representative or typical only and should not be used for specification purposes.
Environmental aging tests have shown that these adhesives may accelerate the corrosion of certain bare metals (such as cold rolled steel, copper, brass, and bronze), leading to low bond strength values and early bond failure. These adhesives also have 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.

Typical Uncured Physical Properties

Attribute Name	Value
Mix Ratio by Volume (B:A)	10:1
Mix Ratio by Weight (B:A)	9.5:1

Attribute Name	Temperature	Value
Base Color		Brown
Accelerator Color		Blue
Base Density		1.02 g/cm³ [1]
Accelerator Density		1.07 g/cm³ [1]
Base Viscosity	22 °C (72 °F)	65,000 cP [2]
Accelerator Viscosity	22 °C (72 °F)	30,000 cP [2]

[1] Density measured using pycnometer.

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

Typical Mixed Physical Properties

Attribute Name	Temperature	Value
Density (mixed)		1.03 g/cm³
Viscosity		60,000 cP
Open Time		8 min [1]
Worklife	22 °C (72 °F)	10 to 12 min [2]
Set Time (min)	22 °C (72 °F)	26 to 30 min [3]
Time to Structural Strength		34 to 38 min [4]
Time to Full Cure	22 °C (72 °F)	24 h [5]

[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 1/8" bead of molten adhesive on a non-metallic surface.

[2] 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.

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

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

[5] The cure time is defined as that time required for the adhesive to achieve a minimum of 80% of the ultimate strength as measured by aluminum-aluminum OLS.

Typical Physical Properties

Attribute Name	Value
Cured Color	Green
Mixed Color	Green

Typical Cured Characteristics

Attribute Name	Temperature	Value
Modulus	22 °C (72 °F)	190,000 lb/in² [1]
Tensile Strain at Break		6 % [2]

[1] 1/8" thick Type I test specimens; samples pulled at 0.2 in/min.
ASTM D638
2 week dwell at 23°C (72°F)

[2] 1/8'' thick Type I test specimens; samples pulled at 0.2 in/min.

Typical Performance Characteristics

Overlap Shear Strength

Surface Prep: Light Abrasion and Solvent Clean
Temperature: 22 °C (72 °F)
Dwell Time: 24 h
Test Method: ASTM D1002

Test Condition	Substrate	Value
	ABS	1100 lb/in² (SF) [1]
	Acrylic (PMMA)	1300 lb/in² (SF) [1]
	Epoxy Resin (Fibre Reinforced)	4200 lb/in² (CF) [1]
	Polycarbonate (PC)	1300 lb/in² (SF) [2]
	Polyester (PET)	1000 lb/in² (SF) [1]
	Polystyrene	550 lb/in² (AF) [1]
	Polyvinyl chloride (PVC)	1700 lb/in² (SF) [1]
	Stainless Steel	3500 lb/in² (CF) [1]
	Aluminum	3900 lb/in² (CF) [1]
@ -40°F(-40°C)	Aluminum	3600 lb/in² (CF) [1]

Test Condition	Substrate	Value
@ 180°F(82°C)	Aluminum	1250 lb/in² (CF) [1]

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

[2] 0.5in overlap, pulled at 0.1 in/min for metals and 2 in/min for plastics, substrates lightly abraded and solvent wiped, 1/16in aluminum and 1/8in plastics, composite thickness varied.
Substrate (SF), Adhesive (AF), Cohesive (CF), Mixed (MF) Failure modes

Temperature: 22 °C (72 °F)
Substrate: Etched Aluminum

Attribute Name	Value
Bell Peel	60 lb/in width (CF) [1]

[1] 6 in/min, 1in wide, 1/16in thick
Data from 3M™ EPX™ Applicator System with an EPX static mixer according to manufacturer's directions. Thorough hand-mixing will afford comparable results.
Cohesive (CF), Adesive (AF) and Substrate (SF) Failure

Attribute Name	Value
Tensile Strength	2,200 lb/in² [1]

[1] 1/8'' thick Type I test specimens; samples pulled at 0.2 in/min.

Attribute Name	Value
Additional Test notes	Environmental aging tests have shown that these adhesives may accelerate the corrosion of certain metals (such as bare steel, copper, brass, and bronze), leading to low bond strength values and early bond failure. These adhesives also have 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.

Typical Environmental Performance

Overlap Shear Strength

Substrate: Aluminum
Dwell Time: 1,000 h
Test Method: ASTM D1002

Temperature	Environmental Condition	Value
-40 °C (-40 °F)		95 % [1]
149 °C (300 °F)		100 % [1]
49 °C (120 °F)	80%RH	85 % [1]
66 °C (150 °F)	80%RH	60 % [1]
85 °C (185 °F)	85%RH	40 % [1]
22 °C (72 °F)	100%RH	90 % [1]
32 °C (90 °F)	100%RH	85 % [1]
49 °C (120 °F)	100%RH	50 % [1]
22 °C (72 °F)	Salt water (5 wt% in water)	95 % [1]
22 °C (72 °F)	Antifreeze (50 wt% in water)	100 % [1]
22 °C (72 °F)	Oil 10W30	100 % [1]
22 °C (72 °F)	Bleach (10 wt% in water)	95 % [1]

Temperature	Environmental Condition	Value
22 °C (72 °F)	Isopropyl Alcohol (IPA)	90 % [1]
22 °C (72 °F)	Diesel Fuel	100 % [1]
22 °C (72 °F)	Gasoline	75 % [1]

[1] Performance % to control sample @RT, tested after 24hr dwell @RT.
Cured adhesives can handle short contact to most chemicals or env. cond. Avoid long exposure to:
Temp >100°F + water
Ketone-type solvents (acetone, MEK)
Gasoline and similar liquids

Overlap Shear Strength

Substrate: Polyvinyl chloride (PVC)
Dwell Time: 1,000 h
Test Method: ASTM D1002

Temperature	Environmental Condition	Value
-40 °C (-40 °F)		100 % [1]
49 °C (120 °F)		95 % [1]
66 °C (150 °F)		100 % [1]
85 °C (185 °F)	85%RH	100 % [1]
22 °C (72 °F)	100%RH	100 % [1]
22 °C (72 °F)	Hydrochloric acid (16 wt% in water)	95 % [1]
22 °C (72 °F)	Salt water (5 wt% in water)	100 % [1]
22 °C (72 °F)	Sodium hydroxide (10 wt% in water)	95 % [1]

[1] Performance % to control sample @RT, tested after 24hr dwell @RT.
Cured adhesives can handle short contact to most chemicals or env. cond. Avoid long exposure to:
Temp >100°F + water
Ketone-type solvents (acetone, MEK)
Gasoline and similar liquids

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 or coated metals, most plastics, and some bare metals. 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.

Aluminum/stainless steel:
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:
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.

Industry Specifications

NFPA 130 test report for details (ASTM E1354)
NFPA 130 test report for details (ASTM E162, ASTM E662, SMP 800-C, BSS 7239)

Storage and Shelf Life

Store product at 80°F (27°C) or below. Refrigeration at 40°F (4°C) will help extend shelf life. Do not freeze. Allow product to reach room temperature prior to use.
3M™ Scotch-Weld™ Acrylic Adhesives have a shelf life of 24 months from date of manufacture in unopened original containers kept at recommended storage conditions.

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 or (651) 737-6501.

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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