

March, 2018

3M™ Scotch-Weld™ Low Odor Acrylic Adhesive DP8810NS Green

Product Description

3M™ Scotch-Weld™ Low Odor 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. Their low odor and non-flammability features also make them easier to incorporate into a manufacturing process.

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

DP8810NS 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.

DP8805NS Green and DP8825NS Green should yield similar results.



Product Features

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

Typical Uncured Physical Properties

Property	Values	Notes
Base Color	Off-White	
Accelerator Color	Blue	
Base Density	1.06 g/cm³	Density measured using pycnometer.
Accelerator Density	1.08 g/cm³	Density measured using pycnometer.
Base Viscosity	45000 cP	Viscosity measured using cone-and-plate viscometer; reported viscosity at 3.8 sec^-1 shear rate.
Accelerator Viscosity	15000 cP	Viscosity measured using cone-and-plate viscometer; reported viscosity at 3.8 sec^-1 shear rate.
Mix Ratio by Volume (B:A)	10:1	
Mix Ratio by Weight (B:A)	10:1	

Typical Performance Characteristics

Additional Test notes

Note: 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.

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 these low odor acrylic adhesives, uncured adhesive on exposed surfaces does not evaporate away quickly, leaving a wet film of partially cured material. For manufacturing processes that need a dry surface quickly, such as for subsequent sanding or painting operations, consider instead the standard acrylic adhesives (DP8405NS Green, DP8410NS Green, DP8425NS Green, and Metal Bonder DP8407NS Green).

Typical Performance Characteristics (continued)

Bell Peel: 35 lb/in width

- Conditions**
Dwell/Cure Time: 24 hr @ Room Temperature
Substrate: Aluminum
Failure mode: CF
- Methods**
ASTM D3167
- Additional Information**

Notes: 1" wide samples; 0.017" bond line thickness; samples pulled at 6 in/min; aluminum surfaces etched; substrates used were 1/16" thick and 0.020" thick aluminum.

Note: The data in this sheet were generated using the 3M™ EPX™ Applicator System equipped with an EPX static mixer, according to manufacturer’s directions. Thorough hand-mixing will afford comparable results.

Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)

Environmental Resistance	Temp C	Temp F	Environmental Condition	Substrate
35 %	49C	120F	Water	Aluminum
55 %	32C	90F	Water	Aluminum
70 %	66C	150F	80%RH	Aluminum
95 %	-40C	-40F		Aluminum
100 %	149C	300F		Aluminum
65 %	49C	120F	80%RH	Aluminum
50 %	85C	185F	85%RH	Aluminum
75 %	22C	72F	Water	Aluminum
75 %	22C	72F	Salt water (5 wt% in water)	Aluminum
90 %	22C	72F	Diesel Fuel	Aluminum
95 %	22C	72F	Motor Oil	Aluminum
90 %	22C	72F	Antifreeze (50 wt% in water)	Aluminum
50 %	22C	72F	Isopropyl Alcohol (IPA)	Aluminum
65 %	22C	72F	Bleach (10 wt% in water)	Aluminum
100 %	-40C	-40F		Polyvinyl chloride (PVC)
95 %	49C	120F		Polyvinyl chloride (PVC)
100 %	66C	150F		Polyvinyl chloride (PVC)
100 %	22C	72F	Water	Polyvinyl chloride (PVC)
100 %	22C	72F	Salt water (5 wt% in water)	Polyvinyl chloride (PVC)
95 %	22C	72F	Hydrochloric acid (16 wt% in water)	Polyvinyl chloride (PVC)

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Typical Performance Characteristics (continued)

Environmental Resistance	Temp C	Temp F	Environmental Condition	Substrate
95 %	22C	72F	Sodium hydroxide (10 wt% in water)	Polyvinyl chloride (PVC)
100 %	85C	185F	85%RH	Polyvinyl chloride (PVC)

Property: Environmental Resistance
Method: ASTM D1002
Attribute Modifier: Overlap Shear
Dwell/Cure Time: 1000
Dwell Time Units: hr
notes: Values indicate overlap shear test performance retained after 1,000 hours of continuous exposure relative to a control sample left at room temperature. Samples exposed after 24hr dwell at Room temperature. Note: Fully-cured structural adhesives can withstand short-term incidental contact with almost any solvent, chemical, or environmental condition. However, long-term continuous exposure of these Low Odor Acrylic Adhesives to the following liquids should be avoided: 1. Elevated temperature (>100°F) water 2. Ketone-type solvents (acetone, MEK) 3. Gasoline and similar liquids

Typical Mixed Physical Properties

Property	Values	Test Condition	Notes
Color	Blue-Green	Mixed	
Viscosity	45000 cP		
Density (mixed)	1.06 g/cm³		
Worklife	8 to 12 min	(Nozzle Mixed) @ Room Temperature	Maximum time that adhesive can remain in a static mixing nozzle and still be expelled without undue force on the applicator.
Open Time	8 to 12 min		Maximum time allowed after applying adhesive to one substrate before bond must be closed and fixed in place. Cure times are approximate and depend on adhesive temperature.
Time to Handling Strength	16 to 20 min	Room Temperature	Minimum time required to achieve 50 psi of overlap shear strength. Cure times are approximate and depend on adhesive temperature.
Time to Structural Strength	19 to 23 min		Minimum time required to achieve 1,000 psi of overlap shear strength. Cure times are approximate and depend on adhesive temperature.
Time to Full Cure	24 h	Room Temperature	

Typical Cured Characteristics

Property	Values	Method	Dwell/Cure Time	Notes
Modulus	125000 lb/in²	ASTM D638	2 wk @ Room Temperature	1/8" thick Type I test specimens; samples pulled at 0.2 in/min.
Tensile Strength	1650 lb/in²	ASTM D638	2 wk @ Room Temperature	1/8" thick Type I test specimens; samples pulled at 0.2 in/min.
Tensile Strain at Break	6.5 %	ASTM D638	2 wk @ Room Temperature	1/8" thick Type I test specimens; samples pulled at 0.2 in/min.

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.

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Handling/Application Information (continued)

Surface Preparation

3M™ Scotch-Weld™ Low Odor Acrylic Adhesives are designed to be used on painted or coated metals, most plastics, glass, 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.*

Glass:

- 1. Wipe surface free of dust and dirt with clean cloth and pure acetone.*
- 2. Apply a thin coating of silane adhesion promoter to the glass surface and allow to dry completely before adhesive bonding.

*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 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™ Low Odor Acrylic Adhesives have a shelf life of 24 months from date of manufacture in unopened original containers kept at recommended storage conditions.

Industry Specifications

Review UL File QOQW2. MH17478 and Sign Components Manual (SAM) File E464624 for certification of these adhesive systems in electrical equipment.
Bombardier SMP 800-C
Boeing BSS 7239
EN 45545 test report details (ISO 5659-2, ISO 9239-1, ISO 5660-1, ISO 5658-2)
NFPA 130 test report details (ASTM E162, ASTM E662, SMP 800-C, BSS 7239)

Trademarks

3M, Scotch-Weld and EPX are trademarks of 3M Company.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/company-us/all-3m-products/~ /3M-Scotch-Weld-Low-Odor-Acrylic-Adhesive-DP8810NS?N=5002385+3293242479&rt=rud
Safety Data Sheet (SDS)	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=DP8810NS Green

3M™ Scotch-Weld™ Low Odor Acrylic Adhesive DP8810NS Green

Family Group

	DP8805NS Green	DP8810NS Green	DP8825NS Green
Worklife (min) Test Condition: (Nozzle Mixed) @ Room Temperature	3 to 5	8 to 12	22 to 24
Time to Full Cure (h) Test Condition: Room Temperature	24	24	24
Time to Handling Strength (min) Test Condition: Room Temperature	6 to 8	16 to 20	42 to 46
Color Test Condition: Mixed	Blue-Green	Blue-Green	Blue-Green
Open Time (min)	4 to 6	8 to 12	20 to 22
Time to Structural Strength (min)	8 to 10	19 to 23	50 to 56

ISO Statement

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

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.

Information

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