



Scotch-Weld™ Structural Plastic Adhesives

DP8010 Blue • DP8010NS Blue

Technical Data Sheet

May 2014

Product Description 3M™ Scotch-Weld™ Structural Plastic Adhesives DP8010 Blue and DP8010NS Blue are two-part, acrylic-based adhesives (10:1 ratio by volume) that can bond many low surface energy plastics, including many grades of polypropylene, polyethylene and TPO's *without special surface preparation*.

These adhesives can replace screws, rivets, plastic welding, and two-step processes which include chemical etchants, priming or surface treatments in many applications.

Note: The following data are taken from tests conducted on a limited number of production runs. 3M will continue to test samples from additional manufacturing lots and issue a new technical data sheet if the results change.

Features

- Ability to bond dissimilar substrates
- Ability to structurally bond polyolefins without special surface preparation
- Room temperature cure
- Regular and Non-Sag formulations
- Excellent water and humidity resistance
- Very good chemical resistance
- One-step process; no pre-treatment of the polyolefin substrates needed
- Solvent-free adhesive system
- Convenient hand-held applicator

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.

3M Scotch-Weld™

Structural Plastic Adhesives

DP8010 Blue • DP8010NS Blue

Typical Uncured Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Property		3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010 Blue	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010NS Blue
Color	Base (B)	Blue-green	
	Accelerator (A)	Off-white	
Viscosity ¹	Base (B)	27,000 cP	64,000 cP
	Accelerator (A)	17,000 – 40,000 cP	17,000 – 40,000 cP
Density	Base (B)	8.5 lb/gal	
	Accelerator (A)	8.3 – 8.7 lb/gal	
Mix ratio	By volume	10:1	
	By weight	10:1	
Work life ²		Approx. 8 minutes	
Open time ³		10 minutes	
Time to handling strength ⁴		60 minutes	

1. Viscosity measured using Brookfield RTV, spindle #7, 20 RPM @ 80°F (27°C)
2. Maximum time that adhesive can remain in a static mixing nozzle and still be expelled without undue force on the applicator.
3. Maximum time allowed after applying adhesive to one substrate before bond must be closed and fixed in place.
4. Minimum time required to achieve 50 psi of overlap shear strength, measured on HDPE

Typical Mixed Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Property	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010 Blue	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010NS Blue
Color	Blue-green	
Full cure time	24 hours	
Dispense viscosity (73°F)	25,000 cP	64,000 cP

3M Scotch-Weld™
Structural Plastic Adhesives
 DP8010 Blue • DP8010NS Blue

**Typical Cured
 Physical Properties**

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Overlap Shear (psi)⁷, ASTM D1002

Substrate	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010 Blue	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010NS Blue
Aluminum (MEK/abrade/MEK)	1960 CF	1900 CF
Cold-rolled steel (MEK/abrade/MEK)	1930 CF	1880 CF
Stainless steel (MEK/abrade/MEK)	2100 CF	1620 CF
Copper (MEK/abrade/MEK)	1870 CF	1830 CF
Galvanized steel (MEK/abrade/MEK)	780 CF	790 mixed
PP (IPA wipe)	1130 SF	1190 SF
LDPE (IPA wipe)	360 SF	370 SF
HDPE (IPA wipe)	880 SF	1130 SF
UHMW-PE (IPA wipe)	730 CF	750 SF
Gel coat (fiberglass-smooth side)	880 SF	1330 SF
Acrylic	1400 SF	1390 SF
PVC	1830 SF	1790 SF
PC	500 AF	460 AF
ABS	1280 SF	1290 SF
Polystyrene (HIPS)	560 SF	590 SF
FRP (Epoxy)	2860CF	2880 CF
Acetal	90 AF	120 AF
SMC (Fiberglass-rough side)	730 SF	930 SF
Glass	620 SF	910 SF
PTFE (IPA/abrade/IPA)	420 AF	330 AF

Overlap Shear (psi); Etched Aluminum, at Temperature⁷, ASTM D1002

Temperature	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010 Blue	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010NS Blue
-20°F (-29°C)	3470 mixed	2240 mixed
73°F (23°C)	2910 CF	1940 CF
120°F (49°C)	1030 mixed	910 mixed
150°F (66°C)	570 AF	380 AF
180°F (82°C)	360 AF	130 AF

7. Overlap shear values measured using ASTM D1002; adhesives allowed to cure for 7 days at room temperature; ½” overlap; 0.008” bond line thickness; samples pulled at 0.1 in/min for metals and 2 in/min for plastics; all surfaces prepared with light abrasion and solvent clean; substrates used were 1/16” thick aluminum and 1/8” thick plastics; failure modes: AF: adhesive failure CF: cohesive failure SF: substrate failure mixed: AF/CF

3M Scotch-Weld™
Structural Plastic Adhesives
 DP8010 Blue • DP8010NS Blue

**Typical Cured
 Physical Properties**

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

**Environmental Resistance⁸ Expressed as Percent Retention of Control Strength
 (Measured on 1/8" thick HDPE via Overlap Shear, ASTM D1002)**

Condition	Substrate	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010 Blue	3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010NS Blue
Control	HDPE	100% SF	100 % SF
160°F water soak		70% CF	75% CF
150°F/80% RH		90% CF	97% CF
NaOH 10% by wt		98% SF/CF	100% SF
HCl 16% by volume		98% SF	100% SF/CF
IPA soak		80% CF	80% CF
Diesel fuel soak		95% SF/CF	98% SF
50% Antifreeze soak		97% SF/CF	100% SF
Gasoline soak		60% CF	60% CF
Acetone soak		15% AF	25% AF

8. Values indicate overlap shear test performance retained after 14 days of continuous exposure relative to a control sample left at room temperature; samples conditioned for 7 days at room temperature and 50% relative humidity prior to tests.

Floating Roller Peel (lb/inch width)⁹ ASTM D3167

Substrate	3M™ Scotch-Weld™ Structural Plastic Adhesives DP8010 Blue and DP8010NS Blue
HDPE	Substrate Failure

⁹ Floating roller peel values measured using ASTM D3167; allowed to cure for 24 hours at room temperature; 1" wide samples; 0.017" bond line thickness; samples pulled at 20 in/min. Flexible HDPE was 1mm thick and rigid HDPE was 4.8mm thick.

AF: adhesive failure CF: cohesive failure SF: substrate failure

**Directions
 For Use**

- 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.
- 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.

3M Scotch-Weld™

Structural Plastic Adhesives

DP8010 Blue • DP8010NS Blue

Directions For Use (continued)

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™ Structural Plastic Adhesives are designed to be used on metal, wood, and most plastic surfaces. The following cleaning methods are suggested for common surfaces:

Steel:

1. Wipe free of dust and dirt with pure solvent such as acetone or isopropyl alcohol.*
2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with clean solvent to remove loose particles.*

Aluminum:

1. Wipe free of dust and dirt with pure solvent such as acetone or isopropyl alcohol.*
2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with clean solvent to remove loose particles.*
4. When using a primer, apply adhesive within 4 hours of primer application.

Plastics/Rubbers:

1. Wipe with isopropyl alcohol.*
2. Abrade using fine grit abrasives (except polyolefins).
3. Wipe with isopropyl alcohol.*

Glass:

1. Solvent wipe surface using acetone or MEK.*
2. Apply a thin coating of a silane adhesion promoter to the glass surfaces to be bonded and allow to dry completely before bonding.

***Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.**

3M Scotch-Weld™

Structural Plastic Adhesives

DP8010 Blue • DP8010NS Blue

Storage Store product at at 40°F (4°C). Do not freeze. Allow product to reach room temperature prior to use.

Shelf Life 3M™ Scotch-Weld™ Structural Plastic Adhesives have a shelf life of 6 months 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.

For Additional Information To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit www.3M.com/adhesives. Address correspondence to 3M Industrial Adhesives and Tapes Division, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55144-1000. Our fax number is 651-778-4244. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

Technical Information The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Warranty and Limited Remedy Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.
