Scotch-Weld™

Low-Odour Acrylic Adhesives

DP810 • DP810 Black • DP810 NS

Technical Data **February, 2016**

Product Description

3M™ Scotch-Weld™ Low-Odour Acrylic Adhesives are two-part, 1:1 mix ratio, toughened structural adhesives with less odour than most acrylic adhesives. These adhesives have excellent shear and peel strength along with good impact resistance and durability. They can quickly bond to most metals, ceramics, rubbers, plastics and wood with minimal surface preparation.

Features

- Tough, durable bonds
- Minimal surface prep
- 10 minute time to handling strength
- Bonds stainless steel
- Low-odour acrylic adhesive
- 10 minute worklife
- 1:1 mix ratio
- Excellent shear and peel strength

Typical Uncured 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™ Low-Odour Acrylic Adhesive		
		DP810	DP810 Black	DP810 NS
Colour	Base (B)	Green	Black	Blue/Green
	Accelerator (A)	White	White	White
Lbs./gal.	Base (B)	8.7 - 9.1	8.7 - 9.1	8.7 - 9.1
	Accelerator (A)	8.7 - 9.1	8.7 - 9.1	8.7 - 9.1
Viscosity (cps)[1]	Base (B)	18,000 - 22,000	18,000 - 22,000	90,000 - 95,000
	Accelerator (A)	18,000 - 22,000	17,000 - 21,000	95,000 -100,000
Base Resin	Base (B)	Acrylic	Acrylic	Acrylic
	Accelerator (A)	Acrylic	Acrylic	Acrylic
Mix Ratio	(Volume)	1:1	1:1	1:1
	(Weight)	1:1	1:1	1:1
Time to Handling Strength (50 psi)		10 minutes	10 minutes	10 minutes
Full Cure @ 23°C (73°F)		8 - 24 hours	8 - 24 hours	8 - 24 hours
Worklife @ 23°C (73°F)		10 minutes	10 minutes	10 minutes

For footnotes, see Test Methods and Footnotes on Page 4.

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Typical Performance Characteristics

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

Overlap Shear Strength[2], tested @ 23°C (73°F)

	3M™ Scotch-Weld™ Low-Odour Acrylic Adhesive		
	DP810	DP810 Black	DP810 NS
Substrate	OLS (psi)	OLS (psi)	OLS (psi)
Etched Aluminum	4200 CF	4200 CF	4200 CF
Abraded Aluminum	3900 CF	3750 CF	3850 CF
Bare Aluminum	3800 CF	3850 CF	4100 CF
CRS	3100 CF	3600 CF	3500 CF
Oily CRS	3450 CF	3450 CF	3500 CF
Stainless Steel	3400 CF	3500 CF	3400 CF
Green FRP	3800 CF	3000 CF	1900 CF
Acrylic	1100 SF	550 MM	800 SF
PVC	1000 SF	1000 SF	1000 SF
Polycarbonate	850 MM	500 MM	500 MM
ABS	600 MM	700 MM	650 MM

Overlap Shear Strength psi, tested @ Temperature

	3M™ Scotch-Weld™ Low-Odour Acrylic Adhesive		
Temperature	DP810	DP810 Black	DP810 NS
-29°C (-20°F)	1750 AF/MM	2000 AF/MM	1600 AF
24°C (75°F)	3650 CF	3550 CF	4000 CF
49°C (120°F)	2000 CF	2000 CF	2350 CF
82°C (180°F)	550 CF	500 CF	500 CF

T-Peel Strength (piw)[3], tested @ 23°C (73°F)

	3M™ Scotch-Weld™ Low-Odour Acrylic Adhesive		
Substrate	DP810	DP810 Black	DP810 NS
Etched Al	30	20	23

SF = Substrate Failure/Break
CF = Cohesive Failure
AF = Adhesive Failure
MM = Mixed (Mode of AF and CF)

For footnotes, see Test Methods and Footnotes on Page 4.

Environmental Resistance[4]

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

Overlap Shear Strength (psi), tested @ 23°C (73°F)

Condition	Time	3M™ Scotch-Weld™ Low-Odour Acrylic Adhesive		
		DP810	DP810 Black	DP810 NS
Control	14 Days	3750 CF	3750 CF	3800 CF
71°C (160°F)/100% RH	14 Days	1500 MM	1500 MM	1250 AF
71°C (160°F)/Soak	14 Days	1750 MM	1650 MM	1450 AF
20% Bleach	14 Days	3450 CF	3250 CF	3750 CF
IPA	14 Days	3150 CF	3050 CF	3450 CF
50% Antifreeze	14 Days	3850 CF	3900 CF	4000 CF
Gasoline	14 Days	2550 CF	2550 CF	3150 CF
Diesel Fuel	14 Days	4000 CF	3950 CF	4050 CF
Toluene	14 Days	2650 CF	2600 CF	3400 CF
MEK	14 Days	50 CF	75 CF	2100 CF
Acetone	14 Days	75 CF	50 CF	900 CF

CF = Cohesive Failure

MM = Mixed (Mode of AF and CF)

AF = Adhesive Failure

Typical Rate of Strength Build-Up

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

Overlap Shear Strength (psi), tested @ 23°C (73°F) at various times after bonding.

Condition	3M™ Scotch-Weld™ Low-Odour Acrylic Adhesive		
	DP810	DP810 Black	DP810 NS
10 minutes	50	30	500
20 minutes	1500	1150	1750
1 hour	2250	2200	2850
2 hours	2750	2700	3350
4 hours	2950	2900	3700
8 hours	3350	3200	3850
24 hours	3600	3550	4000

For footnotes, see Test Methods and Footnotes on Page 4.

Test Methods and Footnotes

1) Viscosity obtained by Brookfield, DV-II, #7 Spindle, 20 rpm at 24°C (75°F).

2) Overlap Shear Test Method: overlap shear test for adhesion determined in accordance to ASTM D1002-72, sample dimensions were 1" x 4" x 1/8", with a 1/2 square inch area of overlap, bonded to themselves unless otherwise noted, allowed to cure for at least 6 hours at 24°C (75°F) before testing. Data were collected using a Sintech 5GL Mechanical Tester with a 2000# or 5000# load cell. Test rate was 0.1"/minute. Strength determined at 24°C (75°F) unless otherwise noted.

3) Peel tests (ASTM D1876-61T) on FPL etched, 0.032" gauge aluminum, with a .017" bondline thickness. Jaw separation rate 20"/min. All bonds were allowed to cure for at least 6 hours at 24°C (75°F) before testing.

4) Environmental tests were conducted by immersing bonded coupons prepared in accordance to description in footnote 2.

Handling/Curing Information

Directions for use:

Apply adhesive to clean, dry substrates, which are free of paint, oxide films, oils, dust, mold release agents and all other surface contaminants. See the Surface Preparation section for specific substrate preparation method.

50 ml cartridge:.

Place Duo-Pak cartridge in 3M™ EPX Applicator. Remove cap. Dispense and discard a small amount of adhesive to assure even ratio and free flow. Clear orifice if necessary. Attach mixing nozzle. Apply adhesive to clean surfaces, join parts, secure until adhesive sets.

200/400 ml cartridge

While holding Duo-Pak cartridge in an upright position, remove and discard the insert from the cartridge by unscrewing plastic nut and removing metal washer. Place cartridge in a 1:1 200/400 ml EPX applicator. Dispense and discard a small amount of adhesive to ensure even ratio and free flow. Attach mixing and nozzle and secure with plastic retaining nut. Apply adhesive to clean surfaces, join parts, secure until adhesive sets.

Clean-up:

Excess adhesive can be removed with solvent such as MEK*****. Edge tack on a finished part or bond line can be removed with isopropyl alcohol.*****

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

Heat Cure:

Full cure can be attained by raising the bondline temperature to 49°C (120°F) for 30 minutes or to 66°C (150°F) for 10 minutes.

Surface Preparation

3M™ Scotch-Weld™ Low-Odour Acrylic Adhesives can bond oily metal, plastic and other substrates with very little surface preparation. However, for the most consistent results and environmental resistance, all substrates should be clean, dry and free of paint, oxide films, dust, mold release agents and all other surface contaminants. The amount of surface preparation directly depends on the bond strength and environmental resistance desired by the user.

The following cleaning methods are suggested for common surfaces.

Steel and Aluminum

1) Wipe free of dust with oil-free solvent such as acetone or isopropyl alcohol.
2) Sandblast or abrade using clean fine grit abrasives (180 grit or finer).
3) Wipe again with solvent to remove loose particles.
4) If a primer is used, it should be applied within 4 hours after surface preparation (or see instructions pertinent to a specific primer).

Note: Aluminum may also be acid etched. Follow the manufacturer's precautions and directions for this procedure.

Plastic/Rubber

1) Wipe with isopropyl alcohol.*****
2) Abrade using fine grit abrasives (180 grit or finer).
3) Remove residue by wiping again with isopropyl alcohol.*****

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

Storage

For maximum shelf life, store Duo-Pak cartridges and bulk containers at 0°C (32°F) to 4°C (40°F). **Do not freeze.**

Shelf Life

When stored at the recommended temperatures in the original unopened containers, this product has a shelf life of twelve months from date of shipment from 3M.

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.

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.

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ISO 9001

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

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