

# 3M

## Scotch-Weld™

### Low-Odor Acrylic Adhesive

#### DP-810

Technical Data

August, 1998

**Product Description** 3M™ Scotch-Weld™ Low-Odor Acrylic Adhesive DP-810 is a two-part, 1:1 mix ratio, toughened structural adhesive with less odor than most acrylic adhesives. DP-810 Adhesive has excellent shear and peel strength along with good impact resistance and durability. DP-810 Adhesive quickly bonds 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-Odor 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.**

Product	DP-810	
<b>Color</b>	Base (Part B) Accelerator (Part A)	Green White
<b>Net Weight (lbs./gallon)</b>	Base (Part B) Accelerator (Part A)	8.9 8.9
<b>Specific Gravity</b>	Base (Part B) Accelerator (Part A)	1.07 1.07
<b>Viscosity (cps)<sup>1</sup> @ 73°F (23°C)</b>	Base (Part B) Accelerator (Part A)	20,000 20,000
<b>Base Resin</b>	Base (Part B) Accelerator (Part A)	Acrylic Acrylic
<b>Mix Ratio</b>	By Volume By Weight	1:1 1:1
<b>Applied Open Time (1/8" bead)<sup>2</sup> @ 73°F (23°C)</b>	Mixed Adhesive	8-10 minutes
<b>Worklife in Mixing Nozzle<sup>2</sup> @ 73°F (23°C)</b>	Mixed Adhesive	8 minutes
<b>Time to Handling Strength (50 psi Shear Strength @ 73°F [23°C]<sup>3</sup>)</b>	Mixed Adhesive	8-10 minutes

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

# Scotch-Weld™

## Low-Odor Acrylic Adhesive

### DP-810

#### 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.

Color	Tan
Hardness Shore D	78
Full Cure Time: Bondline at 73°F (23°C)	6 hours
Accelerated Cure: Bondline temperature of 150°F (66°C)	10 minutes

#### Typical Adhesive 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<sup>3</sup> to Various Substrates

Substrate	OLS (psi)
Aluminum-120 grit abraded	4400
Aluminum-etched	4200
Aluminum-etched/oily	3700
Aluminum-MEK wiped	3600
Stainless Steel-oily	3500
Cold Rolled Steel (CRS)-oily	3100
CRS-MEK wiped	3100
Galvanized Steel	3500
FR-4 Glass Epoxy	3800
Fiber Reinforced Plastic	1650
ABS	600
PVC	1000
Polycarbonate	850
Acrylic	1100
Fir Wood	1600

#### Overlap Shear<sup>3</sup> CRS/CRS Tested After 7 Days Immersion<sup>4</sup>

Immersion	OLS (psi)
Control (no immersion)	3100
Toluene	2750
Machine Oil	3100
IPA (isopropyl alcohol)	2600
Gasoline	2850
1,1,1-Trichloroethane	2850
10% HCL	2800
MEK (Methyl Ethyl Ketone)	550
Acetone	NR*

\*Not recommended for immersion in this solvent (NR)

**Scotch-Weld™**  
**Low-Odor Acrylic Adhesive**  
 DP-810

Typical Adhesive  
 Performance  
 Characteristics  
 (continued)

**Overlap Shear<sup>3</sup> FR-4/FR-4 Tested After Environmental Exposure**

Environment	OLS (psi)
Control (RT Aging)	3800
248°F (120°C) for 2 weeks	3800
194°F (90°C)/90% RH for 2 weeks	2100
Tap Water @ 73°F (23°C) for 1 week	3700

**Overlap Shear<sup>3</sup> CRS/CRS Tested After Environmental Exposure**

Environment	OLS (psi)
Control (RT Aging)	3100
248°F (120°C) for 2 weeks	900
194°F (90°C)/90% RH for 2 weeks	300
Tap Water @ 73°F (23°C) for 1 week	2900

**Overlap Shear<sup>3</sup> Etched Aluminum at Various Temperatures**

Test Temperature	OLS (psi)
-67°F (-55°C)	1200
73°F (23°C)	4200
180°F (83°C)	500
200°F (93°C)	300

**Overlap Shear<sup>3</sup> Heat/Humidity Aged Oily Surfaces**

Environment	OLS (psi)
Etched Aluminum (Oily) 120°F (49°C)/100% RH/4 weeks	2250
Stainless Steel 120°F (49°C)/100% RH/4 weeks	2500
Etched Aluminum (Oily) 200°F (93°C)/100% RH/2 weeks	1250
CRS (Oily) 200°F (49°C)/100% RH/4 weeks	1450

# Scotch-Weld™

## Low-Odor Acrylic Adhesive

### DP-810

**Typical Adhesive Performance Characteristics**  
(continued)

**180° T-Peel Strength<sup>5</sup> (piw)**

Substrate	Test Temperature	Peel Strength
Etched Al/Etched Al	-67°F (-55°C)	2
Etched Al/Etched Al	-20°F (-29°C)	25
Etched Al/Etched Al	73°F (23°C)	30
Etched Al/Etched Al	100°F (38°C)	34
Etched Al/Etched Al	130°F (54°C)	35
Etched Al/Etched Al	150°F (65°C)	33
Etched Al/Etched Al	180°F (-83°C)	25
Neoprene/CRS	73°F (23°C)	17*
Nitrile/CRS	73°F (23°C)	22*
Red SBR/CRS	73°F (23°C)	22*
Black SBR/CRS	73°F (23°C)	22*

**Rate of Strength Build-up OLS<sup>3</sup> (psi)**

Time From Bonding to OLS Test	OLS Strength (psi)
10 minutes	50
12 minutes	250
20 minutes	2000
1 hour	2650
2 hours	2850
4 hours	3850
8 hours	4200
24 hours	4200

**Test Procedures and Footnotes**

- 1) Viscosity obtained by Brookfield, DV-II, #7 Spindle, 20 rpm at 75°F (24°C).
- 2) Time, in minutes, for adhesive to gel at 75°F (24°C) in the specified condition.
- 3) 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 75°F (24°C) 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 75°F (24°C) unless otherwise noted.
- 4) Environmental tests were conducted by immersing bonded coupons prepared in accordance to description in footnote 3.
- 5) 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 75°F (24°C) before testing.

# Scotch-Weld™

## Low-Odor Acrylic Adhesive

### DP-810

---

#### Handling/Curing Information

#### Directions for use:

Any 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 mil cartridge:

Place Duo-Pak cartridge in 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, joint parts, secure until adhesive sets (15 minutes @ 70°F/21°C).

Adhesive will fully cure in 6 hours @ 70°F/21°C. Store unused adhesive at 40°F/4°C or below.

#### 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, joint parts, secure until adhesive sets (15 minutes at 70°F/21°C). Adhesive will fully cure in 6 hours @ 70°F/21°C. Store unused adhesive at 40°F/4°C or below.

#### Bulk Container Directions:

Follow manufacturer's directions for bulk dispensing equipment.

#### Clean-up:

Excess adhesive can be removed with solvent such as Scotch-Grip™ Solvent No. 3 or equivalent, 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 150°F/66°C, for 10 minutes.

# Scotch-Weld™

## Low-Odor Acrylic Adhesive

### DP-810

#### Handling/Curing Information (continued)

#### Coverage:

Approximate Coverage of a semi-circular bead, of the given dimension – By Duo-Pak cartridge size

Bead Size	Linear ft per 50 ml	Linear ft per 200 ml	Linear ft per 400 ml	Linear ft per gallon
1/2"	2.5	10	21	196
3/8"	4.5	18	37	350
1/4"	10.5	41	83	785
1/8"	41.5	165	331	3130

Approximate Coverage in square feet by Duo-Pak cartridge size – (.004" bond line)

Square ft per 50 ml	Square ft per 200 ml	Square ft per 400 ml	Square ft per gallon
5.2	20.8	41.6	400

#### Surface Preparation

Scotch-Weld™ Low-Odor Acrylic Adhesive DP-810 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, isopropyl or alcohol solvents.\*
- 2) Sandblast or abrade using clean fine grit abrasives.
- 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. If Scotch-Weld™ 1945 B/A two-part primer is used, apply a thin coating (.0005") on the metal surfaces to be bonded, air dry at 75°F (24°C) for 1 hr, then cure for 30 minutes at 180°F (82°C), 5 minutes at 250°F (122°C) or 3 hours at 75°F (24°C).

**Note:** Aluminum may also be acid etched, follow the manufacturer's 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.

# Scotch-Weld™

## Low-Odor Acrylic Adhesive

### DP-810

---

#### Surface Preparation (continued)

##### Glass

- 1) Solvent wipe surface using acetone solvent such as Scotch-Grip™ Solvent No. 3 or equivalent.\*
- 2) Apply a thin coating (0.0001" or less) of Scotch-Weld™ EC-3901 Primer to the glass surfaces to be bonded and allow the primer to dry a minimum of 30 minutes at 75°F (24°C) before bonding for maximum adhesion.
- 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 and Shelf Life

**Storage:** Store Duo-Pak cartridges at 40°F (4°C) or below.

**Shelf Life:** When stored at the recommended temperatures in the original, unopened containers, these products have a shelf life of six months from date of shipment.

# Scotch-Weld™

## Low-Odor Acrylic Adhesive

### DP-810

---

#### Precautionary Information

Refer to Product Label and Material Safety Data Sheet for Health and Safety Information before using the product.

---

#### For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550. Address correspondence to: 3M Adhesives Division, 3M Center, Building 220-7E-05, St. Paul, MN 55144-1000. Our fax number is 651-733-9175. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 5-270-2180.

---

#### Important Notice

3M MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. Please remember that many factors can affect the use and performance of a 3M Adhesives Division product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M product. Given the variety of factors that can affect the use and performance of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

---

#### Limitation of Remedies and Liability

If the 3M product is proved to be defective, THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M PRODUCT. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.

ISO 9002

This Adhesives Division product was manufactured under a 3M quality system registered to ISO 9002 standards.

For Additional Product Safety and Health Information, See Material Safety Data Sheet, or call:

# 3M

#### Adhesives Division

3M Center, Building 220-7E-05  
St. Paul, MN 55144-1000  
Phone: 1-800-364-3577 or 651/737-6501



Recycled Paper  
40% pre-consumer  
10% post-consumer

Printed in U.S.A.  
©3M 1998 78-6900-9678-5