Scotch-Weld™

Structural Acrylic Adhesive DP805

Product Data Sheet

Updated : August 2005
Supersedes : New

Product Description

3M Scotch-Weld Structural Acrylic Adhesive DP-805 is a two-part, 1:1 mix ratio, toughened structural adhesive.

DP-805 has excellent shear and peel strength along with good impact resistance and durability. DP-805 quickly bonds most metals, ceramics, rubbers, plastics and wood with minimal surface preparation.

Features

- Tough, durable bonds.
- Minimal surface prep
- 3-4 minute worklife
- Bonds Stainless Steel
- 1:1 mix ratio
- Excellent shear and peel strength

Physical Properties
Not for specification purposes

	BASE	ACCELERATOR
Base	Acrylic	Acrylic
Density	1.01	0.97
Viscosity (cps)[1] @ 23°C (73°F)	75,000	150,000
Colour	Off-white	Yellow
Work Life in Mixing Nozzle[2] @ 23°C (73°F)	3 – 4 minutes	
Time to Handling Strength (0.35 MPa Shear Strength @ 23°C (73°F)	7 -10 minutes	
Applied Open Time (3mm bead)[2] @ 23°C (73°F)	3 minutes	
Mix Ratio	By Volume 1:1 By Weight 1:1	
Shelf Life	6 months from date of despatch by 3M when stored in the original carton at 4°C or below.	

Typical Cured Physical Properties
Not for specification purposes

Colour	Green
Shore D Hardness	79
Full Cure Time : Bondline @ 23°C (73°F)	24 hours

Typical Adhesive Performance Characteristics
Not for specification purposes

Overlap Shear³ to Various Substrates

	OLS (psi)	MPa
Aluminium-120 grit abraded	3200	22.1
Aluminium-etched	3470	24.1
Aluminium-etched/oily	3470	24.1
Cold Rolled Steel (CRS)	2780	19.3
Cold Rolled Steel - Oily	2680	18.6
Galvanised Steel	1300	9.0
FR-4 Glass Epoxy	2480	17.2
Fibre Reinforced Plastic	590	4.1
ABS	990	6.9
PVC	1740	12.1
Polycarbonate	950	6.6
Acrylic	1200	8.3
Fir Wood	790	5.5

Overlap Shear³ CRS/CRS Tested after 7 days Immersion

Immersion	OLS (psi)	MPa
Control (no immersion)	2780	19.3
Toluene	2640	18.3
Machine Oil	2840	19.7
IPA (Isopropyl Alcohol)	2640	18.3
Gasoline	2740	19.0
1,1,1-Trichloroethane	2535	17.6
10% HCL	790	5.5
MEK (Methyl Ethyl Ketone)	NR*	NR*
Acetone	NR*	NR*
* Not Recommended for Immersion in this solvent (NR)		

Overlap Shear³ FR-4/FR-4 Tested after Environmental Exposure

Environment	OLS (psi)	MPa
Control (RT Ageing)	2480	17.2
120°C for 2 weeks	2680	18.6
90°C / 90%RH for 2 weeks	2580	17.9
Tap Water @ 23°C for 1 week	2190	15.2

Overlap Shear³ CRS/CRS Tested after Environmental Exposure

Environment	OLS (psi)	MPa
Control (RT Ageing)	2780	19.3
120°C for 2 weeks	490	3.4
90°C / 90%RH for 2 weeks	2190	15.2
Tap Water @ 23°C for 1 week	2480	17.2

Overlap Shear³ Etched Aluminium at Various Temperatures

Test Temperature	OLS (psi)	MPa
-55°C	2480	17.2
23°C	3470	24.1
83°C	2190	15.2

Overlap Shear³ Heat/Humidity Aged Oily Surfaces

Test Temperature	OLS (psi)	MPa
Etched Aluminium (Oily) 49°C / 100%RH/4 wks	3470	24.1
Etched Aluminium (Oily) 93°C / 100%RH / 2 wks	3280	22.8
CRS (Oily) 49°C / 100% RH / 2 wks	2580	17.9

180° T-Peel Strength [5]

Substrate	Test Temperature	Peel Strength (N/cm)
Etched Al/Etched Al	-55°C	35
Etched Al/Etched Al	23°C	61
Etched Al/Etched Al	38°C	61
Etched Al/Etched Al	54°C	63
Etched Al/Etched Al	65°C	61
Etched Al/Etched Al	83°C	60
Neoprene/CRS	23°C	28
Nitrile/CRS	23°C	7
Red SBR/CRS	23°C	30
Black SBR/CRS	23°C	5

Rate of Strength Build-up on Etched Aluminium/Etched Aluminium[3]

Time from Bonding to OLS Test	OLS Strength (psi)	MPa
7 minutes	130	0.9
15 minutes	990	6.9
30 minutes	1990	13.8
1 hour	2580	17.9
2 hours	2780	19.3
4 hours	3180	22.1
1 day	3470	24.1
2 days	3470	24.1
7 days	3470	24.1

Test Methods and Footnotes :

1. Viscosity obtained by Brookfield, DV-II, #7 Spindle, 20rpm at 24°C .
2. Time, in minutes, for adhesive to gel at 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 25mm x 100mm x 3mm, with a 325mm² area of overlap, bonded to themselves unless otherwise noted, allowed to cure for at least 6 hours at 24°C before testing. Data were collected using a Sintech 5GL Mechanical Tester with a 2000# or 5000# lead cell.

   Test rate was 0.1”/minute. Strength determined at 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, 0.8mm gauge aluminium, with a 0.4mm bondline thickness. Jaw separation rate 500mm/min. All bonds were allowed to cure for at least 6 hours at 24°C before testing.

Storage Conditions

Store Duo-Pak cartridges at 4°C or below.

Surface Preparation

Scotch-Weld Structural Acrylic Adhesive DP-805 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, mould 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 Aluminium

1. Wipe free of dust with oil-free solvent such as acetone or isopropyl alcohol solvents*.
2. Sandblast or abrade using clean fine grit abrasives (180 grit or finer).
3. Wipe again with solvents to remove loose particles.

Plastic/Rubber

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

Glass

1. Solvent wipe surface using acetone.
2. Apply a thin coating (0.0001" or less) of Scotch-Weld EC3901 Primer to the glass surfaces to be bonded and allow the primer to dry a minimum of 30 minutes at 24°C before bonding for maximum adhesion

* Note : When using solvents, be sure to extinguish all ignition sources and follow the manufacturer's precautions and directions for use when handling such materials.

Directions for Use /Clean Up

Place Duo-Pak cartridge into retaining lip on applicator.

Remove re-sealable cap.

Attach mixing nozzle and dispense.

Remove mixing nozzle after use.

WIPE TIP CLEAN AFTER USE AND REPLACE CAP.

Clean Up:
Excess uncured adhesive can be removed with Scotch-Grip Solvent No. 2.

NOTE: Solvent No. 2 is flammable and the proper safety precautions should be observed.

Health & Safety Information

For further Health and Safety Information please contact the Toxicology Department at the Bracknell Head Office on (01344) 860678.

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