Scotch-Weld™

Clear Acrylic Adhesive DP804

Product Data Sheet

Date June 2010
Supersedes: May 2010

Product Description

3M Scotch-Weld DP804 Clear Acrylic Adhesive is a two-part, 1:1 mix ratio structural adhesive with significantly less odour that most acrylic adhesives.
DP804 is specifically designed to quickly bond clear plastics (PMMA, polycarbonate) and also offers good adhesion on glass and metals. DP804 offers high transparency when mixed and offers excellent long term resistance to UV.

Key Features

- 1:1 mix ratio
- 3 minute work life
- 4 minute time to handling strength
- Bonds most metals, clear plastics and glass
- Low-Odour Acrylic Adhesive(compared to most acrylic adhesives)
- Excellent shear and peel strength
- Excellent resistance to UV, non-yellowing
- Very good performance at elevated temperatures
- Very good ageing properties in humid and warm environment

Typical Uncured Properties

	BASE	ACCELERATOR
Base	Acrylic	Acrylic
Specific Gravity g/ml	1.06	1.09
Viscosity Brookshield viscometer 25rpm/2 min @ 25°C	8000	8000
Colour	Transparent (Colourless)	Transparent (Colourless)
Work Life in Mixing Nozzle [2] @ 23°C (73°F)	2.5 minutes	
Time to Handling Strength (0.35 MPa Shear Strength @ 23°C (73°F)	4 minutes	
Applied Open Time (3mm bead) [2] @ 23°C (73°F)	5.5 minutes	
Mix Ratio	By Volume 1:1 By Weight 1:1	

Typical Cured Physical Properties
Not for specification purposes

Colour	Transparent (Colourless)
Shore D Hardness	67
Full Cure Time : Bondline @ 23°C (73°F)	10 minutes

Typical Adhesive Performance Characteristics

Overlap Shear [3] to various substrates

According to ASTM D-1002-64
Degreased with isopropyl alcohol
Overlap 25mm X 12.5mm.
Sample dimension 25mm X 100mm X 5mm. for plastics and 2mm for metals
Polymerized at 24°C and 50% HR for one week before tested
Jaw speed 10mm/min.

	Strength (MPa)	Failure mode
Aluminium-120 grit abraded	8.6	af
Steel – 120 grit abraded	9.5	af
Glass	8.0	sf
ABS	5.8	cf/af
PVC	3.0	af
Polycarbonate	4.4	cf
PMMA	3.3	cf/af
PA	2.3	af

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

Overlap Shear [3] abraded Aluminium tested at various temperatures

Temperature	**Strength (MPa)**
40 °C	9.2
60 °C	10.1
80 °C	8.7

Abraded Aluminium	**Strength (MPa)**
Dry heat 7 days at 70°C	8.7
40 °C 95% RH for 14 days	8.3
40 °C 95% RH for 30 days	8.2
PC	**Strength (MPa)**
40 °C 95% RH for 14 days	6.1
40 °C 95% RH for 30 days	3.9
PMMA	**Strength (MPa)**
40 °C 95% RH for 14 days	6.0
40 °C 95% RH for 30 days	3.0

Overlap Shear [3] to abraded Aluminium after immersion in various liquids according to DIN EN 1465

Liquid	**Strength (MPa)**	**Failure mode**
IPA	14,3	AF
Heptane	n.a.	
MEK	n.a.	
Toluol	n.a.	

The determination of stress/strain curve and Young's modulus (elastic modulus, G') with the use of DMA

System parameters:

- Temperature program: -100°C to 150°C
- Heating rate: 4°C/min
- Frequency: 1Hz
- Displacement: 0.05mm

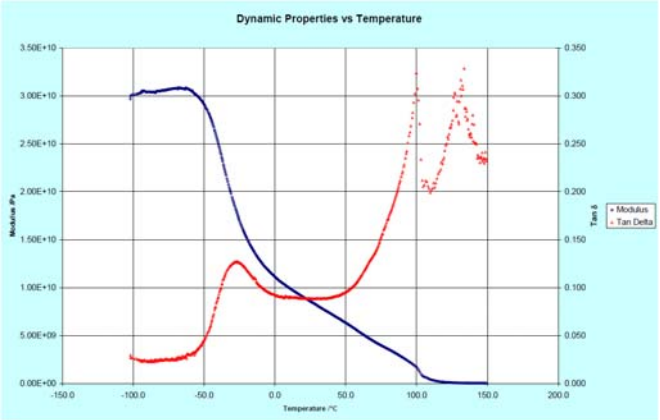

Figure 1: storage modulus and tan δ versus temperature.

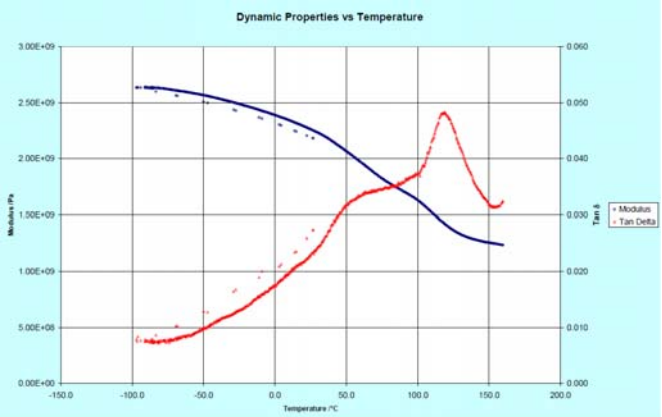

Figure 2: thermo gram of the material in a powder clamp.

- A β transition was detected at -26°C
- A glass transition seems to be present at 119.5°C
- The elastic modulus calculated as 0.72GPa using the stress/strain curve

UV stability: No change after 3 weeks exposure with 0,4 mW / cm2

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.

The service temperature range : 0°C - 100°C
Intended use: Indoor commercial signage and POS displays

Test Methods and Footnotes :

1. Viscosity obtained by Brookfield, DV-II, #7 Spindle, 25rpm at 25°C (77°F).
2. Time, in minutes, for adhesive to gel at 24°C (75°F) in the specified condition.
3. Environmental tests were conducted by immersing bonded coupons prepared in accordance to description above.
4. Peel tests (ASTM D1876-61T) on FPL etched, 0.8mm gauge aluminium, with a 0.4mm bond line thickness.
5. Jaw separation rate 500mm/min. All bonds were allowed to cure for at least 6 hours at 24°C (75°F) before testing

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

Shelf Life	3M DP804 has a shelf life of 24 months from date of dispatch by 3M when stored in the original carton at 4°C & 50 % Relative Humidity
Precautionary Information	It is recommended to use 3M Scotch-Weld EPX Applicator and Mixing Nozzles to apply the adhesive to obtain the correct mixing ratio. Due to its exothermic features, it is not recommended to mix the two components of the adhesive manually. **In any case, the amount of adhesive mixed at the same time should not exceed 5 grams.** Refer to product label and Material Safety Data Sheet for health and safety information before using the product. For information please contact your local 3M Office. www.3M.com
For Additional Information	To request additional product information or to arrange for sales assistance, call 0870 6080050 Address correspondence to: 3M United Kingdom PLC, 3M House, 28 Great Jackson Street, Manchester, M15 4PA
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