



**Adhesive  
Solutions**

GROUP OF COMPANY

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**3M**

# Scotch-Weld™

## EPX™ Adhesive DP490

### Product Data Sheet

Updated : March 1996  
Supersedes : November 1993

#### Product Description

DP490 is a black, thixotropic, gap filling two component epoxy adhesive with particularly good application characteristics.

It is designed for use where toughness and high strength are required and shows special benefits in the construction of composite assemblies.

The product has excellent heat and environmental resistance.

#### Physical Properties

Not for specification purposes

	BASE	ACCELERATOR
<b>Specific Gravity</b>	1.00	1.00
<b>Consistency</b>	Non-sag paste	Non-sag paste
<b>Mix Ratio</b> By Weight By Volume	100 100	50 50
<b>Colour</b>	Black	Off-White
<b>Work Life</b>	1.5 hours minimum at 23°C	
<b>Time to Handling Strength</b>	4 to 6 hours at 23°C	
<b>Time to Full Strength</b>	7 days (test to full performance at one week)	
<b>Shelf Life</b>	15 months from date of despatch by 3M when stored in the original carton at 21°C (70°F) & 50 % Relative Humidity	

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**Performance Characteristics**

Not for specification purposes

**Performance Characteristics of the Cured Adhesive.**

Two cure cycles were evaluated as follows:

Cure Cycle 1	7 days at 23°C
Cure Cycle 2	24 hours at 23°C, 1 hour at 80°C

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**Performance Characteristics (Cont...)**  
Not for specification purposes

**Temperature Performance in Shear and Peel.**

(Etched Aluminium) Shear Strength to BS 5350 C5, Peel Strength was floating roller peel to BS5350 C9.

Tests were performed at 23°C unless otherwise stated.

Temperature (°C)	Shear Strength (1) (N/mm <sup>2</sup> )	Shear Strength (2) (N/mm <sup>2</sup> )	Peel Strength DaN/cm
-55	23.7	31.6	N/A
23	30.2	28.7	9.24
80	11.9	12.7	7.32
120	2.8	3.2	N/A
150	1.9	1.7	N/A

**Adhesion to Etched Aluminium after Environmental Ageing**

Ageing Condition	Shear Strength (N/mm <sup>2</sup> )
RT Control	26.2
Water at 23°C, 750 hours	25.6
50°C, 96% RH, 750 hours	22.0
120°C, 750 hours	25.3
175°C, dry heat, 120 hours	29.6
Skydroll 500B at 23°C, 750 hours	27.6
JP4 at 23°C, 750 hours	28.7
Hydraulic Oil at 23°C, 750 hours	29.5

DP490 shows good adhesion to many plastic surfaces even by simply solvent wiping.

This can be improved still further by the use of 3M Scotchbrite abrasion and/or use of the primer Scotch-Weld 3901.

Plastics	Shear Strength (N/mm <sup>2</sup> )
Carbon Fibre Reinforced Epoxy	36.1 (cohesive)
Polyester Sheet Moulding Compound	4.3 (substrate)
Glass Fibre Reinforced Phenolic	30.3 (cohesive)
ABS (filled)	3.2 (substrate)
PVC (filled)	2.9 (substrate)
Azloy (glass filled polycarbonate)	3.0 (adhesion)
Valox (glass filled PET)	1.4 (substrate)
PMMA	3.7 (adhesion)
Noryl (tm XTRA) (glass filled PPO)	4.9 (adhesion)

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### Storage Conditions

Store product at 15°C to 25°C for maximum storage life.

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### Directions for Use /Clean Up

Place the cartridge into the 3M EPX Applicator and clip into position.

Remove the resealable cap.

Expel a small quantity of adhesive and ensure both components flow freely.

Attach correct mixer nozzle (this should have 20 or more elements).

Dispense the adhesive as required.

When finished either leave the nozzle in place and store, or remove the nozzle, wipe clean the tip, and replace cap.

To re-start after storage remove the old nozzle with cured adhesive and re-fit a new nozzle, or remove the cap and fit a new nozzle.

### Surface Preparation:

The degree of surface preparation depends on the bond strength required and the environment likely to be encountered by the bonded structure. For most plastics solvent wiping with 3M VHB surface cleaner, followed by abrasion with 3M Scotchbrite 7447, followed by a further solvent wipe until clean, will give good performance (except for acetal, polyethylene and polypropylene and some other low surface energy materials). This also applies to powder coat paints and other stoved paint systems.

The same surface preparation will also give good adhesion to metal surfaces. The objective is to remove loosely attached surface films such as oils, waxes, dusts, mill-scale, loose paints and all other

surface contaminants in addition to enhancing mechanical adhesion. Grit-blasting using a clean, fine grit also offers excellent adhesion on many metallic substrates.

Where humid environments are likely to be encountered by metallic substrates we recommend additional priming with 3M Scotch-Weld 3901. Alternatively, chemical conversion coating techniques combined with priming can offer the best durability.

### Clean-Up:

Excess uncured adhesive can be removed with the following solvents:

**3M VHB Surface Cleaner**  
(mild alcohol based cleaner)  
**3M Scotch-Grip Solvent No2.** (Ketone blend)  
**3M Industrial Cleaner**  
(Aerosol).

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### Additional Product Information

Please contact your 3M Salesperson for additional information on the preparation of difficult surfaces, or likely exposure to aggressive environments.

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## Health & Safety Information

### Precautions:

Causes severe eye irritation, may cause permanent eye damage. Irritating to skin. May cause sensitisation by skin contact. Avoid contact with the skin and eyes. Wear suitable gloves and eye/face protection.

Launder contaminated clothing before re-use. Avoid prolonged breathing of vapours. Avoid inhalation of dust when grinding or cutting cured material.

### First Aid:

**Eye Contact:** Immediately flush eyes with copious amounts of water for at least 15 minutes, holding eyes open. Call a physician.

**Skin Contact:** Wash immediately with plenty of soap and water.

For further information please contact the Toxicology Department at the Bracknell Head Office on (0344) 858000.

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Values presented have been determined by standard test methods and are average values not to be used for specification purposes. Our recommendations on the use of our products are based on tests believed to be reliable but we would ask that you conduct your own tests to determine their suitability for your applications. This is because 3M cannot accept any responsibility or liability direct or consequential for loss or damage caused as a result of our recommendations.



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