Technical data sheet

Product:	DP410
Manufacturer:	3M DEUTSCHLAND GMBH
Product group:	KLEBSTOFF
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SCOTCH-WELD DP410

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Scotch-Weld™ DP410
Off-White & Black

Product Data Sheet

Date: November 2016
Supersedes: August 2016

Product Description

DP410 epoxy adhesive is a low flow, two-part epoxy based structural adhesive. Designed for use where toughness, high strength and rapid cure are required.

Key Features

- Rapid cure at room temperature; cure rate may be accelerated by the application of mild heat.
- Convenient 2:1 mix ratio by volume
- Mixed adhesive is low flow for ease of application
- Toughened epoxy system with good elevated temperature resistance

General Properties

Colour	Base (B) Accelerator (A)	Off-White Off-White	Off-White Black
Base	Base (B) Accelerator (A)	Toughened Epoxy Modified Amine	
Density (ISO 2811)	Base (B) Accelerator (A)	1.13 g/cm³ 1.10 g/cm³	
Consistency	Base (B) Accelerator (A)	Low sagging Paste Gel	
Viscosity (ISO 2555)	Base (B) Accelerator (A)	70 PAs -	
Mix Ratio	By volume By weight	100: 50 100: 48	
Work Life (ISO 10364)		12 min	

Mechanical Properties

Overlap Shear Strength

Overlap shear specimens were made according to ISO 4587 using 1.6 mm thick clad aluminium 2024 T3
Surface prepared by the optimised FPL etch method.

Test Conditions	Results (MPa)
-55 ± 2 °C	28
23 ± 2 °C	38
85 ± 2 °C	8

- Cure cycle: 7 days at 23 ± 2°C under a pressure of 100 kPa the first 24 hours
- Glass beads are used to control glue line thickness (# 150 μm)

Overlap Shear Strength on different substrates (ISO 4587)

Substrate	Result (MPa)
Abraded 2024 T3 clad aluminium	22
Abraded 6111 T6 aluminium	17
Cold rolled steel (abraded)	17
Brass (abraded)	16
Stainless Steel (abraded)	19
Polystyrene (abraded)	3
PVC	3
ABS	4
Polyamide 6.6	2
Glass Fibre Reinforced Polyester (abraded)	9 (substrate failure)
Glass Fibre Reinforced Phenolic	22 (substrate failure)
Carbon Fibre Reinforced Epoxy	33

- Cure cycle:
  7 days at 23 ± 2 °C under a pressure of 100 kPa the first 24 hours
- Glass beads are used to control glue line thickness (# 150 μm)

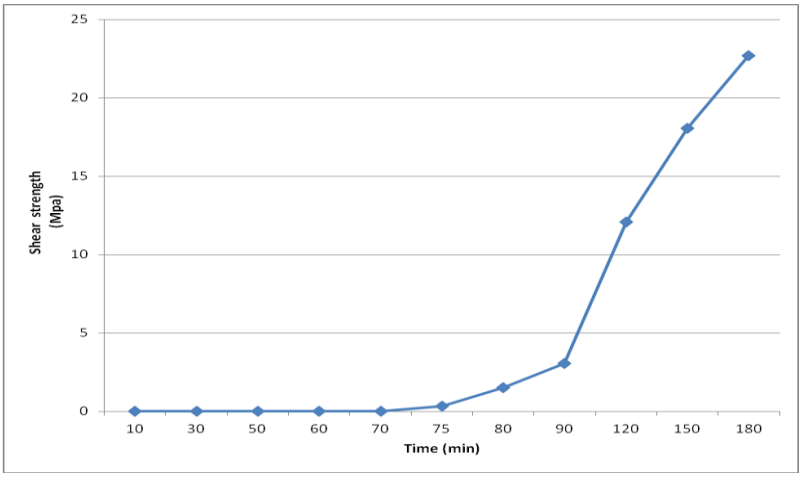
Peel Strength

Roller peel specimens were made according to ISO 4587 using 2024 T3 clad aluminium prepared by the optimised FPL etch

Metal to Metal	
23 ± 2 °C	240 N/25 mm

Strength Build-Up

Typical results obtained on 1.6 mm thick FPL etched 2024 T3 clad aluminium.
Overlap shear specimens were made according to test method ISO 4587 with test speed 2.5 mm/min



Curing Time (Min)	OLs at 23°C (MPa)
10	0
30	0
50	0
60	0
70	0
75	0.36
80	1.50
90	3.07
120	12.08
150	18.05
180	22.70

- Cure cycle : 7 days at 23 ± 2°C
- Glass beads are used to control glue line thickness (# 90 to 150 μm)

Directions for use

For high strength structural bonds, paint, oils, dust, mould release agents and other surface contaminants must be removed completely. However, the amount of surface preparation directly depends on the required bond strength and the environmental ageing resistance desired by user. For specific surface preparations on common substrates, see following information.

Use glove to minimise skin contact. Do not use solvents for cleaning hands

Mixing:
<u>For Duo Pack Cartridges</u>
DP 410 is supplied in a dual syringe plastic Duo-Pak cartridge as part of the EPX™ Applicator System. To use, simply insert the Duo-Pak cartridge into the EPX applicator and start plunging the cylinders using light pressure on the trigger. Next, remove the Duo-Pak cartridge cap and expel a small amount of adhesive to be sure both sides of the Duo-Pak cartridge are flowing evenly and freely. If automatic mixing of Part A and Part B is desired, attach the EPX mixing nozzle to the Duo-Pak cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of adhesive and mix thoroughly. Mix approximately 15 seconds after uniform colour is obtained.

Surface Preparation:
For high strength structural bonds, paint, oils, dust, mould release agents and other surface contaminants must be completely removed. However, the amount of surface preparation directly depends on the required bond strength and the environmental ageing resistance desired by user.

The following cleaning methods are suggested for common surfaces

1. Wipe free of dust with oil-free solvent such as acetone, isopropyl or alcohol solvents*

2. Sandblast or abrade using clean fine grit abrasive.

3. Wipe again with solvent to remove loose particles

Aluminium

1. Alkaline Degrease: Oakite 164 water solution (approx.10 %) at 85 ± 5 °C for 10-20 minutes. Rinse immediately in large quantities of cold running water.

2. Acid Etch: place panels in the following solution for 10 minutes at 65 ± 3 °C
- Sodium Dichromate 44.8 g
- Sulphuric Acid, 66 °Be 332 g
- 2024-T3 aluminium (dissolved) 1.5 g
- Tap water adjust to 1 litre

3. Rinse panels in clean running tap water.

4. Air dry 15 minutes - Force dry 10 minutes at 65 ± 5 °C

5. If primer is to be used, it should be applied within 4 hours after surface preparation.

Plastic/Rubber

1. Wipe with Isopropyl alcohol*

2. Abrade using fine grit abrasives.

3. Wipe with Isopropyl alcohol*

Glass

1. Solvent wipe surface using acetone or MEK*

2. Apply a thin coating (2.5 μm or less) of primer such as Scotch-Weld EC-3901 Primer to the glass surfaces to be bonded and allow the primer to dry before bonding.

(*) Note: When using solvents, extinguish all ignition sources and observe manufacturer's directions and precautions for handling such materials.

Storage & Shelf Life	Store at 16 °C – 25 °C and 40 - 65 % relative humidity in its original box. Rotate stock on a "first in-first out" basis The product in cartridges can be stored up to 36 months after production. Bulks can be stored up to 48 months after production ***Note: The shelf life may be shortened if the original packaging is not properly sealed or stored in an environment with high temperatures or humidity***.
Precautionary Information	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, go to www.3M.be/bonding or www.3M.nl/bonding
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