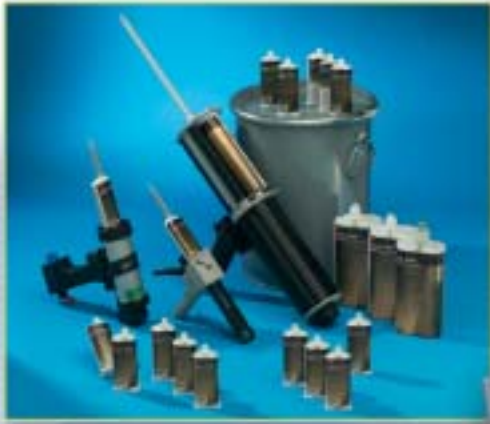


3M Scotch-Weld™ EPX

Two-component structural adhesives and applicator guns



3M *Innovation*

2-component structural adhesives for the EPX application system

Quick, economic, clean and precise processing and quick set-up times with the EPX system, consisting of:

- EPX manual applicator or EPX air-powered applicators
- Two-component adhesives in double cartridges
- Static mixing nozzles

The adhesive is applied at selected points or caterpillar-like. Dosing, mixing, application = 1 work cycle = constant, defined quality. These 3M structural adhesives achieve structural stability on various materials such as metals, glass, ceramics, wood and technical plastics and elastomers etc.



Special types are available for

- particularly high stability and strength (400 series)
- high temperature loads (DP 490, DP 760)
- low-energy plastics such as PE, PP (DP 8005, DP 8010)
- adhesion with minimal shrinkage (DP 270)
- very quick processing times (DP 801, DP 810, DP 100, DP 105)
- transparent bonding – UV-resistant (DP 610)
- potting (DP 270, DP 100, DP 105)

Specifications

Product no. Description
Adhesive type

EPOXY RESIN formulations

DP 100 <i>rigid</i>	For metals, glass, ceramics and other materials. High shear strength for static loads. Very quick processing time. Excellent flow behaviour, therefore also well suited for plugging. UL-listed.
DP 105 <i>highly flexible</i>	Particularly for materials with different, high expansion factors. High strength. Very good flow behaviour, therefore also very well suited for potting.
DP 110 <i>toughened</i>	Especially good for bonding metal and plastic, for static and dynamic loads.
DP 125 <i>flexible</i>	Especially good for bonding plastic and for metals, where flexibility and peel strength are required. As DP 190, but shorter worklife.
DP 190 <i>flexible</i>	Especially good for bonding plastic and some types of rubber, as well as for metals, when flexibility and peel strength are required. UL-listed.
DP 270 <i>fluid</i>	Especially good for electronics. For potting, protection and sealing. No corrosion on copper, minimal exothermal reaction (heat development) and shrinkage (therefore also for bonding optical parts, e.g. lenses). UL-listed.
DP 410 <i>toughened</i>	Outstanding stability under static and dynamic loads. High resistance to impact. Very good strength and excellent aging behaviour. Short processing time.
DP 460 <i>toughened</i>	As DP 410, but longer worklife. UL-listed.
DP 490 <i>toughened</i>	As DP 410, but with high temperature resistance (120°C). Thixotropic, does not flow on vertical surfaces.
DP 760 <i>rigid</i>	Especially for applications that require very high temperature resistance (230°C).

POLYURETHANE formulations

DP 609 <i>flexible</i>	Especially for plastics and wood. Good peel strength, viscosity and flexibility. Minimal flow.
DP 610 <i>flexible</i>	As 609, but transparent, UV-resistant, for applications that require transparency and good visual effect., Good flow behaviour.

ACRYLATE formulations

DP 801 <i>toughened & flexible</i>	Very good for plastics, elastomers and metals. Good resistance to impact. For static and dynamic loads. Very short worklife.
DP 810 <i>toughened</i>	As DP 801, but longer worklife. Minimal odour development.
DP 8005 <i>toughened</i>	New, innovative product especially for bonding low surface energy plastics together or with other materials, without surface activation.
DP 8010 <i>toughened</i>	As above, but worklife of 10 minutes

Rapid adhesive types for applications with static loading and high shear strength (DP 100, DP 270, DP 760)

Flexible adhesive types for dynamic and shock loads (DP 105, DP 125, DP 190, DP 609, DP 610)

Thoughened adhesive types which combine the advantages of hard and flexible types, i.e. with good peel strength, high shear strength and good resistance to impact (DP 110, DP 410, DP 460, DP 490, DP 801, DP 810)

Supply form: Duo pack cartridges

- 1:1 and 2:1 mix ratio = 50 ml and 400 ml
- 10:1 mix ratio = 38 ml and 265 ml
- Bulk versions (40 / 60 liter kit) on request



Adhesive selection

- A = Allrounder: High-performance type for versatile use
- S = Very high range of performance or special application

Product No.	Colour	Mix ratio (B:A)	Worklife (mins)	Time to handling strength	Viscosity	Shear strength (Aluminium, MPa) -55°C +23°C +80°C	Peel strength (Alu)	Temperature
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EPOXY RESIN formulations

DP 100	transparent	1:1	3 to 5 min.	15 min.	fluid	6 9 2	4	-50 to 80°C
DP 105	transparent	1:1	4 to 5 min.	20 min.	fluid	24 14 2	62	-50 to 80°C
DP 110	translucent or grey	1:1	8 to 10 min.	20 min	controlled flow	14 18 1	35	-50 to 80°C
DP 125	grey	1:1	25 min.	2 to 3 hrs	controlled flow	24 24 3	62	-50 to 80°C
DP 190	grey	1:1	90 min.	4 to 6 hrs	controlled flow	11 18 3	21	-50 to 80°C
DP 270	transparent or black	1:1	60 to 70 min.	4 to 6 hrs	fluid	8 17 2	<4	-50 to 80°C
DP 410	off white	2:1	8 to 10 min.	30 min.	thixotropic	29 34 8	100	-50 to 80°C
DP 460	off white	2:1	60 min.	4 to 6 hrs	controlled flow	31 31 5	107	-50 to 80°C
DP 490	black	2:1	180 min.	4 hrs	thixotropic	24 30 12	92	-50 to 120°C
DP 760	white	2:1	45 to 60 min.	4 to 6 hrs	thixotropic	20 29 24	60	-50 to 230°C

POLYURETHANE formulations

DP 609	off white	1:1	7 min.	45 min.	low	17 14 2	70	-50 to 80°C
DP 610	clear	1:1	10 min.	2 hrs	good	34 23 3	78	-50 to 80°C

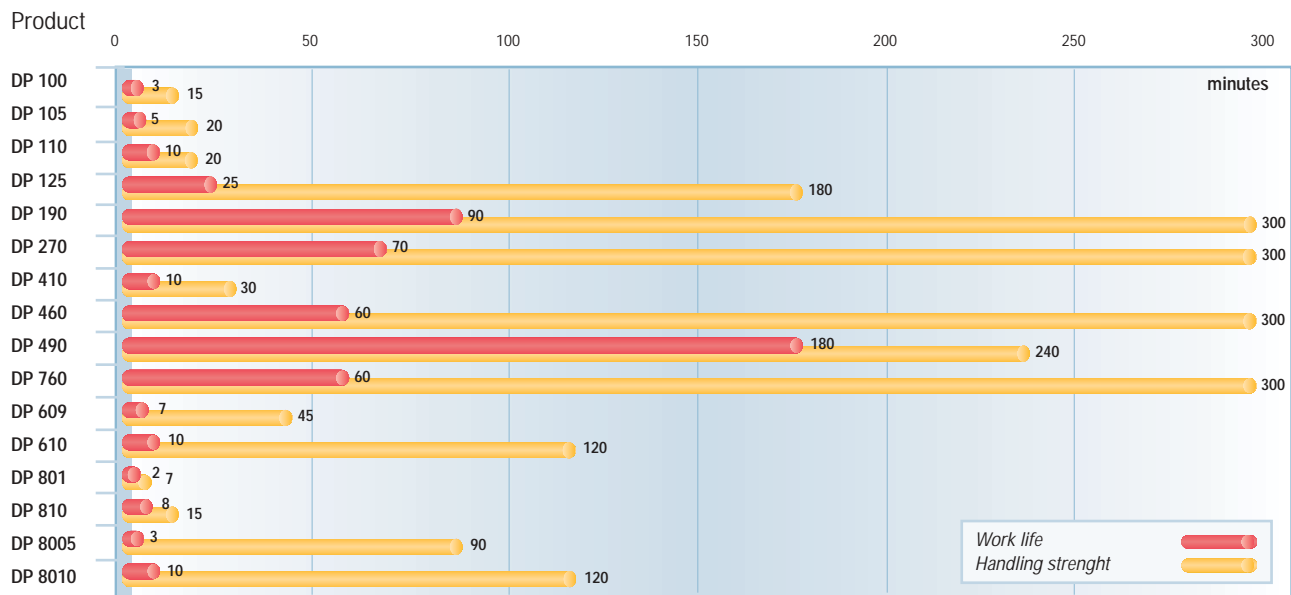
ACRYLIC formulations

DP 801	green	1:1	1 to 2 min.	7 min.	good	19 13 2	24	-50 to 80°C
DP 810	green	1:1	8 min.	10 to 15 min.	good	8 30 3	52	-50 to 80°C
DP 8005	white	10:1	2 to 3 min.	90 min.	low	12* 6* 2*	28**	-50 to 80°C
DP 8010	white	10:1	10 min.	120 min.	thixotropic	6* 10* 2*	28**	-50 to 80°C

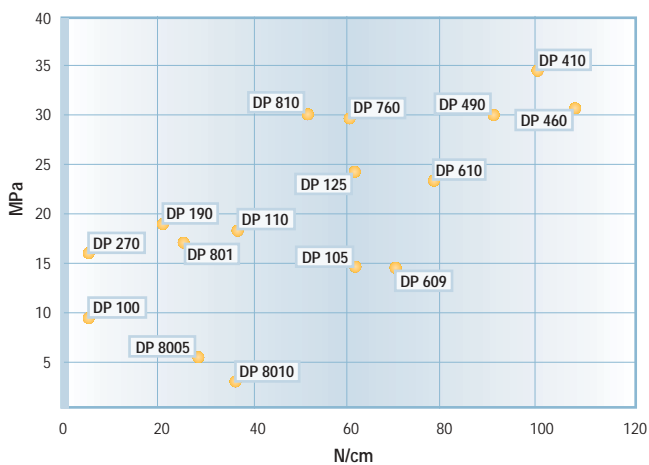
* PP/PP ** HDPE *** from dispatch date works/warehouse

EPX Adhesives Preselection

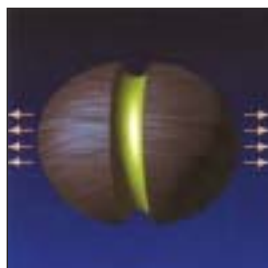
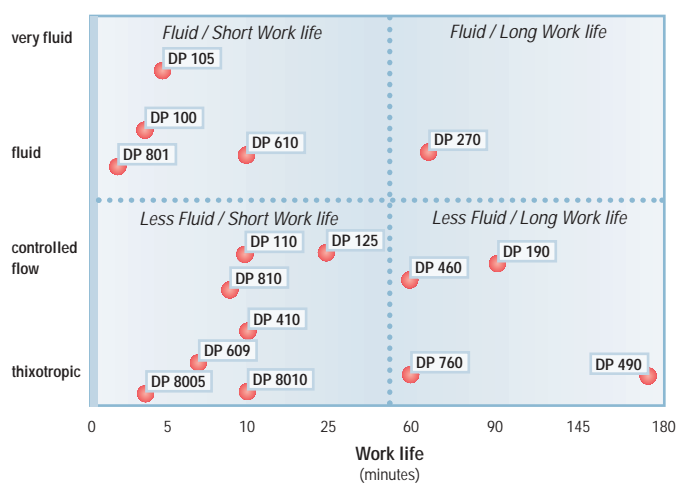
Work life VS handling strenght



Sheer vs Peel Strength on etched aluminium



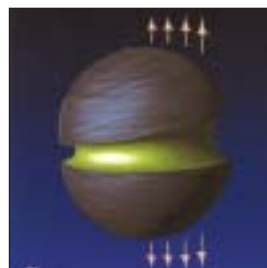
Viscosity vs Work life



Tensile stress



Shear stress



Cleavage stress



Peel stress

Stress resistance, simplification, economy and more

One of the primary benefits of adhesive is that it holds something together resisting the stress trying to pull it apart.

Tensile stress is exerted equally over the entire joint straight and away from the adhesive bond.

Shear stress is across the adhesive bond. The bonded materials are being forced to slide over each other.

Cleavage stress is concentrated at one edge and exerts a prying force on the bond.

Peel stress is concentrated along a thin line at the bond's edge. One surface is flexible.

Most applications combine stresses.



Applications and benefits

The 3M Scotch-Weld™ EPX structural adhesives range is widely used in product assembly where high mechanical performance is required, and also in sealing and potting in electrical and electronic applications.

The EPX structural adhesives offer significant advantages – at a low investment cost:

- Reducing costs combining different materials for the same or better performance
- Eliminating secondary sealing or finishing operations saves time and money
- Achieving stronger and stiffer structures by the improved stress distribution
- Joining a wide variety of materials that cannot be put together by traditional methods of fastening



Operation Instructions

The EPX system of controlled two-component structural adhesives enables bonding operations to be carried out quickly, with precision and in four simple steps:



Slip the cartridge into the dispenser and close the dispenser's lock



Unscrew the tip of the cartridge and fix the nozzle on the cartridge



Pull the trigger for exact dispensing, while the adhesives are mixed and applied at once



The result is a clean application without any contact with the skin

Equipment

The 3M Scotch-Weld EPX adhesive system includes:

Applicators

All the applicators are ergonomically designed to minimise fatigue and ensure the maximum ease of use, particularly in "hard to get at" applications. There are manual and air-powered guns for 50 ml cartridges and an air-powered gun for the 400 ml cartridges. The selection of a manual or air-powered gun and the 50 or 400 ml cartridge depends upon the production requirement(s) for the application.

Air-powered applicator

The use of a compressed air feed enables operators to apply precisely the quantity of product required without interruption.

Manual applicator

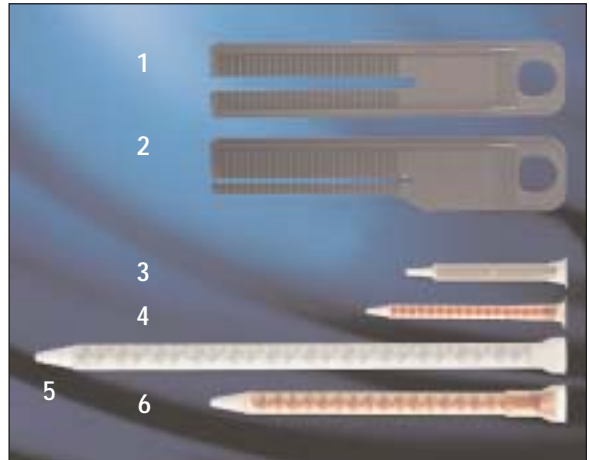
The manual applicator is a light, reliable tool, which requires no special maintenance. It is particularly well suited to smaller scale use of multiple work stations.

Mixing Nozzles

The adhesive is extruded through a static mixing nozzle which ensures that the two components are mixed together thoroughly every time. The mixing nozzle can be adapted to extrude different bead diameters by cutting the tip.



The EPX applicators



The EPX accessoires

- ❶ **EPX manual applicator**
complete with plunger 1:1/2:1 for 50 ml small cartridges
10:1 for 38 ml small cartridges (DP 8005, DP8010), a 10:1
plunger is also required.
 - ❷ **EPX air-powered applicator**
for 1:1 and 2:1 50 ml cartridges
 - ❸ **EPX air-powered applicator 8501**
for 1:1 and 2:1 400 ml cartridges
- EPX air-powered applicator**
for DP 8005, DP 8100, 265 ml cartridges

- EPX plunger for EPX manual applicator**
 - ❶ Type 1:1/2:1 for all 50 ml cartridges
 - ❷ Type 10:1 for DP 8005, DP 8010, 38 ml cartridge
- EPX mixing nozzles for cartridges**
Quadro nozzle for 50 ml cartridges
(except DP 801, DP 810, DP 8005, DP 8010)
- ❸ Short nozzle, 60 mm long for DP 801, DP 810
 - ❹ Type for DP 8005, DP 8010, 38 ml
- EPX mixing nozzles for large cartridges**
- ❺ Type for all 400 ml cartridges
 - ❻ Type for DP 8005, DP 8010, 265 ml cartridge



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Important Notice:

All declarations, technical information and recommendations in this brochure are based on tests we believe to be reliable, but we are unable to guarantee their complete accuracy. Before using our product, please make sure it is suitable for the intended use. Any question concerning the reliability of 3M adhesives is subject to the applications of the terms and conditions of sale and any applicable legislation.