

3M

Scotch-Weld™

General Purpose Instant Adhesives

EC5 • EC40 • EC100 • EC1500 • EC2500 • EC Gel

Technical Data

January, 2015

Product Description

3M™ Scotch-Weld™ General Purpose Instant Adhesives are single component, high strength ethyl cyanoacrylate adhesives designed to bond to a variety of substances including most plastics, rubbers, metals, and other common substrates. They are available in a wide variety of viscosities.

Specific Features

- 3M™ Scotch-Weld™ General Purpose Instant Adhesive EC5 is a very low viscosity, cyanoacrylate that is fast bonding. It is recommended for use on assemblies with very close-fitting parts and smooth, even surfaces. It can be used to wick into bonding gaps of assembled parts.
- 3M™ Scotch-Weld™ General Purpose Instant Adhesive EC40 is a low viscosity cyanoacrylate that is fast curing. It is recommended for use on assemblies with close-fitting parts and smooth, even surfaces.
- 3M™ Scotch-Weld™ General Purpose Instant Adhesive EC100 is a low viscosity cyanoacrylate that is fast curing and useful for general purpose bonding.
- 3M™ Scotch-Weld™ General Purpose Instant Adhesive EC600 is a medium viscosity cyanoacrylate that resists migration from the bond area. It can be used for wire tacking on printed circuit boards.
- 3M™ Scotch-Weld™ General Purpose Instant Adhesive EC1500 is a medium to high viscosity liquid cyanoacrylate with a slower cure rate. It is also used on assemblies where parts are not close-fitting, surfaces are rough or porous, or where time is required to align parts before cure.
- 3M™ Scotch-Weld™ General Purpose Instant Adhesive EC2500 is a high viscosity liquid cyanoacrylate with an even slower cure rate. It is also used on assemblies where parts are not close-fitting, surfaces are rough or porous, or where time is required to align parts before cure.
- 3M™ Scotch-Weld™ General Purpose Instant Adhesive ECI Gel is an industrial strength thixotropic gel for maximum gap filling. It is suitable for bonding poorly mating components and for porous substrates such as ceramic and can be used on vertical surfaces as it will not drip or slump.

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Typical Uncured Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

	3M™ Scotch-Weld™ General Purpose Instant Adhesive					
	EC5*	EC40	EC100	EC1500*	EC2500	EC Gel
Color	Clear	Clear	Clear	Clear	Clear	Clear
Base	Ethyl	Ethyl	Ethyl	Ethyl	Ethyl	Ethyl
Appearance	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Specific Gravity (g/ml)	1.05	1.06	1.06	1.08	1.08	1.10
Viscosity (cps)	<= 5 ¹	24 – 40 ¹	71 – 95 ¹	1,200 – 1,650 ²	2,000 – 3,000 ²	100,000 – 150,000 ³
Time to Handling Strength (sec) **	5 - 10	3 - 10	8 - 15	42 - 56	10 - 34	8 - 20
Time to full cure (hr)	24	24	24	24	24	24

¹ Cone-Plate viscosity, CP75 at 3000/s shear rate; ² Cone-Plate viscosity, CP50 at 100/s shear rate; ³ Brookfield viscosity, Spindle TC @ 2.5 rpm; * Not available in the Americas Region; ** On EPDM. Time to handling is substrate dependent.

Typical Cured Physical Properties

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	3M™ Scotch-Weld™ General Purpose Instant Adhesive					
	EC5	EC40	EC100	EC1500	EC2500	EC Gel
Temperature Range (°F)	-60 to 180	-60 to 180	-60 to 180	-60 to 180	-60 to 180	-60 to 180
Gap Fill (in)	0.002	0.004	0.006	0.008	0.008	0.010
	Overlap Shear Strength (psi) ¹					
Steel²	1991	1600	2543	2106	1601	2118
Stainless Steel²	2186	2443	2081	2846	2449	3119
Aluminum²	1626	1680	1648	2391	2116	3152
ABS	953 ³	1000 ³	988 ³	1018 ³	861 ³	1303 ³
Polycarbonate	943 ³	845 ³	809 ³	799 ³	807 ³	1004 ³
PVC	1266 ³	1233 ³	1801 ³	1713 ³	1224 ³	1488 ³
Nylon	366	395	782	-	506	371
Polypropylene⁴	775 ³	806 ³	981 ³	528 ³	1057 ³	827 ³
Silicone Elastomers⁵	102 ³	106 ³	105 ³	107 ³	107 ³	100 ³

¹ ASTM D-1002 ² Grit blasted ³ Substrate failure ⁴ Primed with AC77 ⁵ Primed with AC79

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Temp (F)	Percent of Initial Strength					
	EC5	EC40	EC100	EC1500	EC2500	EC Gel
72	100	100	100	100	100	100
167	82	96	82	85	94	90
212	73	71	65	86	78	47
257	29	20	28	68	24	15

Handling Information

Surface Preparation

For optimum strength structural bonds, paint, oxide films, oils, dust, mold release agents, and all other surface contaminants must be completely removed. However, the amount of surface preparation depends on the required bond strength and the environmental aging resistance desired by the user. Typical quick surface preparation would include wiping with a clean solvent (such as isopropyl alcohol*), abrading the surface with a clean fine abrasive, and then wiping again with a clean solvent to remove loose particles.

Directions for Use

1. Ensure that parts are clean, dry, and free from oil and grease.
2. An instant adhesive activator may be required if there are bonding gaps or porous substrate surfaces, if substrates are low surface energy plastics (e.g., polyethylene, polypropylene) or if substrates have acidic surfaces (e.g., paper, leather).
3. Bond speed is typically very fast so ensure that parts are properly aligned before dispensing.
4. Product is normally hand applied from the bottle. Apply sparingly to one surface and press parts firmly together until handling strength is achieved. As a general rule, as little cyanoacrylate as possible should be used. Over application will result in slower cure speed and lower bond strength.

Cured Bond Characteristics

1. Full bond strength will typically be achieved within a 24 hour cure time.
2. Low humidity or low temperature conditions will slow down the cure rate.
3. After curing, 3M™ Scotch-Weld™ General Purpose Instant Adhesive bonds are suitable for use up to about 180°F (82°C).
4. Cyanoacrylate bond resistance to most oils and solvents is excellent. Long term humidity, moisture, or water immersion may affect the strength of a cured cyanoacrylate bond depending on the substrates and the bond gap. Testing is recommended to evaluate the effect.

***Note:** When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

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Storage	For short term storage (<30 days), keep adhesive in a cool (60°F to 80°F [16°C to 27°C]), dry place out of direct sunlight. Keep containers tightly covered and free of moisture. Refrigeration (40°F [4°C]) gives optimum long term storage stability.
Shelf Life	3M™ Scotch-Weld™ General Purpose Instant Adhesives can be expected to have a shelf life of 12 months from the date of shipment from 3M when stored under refrigerated conditions.
Precautionary Information	Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.
Technical Information	The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.
Product Use	Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.
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ISO 9001:2000

This product was manufactured under a quality system registered to ISO 9001:2000 standards.

3M Industrial Adhesives and Tapes Division

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