



Product Overview

Crestabond M1-04 is a toughened, two component 10:1 acrylic adhesive designed for bonding composites, thermoplastics and metals. This new generation of structural methacrylate adhesive meets the bonding requirements of most assembly operations, demonstrating excellent impact, peel, shear, compressive strength and fatigue resistance properties across all bonded parts.

Features and Benefits

Primer-less metal application	▶	No need for extra materials or processes
Excellent adhesion to dissimilar substrates	▶	Affords greater flexibility in design checks
Fast setting and curing	▶	Speeds up assembly process
Non sag	▶	Application on vertical surfaces
High strength, modulus and toughness	▶	Designed for demanding structural applications
Excellent environmental resistance	▶	Designed for demanding environmental applications

Application Properties

Working Time	3 – 5 Minutes
Fixture Time ²	8 – 10 Minutes
Gap Filling	1 – 15 mm
Mixed Colour	Grey
Recommended Application Temperature	18 - 25 °C

Mechanical Properties

Tensile Strength ⁵	16 - 20 MPa
Tensile Modulus	600 - 1000 MPa
Tensile Elongation	80 - 100%
Aluminium Lapshear	15 - 19 MPa
Recommended Operating Temperature	-40 - 100 °C

Liquid Properties

Product	M1-04 Adhesive	Activator 4
Viscosity ³	100,000 - 140,000 cP	80,000 - 120,000 cP
Specific Gravity	0.96 - 1.02	1.05 - 1.15
Mixed Ratio (by volume)	10	1
Mixed Ratio (by weight)	9	1
Colour	Off white	Black
Shelf Life ⁴	12 months	12 months

Recommended Substrates

	Recommended Substrates (Lapshear Strength MPa ⁶)	Non - Recommended Substrates
Plastics	Acrylic (20 - 24 MPa) PVC (16 - 20 MPa) ABS (13 - 17 MPa) Other: Styrenics, Urethanes, CPVC	Low Surface Energy Plastics e.g. Polypropylene, Polyethylene, PTFE <small>(use Crestabond PP-04)</small>
Metals	Stainless (12 - 17 MPa) CRS (13 - 17 MPa) Aluminium (17 - 21 MPa) Other: Powder Coated Metals, Carbon Steel	Zinc/ Galvanised Coated Metals, Copper
Composites	GRP/FRP ⁷ (8 - 12 MPa) Carbon Fibre/ Polyester DCPD Modified Vinyl Esters Epoxy ⁹ Gelcoats ¹⁰	-

Surface Preparation

The surface to be bonded can affect the strength and durability of the bond joint. Appropriate treatment may be required to ensure that there are no traces of oil, grease or dirt through the use of a degreasing agent, for instance acetone or another degreasing agent on the joint surfaces.

Mechanically abrading or chemically etching degreased surfaces can make bond joints more durable and stronger. If abrading, a second treatment of degreasing is highly recommended.

Do not use gasoline (petrol), low grade alcohol or paint thinners.

i) Metals

Typically, the surface should be clean and dry by using an alcohol/solvent wipe and allowing the solvent to evaporate before application. Certain metals, such as carbon steel may also require mechanical abrasion and a subsequent alcohol solvent wipe prior to bonding.

ii) Thermoplastics

The surface must be clean, dust-free and dry. A suitable solvent such as iso-propanol can be used to degrease.

iii) Composites

The surface must be clean, free of dust and dry. This can be achieved by the use of proprietary strippable cloths such as peel-ply (without lubricant contaminates). The laminate should be fully cured prior to bonding and if the laminate surfaces are more than 3 days old, it is recommended that the surface must be cleaned with a suitable solvent or cleaner with a lint-free, clean cloth prior to bonding.

Surface preparation, such as mechanical abrasion, is likely to be needed on gel coat surfaces and moulded surface where release agents are likely to be present. When bonding epoxy laminates please test bond strength prior to application.

Application

Prior to bonding, ensure the substrate surface is clean by following instructions provided. Bulk dispensing equipment should be in good operating condition. Dispense the adhesive at slow rate initially onto a non-bonding surface until the bead colour is uniform opaque grey or black, depending on the adhesive grade. Check the dispensed bead for cure quality before beginning the bonding process.

Dispense enough adhesive to fill the bond gap before parts are mated. Avoid dry bonds by using adequate pressure to mate parts and clamp properly to prevent joint movement. The working time is the approximate time after mixing that the adhesive is still useable. The bonding process must be completed before the working time of the mixed adhesive expires. The effect of temperature upon this working time can be seen in the graph on the previous page. The viscosities of both adhesive and activator are affected by temperature. The adhesive, activator and parts to be bonded should be allowed to attain workshop temperature of between 18°C and 25°C prior to bonding. This temperature should be maintained during the bonding process and until the adhesive is sufficiently cured to allow movement of the assembly. Typically, such movement may be possible after the fixture time of the adhesive is achieved. Ambient temperature, bondline thickness and the substrate materials being bonded can all affect the fixture time.

For industrial/commercial use only. Not to be used in household applications. The user must determine the suitability of a selected adhesive for a given substrate and application. Contact your local Scott Bader representative for questions or assistance with the selection of adhesives for your use. This product is intended for use by skilled individuals at their own risk. Recommendations contained herein are based on information we believe to be reliable. The properties and strength values obtained under controlled conditions at the Scott Bader laboratory.

Storage and Shelf Life

The shelf life is defined from date of manufacture when stored at a recommended temperature between 2°C and 23°C. It is highly recommended that products should never be frozen. Exposure to temperatures above 23°C will reduce the shelf life of these materials. Exposure above 35°C of activators, including the cartridges, should be avoided as the reactivity of the product is quickly diminished.

Crestabond products should be stored in their original container out of direct sunlight. The bulk product or cartridge material should be opened only immediately prior to use. The expiry date is indicated on the product labels.

Packaging

Crestabond M1-04 is supplied in 18Kg plastic pails, 180Kg drums, pre-packed 400ml co-axial and 50ml side by side cartridges.

Health and Safety

See separate Material Safety Data Sheet.

1. Working time measured with 10g mass of adhesive with 10:1 mix ratio by volume at 24°C.	2. Fixture time defined using an ISO 4587 lap-shear sample, 0.26mm bondline thickness with 23°C ambient temperature achieving >1.4MPa.
3. Viscosity measured using a Brookfield Viscometer at 24°C	4. Shelf life defined from date of manufacture when stored as recommended.
5. Tested to ASTM D638	6. Metals tested according to ISO 4587, Thermoplastics according to ASTM 2564 and GRP according ASTM 5868.
7. Substrate Failure	8. Maximum temperature where an ISO 4587 lap-shear sample, 0.26mm bondline thickness achieves >3MPa.
9. Surface preparation of epoxy laminates may be necessary and testing should be performed to ensure sufficient bond strength is achieved.	10. Surface preparation is likely to be needed on gelcoat surfaces to ensure no release agents are present.



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