CRESTABOND® M1-90HV

Technical Data Sheet

Product Overview

Crestabond M1-90HV 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

Primerless application	▶	No need for extra materials or processes
Excellent adhesion to dissimilar substrates	▶	Affords greater flexibility in design
Long working time and high gap fill	▶	Allows for use on large structures
Exceptional sag resistance	▶	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[1]	70 – 100 Minutes
Fixture Time[2]	210 – 240 Minutes
Gap Filling	1 – 50 mm (0.04-2.0 inch)
Mixed Colour	Green
Recommended Application Temperature	18 - 25 °C (64 - 77°F)

Mechanical Properties

Tensile Strength[3]	22 - 26 MPa (3.2 - 3.8 ksi)
Tensile Modulus[3]	1200 - 1600 MPa (174 - 232 ksi)
Tensile Elongation[3]	50 - 70%
Aluminium Lap shear[4]	12 - 16 MPa (1.7 - 2.3 ksi)
Recommended Operating Temperature[5]	-40 - 100 °C (-40 - 212°F)

Liquid Properties

Product	M1-90HV Adhesive	Activator 2 Green
Viscosity[6]	340,000 - 380,000 cP 350-800 & 1000-3000 dPa.s**	80,000 - 120,000 cP 100-300 & 300-1000 dPa.s**
Specific Gravity	0.97 - 1.03 g/cc	1.05 - 1.15 g/cc
Mix Ratio (by volume)	10	1
Mix Ratio (by weight)	9.1	1
Colour	Off white	Green
Shelf Life[7]	12 months	9 months

Substrates

	Recommended Substrates (Lapshear Strength MPa[4])	Non - Recommended Substrates
Plastics	Acrylic[10] 15 - 20 MPa PVC[8] 14 - 18 MPa ABS[10] 8 - 12 MPa Other: Urethanes and common engineering thermoplastics	Low Surface Energy Plastics e.g. PP, PE & PTFE (use Crestabond PP-04)
Metals	Stainless[9] 12 - 16 MPa Aluminium[10] 12 - 16 MPa Other: Powder Coated Metals, Carbon Steel	Zinc/ Galvanised Coated Metals, Copper
Composites	GRP/FRP[8] 8 - 12 MPa Carbon Fibre/ Polyester DCPD Modified Vinyl Esters Epoxy[11] Gelcoats[12]	-

Please contact Scott Bader technical services for information and advice on other substrates

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, dirt or release agents 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 petrol (gasoline), 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, dust-free 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 surfaces 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 the surface preparation instructions provided. Bulk dispensing equipment should be in good operating condition. Dispense the adhesive at a slow rate initially onto a non-bonding surface until the mixed bead colour is uniform. 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 usable. The bonding process must be completed before the working time of the mixed adhesive expires. 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 (64°F and 77°F) prior to bonding. The operating 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.

Storage and Shelf Life

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.

The shelf life is defined from date of manufacture when stored at a recommended temperature between 2°C and 23°C (36°F and 73°F). It is highly recommended that products should never be frozen. Exposure to temperatures above 23°C (36°F) will reduce the shelf life of these materials. Exposure above 35°C (95°F) of activators, including the cartridges, should be avoided as the reactivity of the product is quickly diminished.

Packaging

Crestabond M1-90HV is supplied in 18Kg (40 lb) plastic pails, 180Kg (397 lb) drums, pre-packed 400ml co-axial and 825ml 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 (75°F).	2. Fixture time defined using an ISO 4587 lap shear sample, 0.26mm bondline thickness with 23°C (73°F) ambient temperature achieving >1.4MPa.
3. Tested to ASTM D638.	4. Metals tested according to ISO 4587, Thermoplastics according to ASTM 2564 and GRP according ASTM 5868.
5. Maximum temperature where an ISO 4587 lap shear sample, 0.26mm bondline thickness achieves >3MPa.	6. Viscosity measured using a Brookfield Viscometer at 24°C (75°F)* Viscosity measured using HAKKE RV1 Rheometer at 25°C (77°F)**
7. Shelf life defined from date of manufacture when stored as recommended.	8. Substrate failure when tested.
9. Adhesive failure when tested.	10. Cohesive failure when tested.
11. Surface preparation of epoxy laminates may be necessary and testing should be performed to ensure sufficient bond strength is achieved.	12. Surface preparation is likely to be needed on gelcoat surfaces to ensure no release agents are present.

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