SCOTT BADER ADHESIVES

CRESTABOND® STRUCTURAL ADHESIVES

COMPOSITES METALS PLASTICS

Crestabond® M1-90

Methacrylate Structural Adhesive Technical Data Sheet

Description

Crestabond M1-90 is a toughened, two component 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. Crestabond M1-90 is a primerless adhesive, requiring only minimal surface cleaning of the substrates to be bonded and demonstrates high toughness in all assembled parts with a gap filling capability up to 50mm.

Features

- Primerless metal application
- Excellent retention of toughness
- High strength and modulus
- Non-sag
- Fast setting and curing
- Excellent adhesion to dissimilar substrates
- Excellent environmental resistance
- Ready-to-use two component adhesive

Benefits

- Speeds assembly process
- Excellent fatigue and impact resistance
- Replaces mechanical fasteners
- Application on vertical surfaces
- Reduce labour

Characteristics of Crestabond M1-90

Characteristics	Typical Value
Working Time/Geltime[1]	80 – 100 Minutes
Fixture Time	210 – 240 Minutes
Gap Filling	1 – 50 mm
Flash Point	10.0°C
Mixed Colour	Grey

1. Working time measured with 40g mass of adhesive with 10:1 mix ratio by volume at 24°C.

Physical Data – Uncured

	Typical Value	
Property	**M1-90 Adhesive**	**Activator 3**
Viscosity[2]	200,000 – 240,000 cPs	80,000 – 120,000 cPs
Specific Gravity	0.97 – 1.03	1.05 – 1.15
Mix Ratio (by volume)	10.0	1.0
Mix Ratio (by weight)	9.1	1.0
Colour	Off White	Black
Stability at 20°C[3]	9 Months	9 Months

2. Viscosity measured using a Brookfield Viscometer at 24°C.
3. Stability defined from date of manufacture when left un-opened in the original containers and stored between 15°C and 23°C.

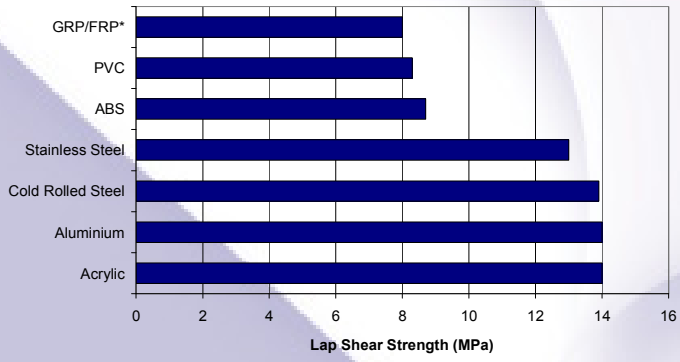
Physical Data – Cured

Property	Typical Value
Tensile Strength	16 – 18 MPa
Tensile Modulus	650 – 850 MPa
Tensile Elongation	>100%

Tested to ASTM D638.

Bond Joint Strength – Typical Lap Shear Strengths (MPa)

Values are based on substrate failure where marked by *

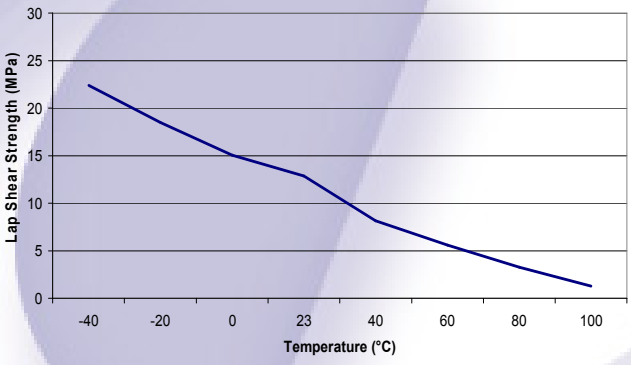


Material	Surface Preparation	Bondline Thickness	Test Method
GRP	Solvent Degrease	3.00mm	ASTM 5868
PVC	Solvent Degrease	0.76mm	ASTM 2564
ABS	Solvent Degrease	0.76mm	ASTM 2564
Stainless Steel	Solvent Degrease	0.26mm	ISO 4587
Cold Rolled Steel	Degrease, Abrade & Degrease	0.26mm	ISO 4587
Aluminium	Solvent Degrease	0.26mm	ISO 4587
Acrylic	Solvent Degrease	0.76mm	ASTM 2564

Please contact Scott Bader Technical Services for information on other substrates.

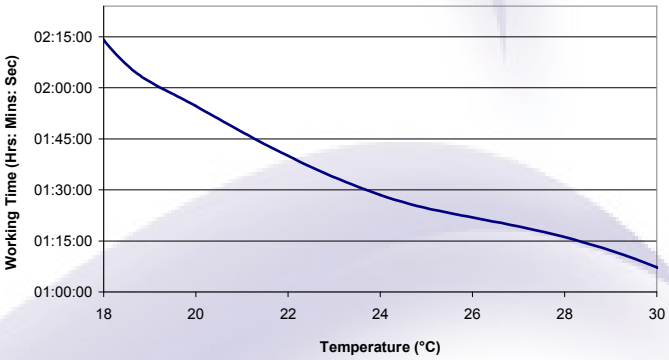
Temperature Performance Lap Shear Testing

Tested to ISO 4587:2003 0.26mm bondline, aluminium 6061-T6, acetone wipe surface preparation.



Working Time Testing

The time taken for a 40g mass to reach 32°C at different ambient temperatures.



Recommended Substrates

Metals	Thermoplastics	Composites
Aluminium	Acrylic	GRP/FRP
Stainless Steel	Styrenics	Epoxy[4]
Carbon Steel	ABS	Polyester & DCPD Modified
Powder Coated Metals	PVC/CPVC	Vinyl Esters
		Urethanes
		Gel Coats[5]
		Carbon Fibre

4. Surface preparation of epoxy laminates may be necessary and testing should be performed to ensure sufficient bond strength is achieved.
5. Surface preparation is likely to be needed on gel coat surface to ensure no release agents are present.

Please contact Scott Bader Technical Services for information on other substrates and advice.

Non-Recommended Substrates

- Polyethylene
- Polypropylene
- Nylon
- Polytetrafluoroethylene
- Polyacetals
- Zinc/Galvanised Coated Metals

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

The surface should be clean and dry by using an alcohol/solvent wipe and allowing the solvent to evaporate before application.

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 is likely to be needed on gel coat surfaces to ensure no release agents are present. However, when bonding epoxy laminates please test bond strength prior to application.

Application

Crestabond M1-90 is supplied ready to use in pre-packed 400ml co-axial cartridges and in bulk (20 litre pails and 200 litre drums). Prior to bonding, ensure the substrate surface is clean by following instructions provided. Bulk dispensing equipment should be in good operating condition. Check valves on cartridges for any obstructions and remove as necessary to ensure product flows easily. Dispense the adhesive at slow rate initially onto a non-bonding surface until the bead colour is a uniform opaque grey. Check the dispensed bead for cure quality before beginning the bonding assembly. Dispense enough adhesive to fill the bond gap before parts are mated. Avoid dry bond by using adequate pressure to mate parts, and clamp properly to prevent joint movement.

All these processes must be completed before the working time of the mixed adhesive expires. To ensure thorough cure, the adhesive must be applied at temperatures between 18°C and 26°C. The effect of temperature upon this working time can be seen in the graph above. The viscosities of both adhesive and activator are affected by temperature. To ensure consistent dispensing in meter-mix equipment, adhesive and activator temperatures should be held reasonably constant throughout the year.

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 you 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

The shelf life for Crestabond M1-90 is 9 months from date of manufacture when stored at a recommended temperature between 15°C and 23°C. Long term exposure above 23°C will reduce the shelf life of these materials. Prolonged exposure above 35°C of activators, including the cartridges, should be avoided as the reactivity of the product is quickly diminished. The expiry date is indicated on the cartridge labels.

It should be stored in its original container out of direct sunlight. The bulk product or cartridge material should be opened only immediately prior to use, and it's highly recommended that products should never be frozen or exposed to temperatures above 35˚C during shipping or storage.

Packaging

Crestabond M1-90 is supplied in 20 litre pails, 200 litre drums and 400ml co-axial cartridges.

Health & Safety

See separate Material Safety Data Sheet.

All information on this data sheet is based on laboratory testing and is not intended for design purposes. Scott Bader makes no representations or warranties of any kind concerning this data. Due to variance of storage, handling and application of these materials, Scott Bader cannot accept liability for results obtained. The manufacture of materials is the subject of granted patents and patent applications; freedom to operate patented processes is not implied by this publication.