



TECHNICAL DATA SHEET

A NEW FORCE IN CHEMICAL MANUFACTURING

AEROSOLS | WELDING CHEMICALS | ADHESIVES & THREADLOCKERS | ANTI-SEIZE & GREASES | CLEANING CHEMICALS & SOLVENTS | ELECTRICAL & ELECTRONICS

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Rapidstick™ 8-310 Methacrylate Structural Adhesive

PART NUMBER	AVAILABLE SIZE
8-310-25	25ml Dual Cartridge
8-310-50	50ml Dual Cartridge
8-310-400	400ml Dual Cartridge

PRODUCT DESCRIPTION

Chemtools® Rapidstick™ 8-310 Methacrylate Structural Adhesive is a two-component, 100% reactive adhesive with excellent impact, peel, and shear resistance in a convenient 1:1 mix ratio. Its non-sagging and thixotropic formulation is specifically designed for bonding a wide variety of metals, thermoplastics, thermosets, and composite assemblies.

8-310 offers excellent adhesion to metal surfaces without the need for primer or chemical wipes, and is room temperature cured with extended open time. It is typically used for automotive components, marine assemblies, electronics enclosures, aerospace parts, electrical components, furniture, windmill assemblies, plastic fabrications, metal fabrications, and signs.

Recommended bonding surfaces include, but are not limited to, all types of metals, and the following:

PVC	Fibreglass	PBT	PPO	ABS	FRT
Polyurethane	Epoxy	Wood	RIM	Nylon	Polyester
Acrylics	Gelcoats	Styrene	Aluminium	Stainless Steel	Cold Rolled Steel

ADVICE ABOUT DISPENSING EQUIPMENT

Care must be taken to ensure compatibility between the adhesive components and the materials in the equipment that they contact. All wetted metal components should be constructed of stainless steel or aluminium, or have a sufficient thickness of chemically resistant material that prevents contact between the adhesive components and the base metal.

Contact with copper, zinc, brass or other alloys containing these materials must be strictly prevented. All non-metallic seals and gaskets should be fabricated from Teflon® or UHMW polyethylene-based materials.



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DIRECTIONS (READ LABEL BEFORE USE)

APPLICATION: All surfaces must be clean and dry, and free of dust and grease. Best results will be achieved with surfaces that have been lightly abraded immediately prior to bonding.

Always dispense a quantity of adhesive at start-up to ensure that the adhesive exiting the tip of the mixer is the proper color, and is uniform, without streaks. If previously opened or aged material is being used, allow the purged material to cure to confirm quality before proceeding.

Carefully dispense a sufficient quantity of adhesive on the substrate to ensure that the bond gap will be completely filled when the parts are joined. Allow for squeeze-out at the edges of the bond to ensure coverage. Carefully secure or clamp parts to prevent joint movement while the adhesive sets. Do not apply excessive pressure that can cause excessively thin gaps and starve the bond line. Test the curing adhesive at the edges for fingernail hardness before removing clamps or fixtures.

CARTRIDGE TYPE	MMA COVERAGE CHART					BOND LINE COVERAGE ↓
	BEAD SIZE (ROUND) VS APPROX. BOND LINE COVERAGE PER CARTRIDGE					
1:1 MIX RATIO	1/8 inch 3.175 mm	1/4 inch 6.35 mm	3/8 inch 9.525 mm	1/2 inch 12.70 mm	5/8 inch 15.875 mm	
50ML	12,649.2	3,149.6	1,397	787.4	508	mm
	126.50	31.50	13.97	7.87	5.08	cm
	1.26					M
200ML	55,575.2	13,868.4	6,197.6	3,454.4	2,209.8	mm
	555.76	138.68	61.98	34.55	22.10	cm
	5.56	1.39				M
400ML	101,015.8	25,273	11,268	6,299.2	4,038.6	mm
	1,010.16	252.73	11.27	62.99	40.39	cm
	10.10	2.53				M

CURING: Working time is the approximate time, after mixing components A and B that the adhesive remains fluid and bondable. Fixture time is the approximate time after mixing components A and B required for the adhesive to develop sufficient strength to allow careful movement, unclamping, or demolding of assembled parts. Parts can generally be put into service when 80 percent of full strength is developed. The time to achieve 80% cure is approximately 2-3 times that required for fixturing.

Note: The chemical curing reaction that occurs when components A and B are mixed generates heat. The amount of heat generated is controlled by the mass and thickness of the mixed product. Large masses over 12.7mm thick can develop heat in excess of 121°C and can generate harmful, flammable vapours. Large curing masses should be carefully moved to a well-ventilated area where the chance of personal contact is minimized.

CLEAN UP: Adhesive components and mixed adhesive should be removed from mixing and application equipment with a suitable industrial solvent or cleaner before the mixed adhesive cures. Once the adhesive cures, soaking in a strong solvent or paint remover will be required to soften the adhesive for removal.



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TECHNICAL DATA

ADHESIVE PROPERTIES (LIQUID):

	Adhesive	Activator
Viscosity @ 25°C (Spindle TD, 20 rpm)	40,000 – 60,000	40,000 – 60,000
Flash Point (TCC)	10.5°C	10.5°C
Density (lbs/gal)	8.07	8.05
Mix Ratio (Weight & Volume)	1	1

Mixed Viscosity, cps	90,000 – 100,000
Working Time	12 – 18 minutes
Fixture Time	30 – 35 minutes
Full Cure	24 hours
Coverage (lb)	147 sq.in @ 0.10"
Service Temperature	-40°C to +121°C

ADHESIVE PROPERTIES (CURED):

Gap Filling	Up to 9.5mm
Shore Hardness (ASTM D2240)	78D
Elongation	7 – 18%
Tensile Shear Strength (DIN 53283)	3,850 psi
Impact Resistance	18 ft.lb./in.

LAP SHEAR STRENGTH DATA (ASTM D1002)

Result: Lap Shear Strength figures are lower for the plastic surfaces due to substrate failure which means substrate is failing before the adhesive bond

Substrates	Lap Shear Strength & Failure Mode
Stainless Steel / Stainless Steel	3,150 psi – Cohesive Failure
Aluminium / Aluminium	3,250 psi – Cohesive Failure
ABS / ABS	1,500 psi – Substrate Failure
FRP / FRP	1,700 psi – Fibre Tear
Aluminium / ABS	2,150 psi – Substrate Failure

CLEAVAGE PEEL DATA (ASTM D3807)

Result: Has the ability to withstand at high levels of peel stresses.

Stainless Steel / Stainless Steel	Initial Strength: 20 pli
	Average Strength: 18 pli



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TECHNICAL DATA (CONT'D)

CHEMICAL RESISTANCE DATA

The chemical resistance was studied by bonding the Aluminium/Aluminium as per specification and cured for 7 days @ 25°C, then kept immersed in the media listed here and tested for Lap Shear Strength (ASTM D1002). Effect of 1 month immersion in different media:

Media	Lap Shear Strength
Petrol	3,190 psi
Acetic Acid (10%)	2,900 psi
Xylene	3,250 psi
Lubricating Oil – HD30	3,150 psi
Paraffin	3,200 psi
Water @ 23°C	3,050 psi
Water @ 90°C	3,150 psi

ENVIRONMENTAL RESISTANCE DATA

Result: Excellent resistance to harsh environment conditions

Notes: The Lap Shear Strength had increased after environmental cycle and performed better under these conditions compared to the substrates bonded. Substrates may have less resistance to these conditions compared to adhesive.

Condition	Lap Shear Strength & Mode of Failure
Initial	3,480 psi – Cohesive Failure
Environmental Cycle – 30 days	3,950 psi – Cohesive Failure

Lap Shear Strength (ASTM D1002) – Stainless Steel / Stainless Steel

Environmental Cycle = 8 hours @ -30°C, 8 hours @ 85°C, 8 hours @ 30°C, @ 100% Relative Humidity

STORAGE & SHELF LIFE

Keep out of reach of children. Store continuously between 13°C and 23°C. Long term exposure above 23°C will reduce the shelf life of these materials. Prolonged exposure of activators, including cartridges which contain activators, above 37°C quickly diminishes the product's reactivity and should be avoided. Shelf life can be extended by refrigeration (8°C - 12°C). Do not freeze.



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FIRST AID & SAFETY PRECAUTIONS

Please refer to Safety Data Sheet (SDS) before use. Use with adequate ventilation and avoid breathing fumes. Avoid contact with eyes and skin. This product may produce adverse health conditions, ranging from minor skin irritation to serious systemic effects. It should not be used, stored, or transported until the handling precautions and recommendations as stated in the Safety Data Sheet (SDS) for this product have been fully understood by all persons who will work with the material.

DISCLAIMER

Chemtools® has made every effort to ensure the information provided in this Technical Data Sheet is accurate at the time of publication. Chemtools® expressly recommends that the user make his/her own assessment to determine the suitability of the product for its intended purpose prior to application. Chemtools shall not be responsible for loss, damage, or injury, resulting from the reliance upon, or failure to adhere to, any recommendations or information contained herein; nor from abnormal use of the material; nor from any hazard inherent in the nature of the material.

FURTHER INFORMATION

Please visit Chemtools® online at www.chemtools.com.au for product photos, marketing materials, Technical Data Sheets, Safety Data Sheets, contact details, and other company/business related information.