

LIQUIDWELD 5310A/B



METHACRYLATE ADHESIVE, 15-18 MINUTE FIXTURE TIME

LIQUIDWELD™ 5310A/B is a rapid-setting, methacrylate adhesive that provides a medium viscosity that is non-sagging & gap filling in thickness of up to 0.375 inches. The adhesive has excellent bond strength to plastics, metals, and most other surfaces. The LIQUIDWELD™ 5310 A/B system has a convenient 1:1 by weight and volume mix ratio and is easy to apply from a dispensing nozzle or with a spatula, stiff brush or squeegee. The cured adhesive features good peel strength and excellent impact, thermal shock, and fatigue resistance.

Other LIQUIDWELD™ 5000 and 7000 series adhesives are available with fixture times ranging from 2 – 120 minutes. Thickened and thinned versions are also available, as are custom colors. . Please contact us to discuss your application if you think such a variation might be needed.

TYPICAL APPLICATIONS

- Ideal for Automotive Components, Marine Assemblies, Sporting goods, Electronics Enclosures, Appliances, Electrical Components, Furniture, Plastic Fabrications, Sign & Display, Metal Fabrications, etc.
- Ideal for bonding PVC, Polycarbonate, Acrylic, Fiberglass, PBT, PPO, ABS, FRP, Polyurethane, Epoxy, Wood, Nylon, Polyesters, Gelcoats, Aluminum, CRS, Stainless Steel, Galvanized Steel, etc.

HANDLING PROPERTIES

<u>LIQUIDWELD™ 5310A</u>	<u>VALUE</u>	<u>TEST METHOD</u>
Density g/cm ³	1.03	ASTM E-201
Viscosity at 25°C, cps	45,000	ASTM D-2393
<u>LIQUIDWELD™ 5310B</u>	<u>VALUE</u>	<u>TEST METHOD</u>
Density g/cm ³	1.04	ASTM E-201
Viscosity at 25°C, cps	45,000	ASTM D-2393
Mix Ratio by Weight	1A:1B	Calculated
Mix Ratio by Volume	1A:1B	Calculated
Viscosity, Mixed at 25°C, cps	90,000	ASTM D-2393
Working Time at 25°C	8-10 minutes	ASTM D-2471
Fixture Time at 25°C	15-18 minutes	
Recommended Cure Schedule:	Functional cures are achieved in as little as 4 hours and full strength is developed within 8 - 24 hours at 25°C.	

PHYSICAL PROPERTIES

	<u>VALUE</u>	<u>TEST METHOD</u>
Color	Cream (standard), White or black (made-to-order)*	Visual
Shore D Hardness	78	ASTM D-2240
Tensile Strength, psi	4,250	ASTM D-638
Tensile Elongation at break	12%	ASTM D-638
Lap Shear Strengths, various substrates at 25°C / 77°F:		ASTM D-1002

<u>Substrate</u>	<u>Shear Strength</u>
Stainless Steel / Stainless Steel	3400 psi (cohesive failure)
Aluminum / Aluminum	3200 psi (cohesive failure)
ABS / ABS	1500 psi (substrate failure)
FRP / FRP	1700 psi (fiber tear)
Acrylic / Acrylic	1120 psi (substrate failure)
PVC/PVC	980 psi (substrate failure)
Polycarbonate:Polycarbonate	860 psi (substrate failure)

Note: substrate failure indicates that the bonded substrate broke before the adhesive bond failed, fiber tear indicates that the fiber reinforced plastic tore a par from its fiber reinforcement before the adhesive bond failed

Lap Shear Strength tested at various temperatures:

<u>Test Temperature</u>	<u>Shear Strength</u>
-40°C / -40°F	1420 psi
-29°C / -20°F	1800 psi
25°C / 77°F	3200 psi
50°C / 121°F	2000 psi
82°C / 180°F	540 psi

Lap Shear Strength after Environmental Cycling:

each cycle 8 hrs at -30°C, 8 hrs at 85°C & 8 hrs @ 30°C and 100% relative humidity:

<u>Aging Period</u>	<u>Shear Strength at 25°C</u>
0 Days (initial)	3480 psi
30 days (30 cycles)	3950 psi

Note: Liquidweld™ 5310A/B resists environmental condition that will degrade many substrates. Environmental conditions that degrade the bonded substrate may reduce overall bond strength even if the adhesive is unaffected.

Lap Shear Strength after Chemical Immersion for 30 days at:

<u>Chemical</u>	<u>Shear Strength</u>
Gasoline	3200 psi
Acetic Acid (10%)	3180 psi
Water at 25°C	3140 psi
Water at 90°C	2980 psi
Motor Oil	3300 psi
Xylene	3200 psi
Toluene	3090 psi
Isopropanol	3200 psi
Acetone	60 psi

T-Peel Strength	20 pli	ASTM D3807
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NOTE : Typical Properties determined using LIQUIDWELD™ 5310A/B cured for 24 hours at 25°C. Values are based on laboratory or average production results – not for specification purposes. *Custom colors available by request

SUGGESTED PROCESSING GUIDELINES:

LIQUIDWELD™ 5310A/B can be applied by stiff brush, roller, squeegee, knife, or spatula. They are also suitable for meter-mix dispensing and can be supplied in dual syringes cartridges for use with static mixing nozzles. Dispensing directly from disposable cartridges or meter-mix-dispensing equipment is strongly recommended as it ensures proper mixing without incorporating air and give consistent results. Product supplied in dual syringe cartridges can be dispensed using manual or pneumatic dispensing guns.

When meter-mix dispense systems are used, care must be taken to assure compatibility between the adhesive components and the equipment components that they contact. All wetted metal components should be constructed of stainless steel or aluminum or have a sufficient thickness of a chemically resistant material to prevent contact between the adhesive components and the base metal. Contact with copper, zinc, brass, and/or alloys containing these materials must be strictly prevented. All non-metallic seals and gaskets should be fabricated from Teflon® or UHMW polyethylene based materials.

If mixing manually, weigh Part A and Part B in the recommended ratio as accurately as possible into a clean mixing container. Always use weighing equipment having accuracy in proportion to the amounts being weighted. Blend by using a spatula or stirring stick for 1-2 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture.

Apply the adhesive to clean, dry surfaces free of dust and oils. Best results will be achieved with surfaces that have been lightly abraded or have a textured surface. Clamp or otherwise hold in place bonded parts so that they will not move prior to the bond curing, light even pressure is generally sufficient. Allow to cure at room temperature for at least the fixture time before any movement, impact or force is applied to the bonded parts. After the fixture time has elapsed check the edges of the bond or a witness sample to confirm proper setting before removing clamps or carefully handling the bonded parts. The parts can often be subject to normal handling and limited shock and chemical exposure once 3-4 times the fixture time (45 - 60 minutes) has elapsed. The adhesive will be expected to have reached about 80% of its final bond strength at this point. For demanding applications, allow at least the suggest cure time before subjecting the bonded parts to significant force, vibration, heat, or chemical exposure

CLEAN UP: Adhesive components and mixed adhesive should be removed from mixing tools and application equipment with a cleaner like our Rezi-Kleen #4 before it cures. For washing up and to clean skin and to gently clean wood and painted metals, we can supply GOOP® waterless Hand Cleaner, which is excellent for cleaning and protecting skin, wood, and other surfaces that could be dried out or damaged by stronger chemicals. Cured Adhesives can be removed with solvents like our UltraStrip solvent blends.

STORAGE GUIDELINES & SHELF-LIFE:

Store this material in a clean, cool and dry environment in its tightly closed original container. Shelf life of adhesive is at least 6 months from day of shipment when stored at 55°F and 75°F. Long term exposure above 75°F will reduce the shelf life of these materials. Prolonged exposure

of part B, including in dual syringe cartridges, above 100°F (37.7°C) quickly diminishes the product's reactivity and must be avoided. These products should never be frozen, but refrigerated storage at 4°C – 10°C (39°F - 50°F) will help extend the shelf-life to up to 1 year from date of shipment.

HANDLING PRECAUTIONS:

Mandatory and recommended industrial hygiene procedures should be followed whenever these products are being handled and processed. Read Material Safety Data Sheet before handling or using this product. Adhesive component A contains methyl methacrylate monomer and always use in a well-ventilated area. Activator component B contains peroxide. Both materials must be stored in a cool place away from sources of heat and open flames or sparks. Keep containers closed when not in use. Prevent contact with skin and eyes. In case of skin contact, wash with soap and water. In case of eye contact, flush with water for 15 minutes and seek immediate medical attention. Harmful if swallowed. Keep out of reach of children. **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 1/2 inch thick can develop heat in excess of 250°F/121°C and can generate harmful, flammable vapors. Large curing masses should be carefully moved to a well-ventilated area where the chance of personal contact is minimized.

FIRST AID

In case of contact:

Skin – Immediately wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Destroy contaminated shoes and other articles made of leather.

Eyes – Immediately flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Inhalation - Remove person to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

Ingestion - Do not induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person.

DISCLAIMER:

IMPORTANT: The following supercedes Buyer's documents. **SELLER / MANUFACTURER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller / Manufacturer be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results presented are based on controlled or laboratory work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended

Specialty Polymers & Services, Inc. (SP&S)

27822 Fremont Court

Valencia, CA 91355

www.spolymers.com

Tel: 661-294-1790

Fax: 661-294-0640

info@spolymers.com

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