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PARTITE 7310

Methacrylate Structural Adhesive

PARTITE 7310 is a two-component, 100% reactive structural adhesive specifically formulated for bonding thermoplastics, thermosets, metals and composite assemblies.

FEATURE:

- Convenient 1:1 mix ratio, Non-sagging and thixotropic formulation
- Excellent adhesion to metal surfaces such as aluminum, stainless steel, plated steel, galvanized metals, etc. without primer or chemical wipes.
- Excellent impact, peel and shear resistance
- Room temperature cured with extended open time.

APPLICATIONS:

- Ideal for bonding all types thermoplastics, thermoset, and composites as well as metals.
- Ideal for Automotive Components, Marine Assemblies, Electronics Enclosures, Appliances, Aerospace Parts, Electrical Components, Furniture, Windmill Assemblies, Exterior Sign and display, Plastic & Metal Fabrication, etc.

CERTIFICATION:

- ABS certified for Transportation
- RoHS and REACH Compliant
- SGS Certified
- BRE BS 476 Certified
- EN 45545-2 Fire Approval

ADHESIVE PROPERTIES:

Liquid		
	Resin	Activator
Appearance	Off-White	Amber
Viscosity @ 25 °C, Brookfield RVT	40,000 – 60,000	40,000 – 60,000
Flash Point (TCC) °F	51	51
Density (lbs/gal)	8.07	8.05
Mix Ratio by Volume	1	1

Cure Characteristics	
Working Time	15 – 18 minutes
Fixture Time	30 – 35 minutes
Full Cure	24 hours

Cured Adhesive Properties	
Gap Filling	Up to .375 inches
Shore Hardness ASTM D 2240	72 - 78D
Elongation DIN 53283	7 - 18%
Modulus, Psi DIN 53283	75,000 -100,000
Tensile Strength, Psi ASTM D 638	3,100 – 3,300 psi
Service Temperature	-40 °F to 250 °F -40 °C to 121 °C

Lap Shear Strength

PARTITE 7310 formulated to bond wide variety of substrates. Lap shear strength data according to ASTM D 1002 reported for the most common substrates:

Substrates	Shear Strength & Failure Mode
Stainless Steel / Stainless Steel	3,150 psi – Cohesive Failure
Aluminum / Aluminum	3,100 – 3,300 psi – Cohesive Failure
ABS / ABS	1,500 psi – Substrate Failure
FRP / FRP	1,700 psi – Fiber Tear
Aluminum / ABS	2,150 psi – Substrate Failure



Result

Lap shear strength figures are lower for the plastic surfaces due to substrate failure which means substrate is failing before the adhesive bond.

Cleavage Peel

Partite 7310 have the ability to withstand at high level of peel stresses. Following are the results of Cleavage Peel strength based on ASTM D 3807:

Stainless Steel / Stainless Steel	Initial Strength – 20 pli Average Strength – 18 pli
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Result

The above result shows the strength required for the joint to begin to peel and joint resistant with average strength.

Chemical Resistance

The chemical resistance of 7310 was studied by bonding the Aluminium/Aluminium and cured for 7 days @ 25° C then kept immersed in the media listed here and tested for lap shear strength.

Effect of immersion in different media.
(Immersion for 1 month in various media)

Media	Lap Shear Strength, in PSI ASTM D 1002
Gasoline	3190
Acetic acid (10%)	2900
Xylene	3250
Lubricating oil-HD30	3150
Paraffin	3200
Water@23 °C	3050
Water@90 °C	3150

Temperature Resistance



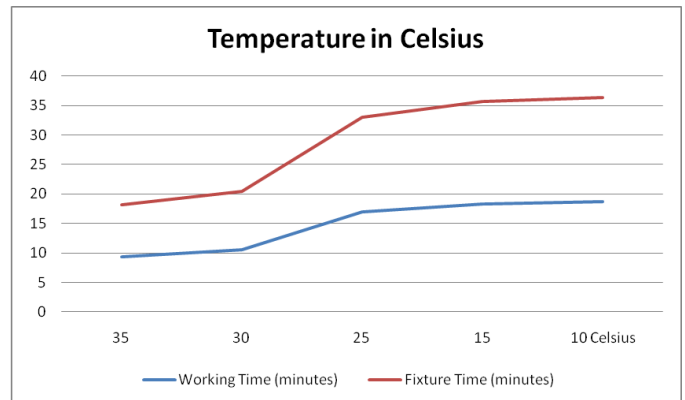
Lap Shear Strength ASTM D 1002 –
Aluminum / Aluminum

Result

The lap shear strength of the Partite 7310 reduces with heat and increases in cold temperature. The failure mode was cohesive failure in all above cases.

Effect of Temperature on Cure Speed

PARTITE methacrylate adhesives are designed to cure at room temperature but the ambient temperature will affect the working and fixture times as follows:



Result

We recommend using the product at around room temperature of 25 °C.



Environmental Resistance

PARTITE 7310 have excellent resistance to harsh environment conditions. The testing data is as follows:

Condition	Lap Shear Strength & Mode of Failure
Initial	3,170 psi – Cohesive Failure
Environmental Cycle – 30 days	3,450 psi – Cohesive Failure

Lap Shear Strength ASTM D 1002 –
Stainless Steel / Stainless Steel

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

Result

The lap shear strength has increased after environmental cycle. PARTITE 7310 perform better under these conditions compare to the substrates bonded. Substrates may have less resistance to these conditions compare to adhesive.

HANDLING AND PRECAUTIONS:

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.

DISPENSING EQUIPMENT: Dispensing directly from disposable cartridges or meter-mix-dispensing equipment is strongly recommended. Both methods employ convenient static motionless

mixer technology. Product supplied in pre-measured cartridges is dispensed from approved manual or pneumatic powered guns. When meter-mix dispense systems are used, care must be taken to assure 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 aluminum 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.

MIXING AND APPLICATION:

All surfaces must be clean, dry, dust and grease free. Best result will be achieved with surfaces that have been lightly abraded immediately prior to bonding. Always dispense a quantity of adhesive at start-up to assure 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 assure quality before proceeding. Carefully dispense a sufficient quantity of adhesive on the substrate to assure that the bond gap will be completely filled when the parts are joined. Allow for squeeze-out at the edges of the bond to assure filling. 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.

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 in service when 80 percent of full strength is developed. The time to achieve 80% cure is approximately 2-3 times that required for fixturing.

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.

STORAGE AND SHELF LIFE:

Shelf life of adhesive (Part A) is 1 year from day of shipment from Parson. Shelf life of activator (Part B), including cartridges that contain activators, is 9 months from day of shipment. Shelf life is based on continuous storage between 55°F and 75°F. Long term exposure above 75°F will reduce the shelf life of these materials. Prolonged exposure of activators, including cartridges which contain activators, above 100°F quickly diminishes the product's reactivity and should be avoided. Shelf life can be extended by refrigeration (45°F - 55°F). These products should never be frozen.

Warranty: All information presented in this data sheet is based on laboratory testing under controlled conditions and is not intend for design purposes. Due to variance of storage, handling & application of these materials; Parson makes no representations or warranties of any kind concerning this data. The ultimate suitability for any intended application must be verified by the end user under anticipated test conditions. All products purchased from or supplied by Parson are subject to terms and conditions set out in the contract. All other information supplied by Parson is consider accurate but are furnished upon the express condition the customer shall make its own assessment to determine the product's suitability for a particular purpose. Parson makes no other warranty, either express or implied, including those regarding such other information, the data upon which the same is based, or the results to be obtained from the use thereof; that any product shall be merchantable or fit for any particular purpose; or that the use of such other information or product will nor infringe any patent.