PARSON ADHESIVES, INC.

PARTITE 7420

Methacrylate Structural Adhesive

PARTITE 7420 is a two-component, 100% reactive, toughened structural methacrylate adhesive specifically formulated for bonding wide variety of metals, thermoplastics, thermosets, and composite assemblies.

FEATURE:

- Combined at a 10:1 mix ratio, Non-sagging and thixotropic formulation
- Requires no surface preparation.
- High strength, excellent fatigue endurance, impact resistance and toughness.
- Working time 4 to 6 minutes and fixture time is 15 - 18 minutes.

APPLICATIONS:

- Ideal for bonding Aluminum, Cold Rolled Steel, Stainless Steel, Fiberglass, PBT, PPO, ABS, FRT, Polyurethane, Epoxy, Wood, RIM, Nylon, FRP, Polyesters, Gelcoats, Styrene, Steel, Carbon Steel, etc.
- Ideal for Automotive Components, Marine Assembly, Plastic Tanks, Thermoform Enclosures, Appliances, Electrical Components, Plastic & Composite Fabrications, Sign & Display, Metal Fabrications, etc.

ADHESIVE PROPERTIES

Liquid

	Adhesive	**Activator**
Appearance	Milky-White	Off-White/Blue/Black
Viscosity @ 25 ^{0}C, Brookfield RVT	100, 000 – 125,000	50,000 – 70,000
Flash Point (TCC), ^{0}F	51	51
Density (lbs/gal)	8.00	8.95
Mix Ratio by Volume	10.0	1.00
By Weight	8.9	1.0

Cure Characteristics

Working Time	4 - 6 minutes
Fixture Time	15 – 18 minutes
Functional Cure	1 – 3 hours
Full Cure	24 hours
Mixed Density (lbs/gal)	8.10

Cured Adhesive Properties

Gap Filling	Up to 0.375 inches (10 mm)
Shore Hardness	73D ASTM D 2240
Elongation	95%
Modulus, psi	75,000 – 100,000
Tensile Strength, psi	3,200 – 3,500
Impact Resistance	21 ft.lb./in.
Service Temperature	-40 ^{0}F to 250 ^{0}F

Lap Shear Strength Data

PARTITE 7420 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	3,100 psi – Cohesive Failure
Aluminum / Aluminum	2,910 psi – Cohesive Failure
ABS / ABS	1,200 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 Data

Partite 7420 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 – 22 pli Average Strength – 20 pli

Result

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

Environmental Resistance

PARTITE 7420 have excellent resistance to harsh environment conditions. The testing data is as follows:

Condition	Lap Shear Strength & Mode of Failure
Initial	3,180 psi – Cohesive Failure
Environmental Cycle – 30 days	3,200 psi – Cohesive Failure

Lap Shear Strength ASTM D 1002 – Stainless Steel / Stainless Steel
Environmental Cycle = 8 hours @ -30 ^{0}C, 8 hours @ 85 ^{0}C, 8 hours @ 30 ^{0}C @ 100% Relative Humidity

Result

The lap shear strength has increased after environmental cycle. PARTITE 7420 perform better under these conditions compare to the substrates bonded. Substrates may have less resistance to these conditions compare to adhesive.

Chemical Resistance Data

The chemical resistance of 7420 was studied by bonding the Aluminum/Aluminum as per specification 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	3180
Acetic acid (10%)	3120
Xylene	3150
Lubricating oil-HD30	3240
Paraffin	2950
Water@23C	3100
Water@90C	3000

Packaging:

PARTITE 7420 is available in 380 ml co-axial cartridge & 490 ml side by side cartridge, 5 gallon (18 kg) drum and 50 gallon (182 kg) drum.

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 de-molding 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.