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PARTITE® 7300

Methacrylate Structural Adhesive

PARTITE 7300 is a two-component, 100% reactive structural methacrylate adhesive specifically formulated for bonding thermoplastics, thermosets, metals and composite assemblies.

FEATURE:

- 1:1 mix ratio, non-sagging and thixotropic formulation.
- Excellent impact, peel and shear resistance.
- Non-sagging, gaps filled up to 0.375 inches (9.5 mm).
- Room temperature cure with short open time.

APPLICATIONS:

- Ideal for bonding all types of PVC, polycarbonate, acrylic, fiberglass, PA, PBT, PPO, ABS, FRT, polyurethane, epoxy, wood, RIM, Nylon, FRP, polyesters, gelcoats, styrene, stainless steel, galvanized steel.
- For producing long term bonds, and for virtually all adhesive and repair work requiring mechanical processing. Bonds a wide variety of surfaces.

APPLICATION-EXAMPLES:

- For automotive components, sporting goods, electronics parts, tool handles, appliances, computer assemblies, electrical components, furniture, marine assemblies, plastic fabrications, sign & display, . . .
- Repairing GRP (glass fibre-reinforced plastic, fibreglass), e.g.: outside mirrors, bumpers, front grills, headlamp housing, bonnets and boots, wings, roof racks, spoilers and cabrio-hardtops. Strengthening and mounting sheet metals in car bodwork areas. Bumpers, entries, wings, door panels, spoilers on commercial vehicles and traction engines. Cab and plastic parts on agricultural vehicles. Train interiors and refrigerated vehicles. Motorbike fairing. Caravans, sailboats and motor boats. Gliders, tent poles, rotor blades on wind energy installations, pedestrian bridges, lighthouses. Machine casings, circuit boxes. Advertising or decorative figures. Bonding different materials (with each other or in combination), e.g.: metal, plastic, wood, ceramic, stone. Repairing breaks, faulty-drillings, holes and cracks. Surface treatment of bumps, dents and scratches, (Metal – wood – GRP).



ADHESIVE PROPERTIES

Liquid

	Adhesive	Activator
Appearance:	Off-white	Amber
Viscosity: @ 25°C, Brookfield RVT	40,000 - 60,000 cps	40,000 - 60,000 cps
Flash Point: (TCC)	51°F / 10°C	51°F / 10°C
Density:	8.55 lbs/gal / 1.02 kg/l	8.71 lbs/gal / 1.04 kg/l

Cure Characteristics

Mixed Viscosity:	90,000 cps	
Working Time:	4 - 6 minutes	
Fixture Time:	12 - 15 minutes	
Assembly Time:	6 minutes @ 77°F / 25°C	
Functional Cure:	1 - 3 hours	
Full Cure:	24 hours	
Mixed Density:	8.59 lbs/gal	/ 1.03 kg/l
Coverage/lb: (kg)	148 sq.in @ .010"	/ 954 cm ² @ 0.254 mm
Service Temperature:	-40°F to +250°F	/ -40°C to +120°C

Cured Adhesive Properties

Gap Filling:	≤ 0.375 inches / ≤ 9.53 mm		
Shore Hardness:	78D		ASTM D 2240
Elongation:	19%		
Tensile Shear Strength:	4,200 psi	/ 29.0 N/mm ²	DIN 53283
Peeling Strength:	15-20 pli	/ 26,3-35,0 N/mm	
Adhesive Tensile Shear: (Steel/Steel)	3,450 psi	/ 23.8 N/mm ²	ASTM D 1002
Adhesive Tensile Shear: (Al/Al)	> 3,100 psi	/ > 21.4 N/mm ²	
Adhesive Tensile Shear: (ABS/PVC)	1,500 psi	/ 10.3 N/mm ²	
Adhesive Tensile Shear: (Fiberglass)	> 1,650 psi	/ > 11.4 N/mm ²	
Impact Resistance:	19 ft.lb./in	/ 10.1 Nm/cm	

Lap Shear Strength Data

PARTITE 7300 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	3,480 psi – Cohesive Failure
Aluminum / Aluminum	3,190 psi – Cohesive Failure
ABS / ABS	1,500 psi – Substrate Failure
FRP / FRP	1,700 psi – Fiber Tear
Aluminum / ABS	2,200 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 7300 have the ability to withstand at high level of peel stresses. Following are the results of Cleavage Peel strength based ASTM D 3807:

Stainless Steel / Stainless Steel	Initial Strength – 20 pli Average Strength – 18 pli
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Result: The above results shows the strength required for the joint to begin to peel and joint resistant with average strength.

Effect of Temperature on Cure

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

Temperature	Working Time	Fixture Time
10°C	45% Slower	45% Slower
15°C	38% Slower	38% Slower
25°C	4 – 6 minutes	12 – 15 minutes
30°C	8% Faster	8% Faster
35°C	10% Faster	10% Faster

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

Off Ratio Performance

PARTITE methacrylate adhesives are designed such a way that off ratio does not affect the final properties of the bond performance. Following table shows the result of the off ratio:

Ratio	Fixture Time	Hardness	Lap Shear Strength
0.8:1	15-20 minutes	78D	2,800 psi
1:1	12 – 15 minutes	78D	3,480 psi
1.2:1	10-12 minutes	78D	3,002 psi

Stainless Steel / Stainless Steel According to ASTM D 1002

Result: The above data shows that there is minor change in the lap shear strength and curing properties of the adhesive when mixed off ratio.

Shrinkage Data

All the polymeric adhesives shrink upon cure and the data below shows the results:

Cure Time	Percentage Shrinkage
4 hours	2 - 3 %
24 hours	5 - 7 %
7 Days	7 - 9%

Result: This data shows that Partite 7300 has minimum linear shrinkage.



Gap Fill Data

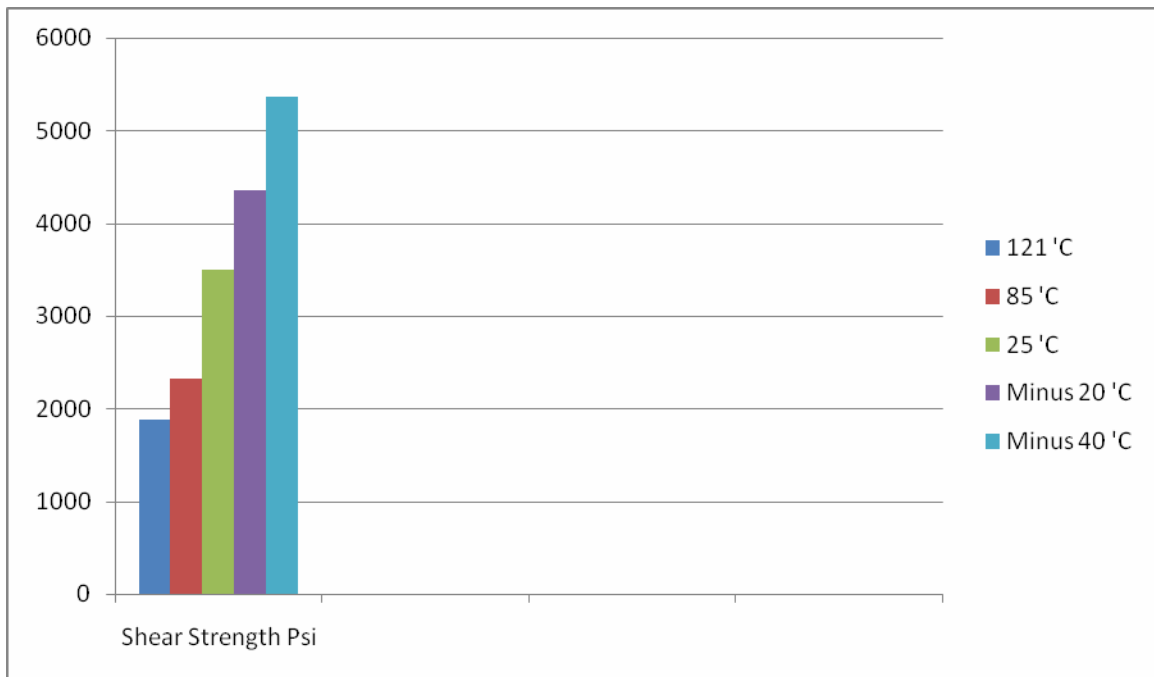
Recommended bond gap for Partite 7300 is 1 mm. This adhesive has gap fill capabilities of up to 4 mm. The following table shows lap shear strength variations for different gap sizes:

Gap Fill	Lap Shear Strength	Impact Strength
0.5 mm	3,980 psi	18 ft.lb./in.
1 mm	3,480 psi	19 ft.lb./in.
2 mm	2,900 psi	18 ft.lb./in.

Stainless Steel / Stainless Steel – Lap Shear Strength – ASTM D1002
Impact Strength—Aluminum / Aluminum

Result: 1 mm gap fill is recommended to get the optimum bond performance and to make sure that there is sufficient adhesive in the bond joint.

Temperature Resistance



Lap Shear Strength ASTM D 1002 – Stainless / Stainless Steel

Result: The lap shear strength of the Partite 7300 reduces with heat and increases in cold temperature. The failure mode was cohesive failure in all above cases.



Chemical Resistance Data

The chemical resistance of 7300 was studied by bonding the Aluminium/Aluminium as per specification and cured for 7 days @ 77°F / 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 (ASTM D 1002)
Gasoline:	4200 PSI / 29.0 N/mm ²
Acetic acid: (10%)	3190 PSI / 22.0 N/mm ²
Xylene:	3200 PSI / 22.1 N/mm ²
Lubricating oil-HD30:	4400 PSI / 30.3 N/mm ²
Paraffin:	3950 PSI / 27.2 N/mm ²
Water: @ 73°F / 23°C	3100 PSI / 21.4 N/mm ²
Water: @ 194°F / 90°C	3000 PSI / 22.7 N/mm ²

Environmental Resistance

PARTITE 7300 have excellent resistance to harsh environment conditions. The testing data is as follows:

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 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 7300 perform better under these conditions compare to the substrates bonded. Substrates may have less resistance to these conditions compare to adhesive.

APPLICATION INSTRUCTIONS

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. Proper mixing is required for the curing and adhesive strength development. To ensure that the ratio is 100% exact, it is advantageous to discard a small amount of the first mixed product before use. Excess adhesive can be wiped away with organic solvent. Adhesive bond should be allowed to develop full strength before subjecting to any service loads.

Packaging:

PARTITE 7300 is available in 25ml, 50 ml, 200ml, 400ml and 600ml cartridges. This product is also available in pails and drums to use with conventional meter/mix/dispense equipment.

PRECAUTIONS: This product and the auxiliary materials normally combined with it are capable of producing adverse health effects ranging from minor skin irritation to serious systemic effects. None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Material Safety Data Sheets (MSDS) for this and all other products being used are understood by all persons who will work with the product. **Warranty:** All products purchased from or supplied by Parson are subject to terms and conditions set out in the contract. Parson warrants only that its product will meet those specifications designated as such herein or in other publications. 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.