# INTER-MIX 20
## PANEL BONDING ADHESIVE


INTER-MIX 20 is a 1:1 methacrylate structural adhesive formulated to bond engineered thermoplastics, thermosets, composites and metal structural elements together in any combination. INTER-MIX 20 forms a tough, high-strength, high impact resistant bonds. It features a medium cure time for flexibility in positioning and multiple operations, but provides for faster fixturing. INTER-MIX 20 has outstanding durability and environmental resistance to most common industrial cleaners, fuels, lubricants and environmental conditions. This product is formulated as a non-sag, creamy gel to dispense through static mixer tubes and bulk dispensing equipment. Contains glass beads to prevent adhesive squeeze-out. Tremendous impact resistance.

APPLICATIONS

- Ideal for bonding all types of metal, PVC, Fiberglass, PBT, PPO, ABS, FRT, Polyurethane, Epoxy, Wood, RIM, Nylon, Polyesters, Acrylics, Gelcoats, Styrene, Aluminum, Stainless Steel, Cold Rolled Steel, etc.
- Ideal for Automotive Components, Marine Assemblies, Electronics Enclosures,Appliances, Aerospace Parts, Electrical Components, Furniture, Windmill Assemblies, Exterior Sign and Displays, Plastic & Metal Fabrication, etc.

ADHESIVE PROPERTIES

| Liquid | Adhesive | Activator |
|---|---|---|
| Appearance | Off-White | Amber |
| Viscosity (@25°C, Spindle TD 20 rpm) | 40,000 - 60,000 | 40,000 - 60,000 |
| Flash Point (TCC),°F | 51 | 51 |
| Density (lbs/gal) | 8.07 | 8.05 |
| Mix Ratio (weight & volume) | 1 | 1 |

Cure Characteristics

| | |
|---|---|
| Mixed Viscosity, cps | 90,000 - 100,000 |
| Working Time | 20 - 25 minutes |
| Fixture Time | 45 - 60 minutes |
| Full Cure | 24 hours approx. |
| Coverage/lb | 147 sq. in. @ .010" |
| Service Temperature | -40°F to 250°F |

Cured Adhesive Properties

| | |
|---|---|
| Gap Filling | Up to 0.375 inches |
| Shore Hardness | 78 D ASTM D 2240 |
| Elongation | 7-18% |
| Tensile Shear Strength | 3,850 psi DIN 53283 |
| Impact Resistance | 18 ft. lb./in. |

Lap Shear Strength Data

#8430 is formulated to bond a wide variety of substrates. Lap shear strength data according to ASTM D 1002 reported for the most common substrates:

| Substrates | Shear Strength & Failure Mode |
|---|---|
| Steel | 3,150 psi - Cohesive Failure |
| Stainless Steel/Stainless Steel | 3,150 psi - Cohesive Failure |
| Aluminum/Aluminum | 3,250 psi - Cohesive Failure |
| ABS/ABS | 1,500 - Substrate Failure |
| FRP/FRP | 1,700 - Fiber Tear |
| Aluminum/ABS | 2,150 - 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

#8430 has the ability to withstand at a high level of peel stresses. Following are the results of Cleavage Peel strength based on ASTM D3807:

| | |
|---|---|
| Stainless Steel/Stainless Steel | Initial Strength - 20 pli |
| | Avg. Strength - 18 pli |

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

Chemical Resistance Data

The chemical resistance of #8430 was studied by bonding 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.

| Media | Lap Shear Strength (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 |

*-continued*

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Environmental Resistance

#8430 has excellent resistance to harsh environmental 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 hrs @ -30°C, 8 hrs @ 85°C, 8 hrs @ 30°C @ 100% Relative Humidity*

Result - The lap shear strength has increased after environmental cycle. #8340 performs better under these conditions compared to the substrates bonded. Substrates may have less resistance to these conditions compared to adhesive.

## HANDLING AND PRECAUTIONS:

*CAUTION: ADHESIVE IS FLAMMABLE when in a liquid state.* Allow adhesive to set before welding (approx. 1-1/2 to 2-1/2 hours). Keep any welding to a minimum of 2 inches from the adhesive. Adhesive is combustible when cured and will burn. Read 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. NOTE: DO NOT use two-part polyester body filler or putty over #8430. Bubbling may occur.

## 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 is 6 months from day of shipment from IES. 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.

## PRODUCT AVAILABLE

| | | |
|---|---|---|
| 8430 | 6.75 fl. oz. kit (200ml)<br>*Each kit includes two #8260 static mixers* | 4/box |


Please refer to the SDS and product label before using this or any IES product. Additional information and Repair Procedures can be found online at www.useies.com

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