Universal Bonder (UB)

PRODUCT DESCRIPTION
The Tru-Bond™ Universal Bonding (UB) Series of products bonds rigid substrates to flexible substrates with UV/Visible light. Tough, durable bonds are created making it possible to join glass, metals, ceramics and plastics that include; ABS, polycarbonate, PET, PETG, flexible vinyl, urethanes, acrylcs and epoxy. The assemblies can survive thermal and humidity cycling while maintaining optical clarity. This formulation also cures through many translucent substrates, as well as, UV blocked plastics.

PRODUCT CHARACTERISTICS
- Chemical Class: Urethane Acrylate
- Appearance (uncured): Clear Liquid
- Components: Single-Requires no Mixing
- Viscosity: Low

TYPICAL PROPERTIES OF UNCURED MATERIALS
- Specific gravity@25 °C: 1.07
- Viscosity@25°C, Brookfield RV Spindle 3, 6 rpm, cP: 3,000
- Non-Volatile Materials, %: >99
- VOC, %: <1
- Flashpoint, °F(°C): 171(77)
- Shelf life, months: 24
- Solubility: ketones, oxygenated solvents

TYPICAL PROPERTIES OF CURED MATERIALS
- Color: Clear
- Refractive Index: 1.49
- Optical Clarity, %: >98
- Tensile strength, ASTM D882, psi(MPa): 312(2.15)
- Elongation, ASTM D882, %: 214
- Modulus of Elasticity, ASTM D882, psi(MPa): 136(0.94)
- Volume Shrinkage, %: 5.8
- Lineal Shrinkage, %: 1.8
- Water absorption, ASTM D570 (24 hrs.), %: 7.5
- Boiling Water, ASTM D570 (2 hrs.), %: 4.3
- Shore hardness: 90A
- Temperature range, °F(°C): -65(-54) to 300(149)

Adhesive Lap Shear
- Acrylic: 354
- Glass: 657
- Polycarbonate: 788
- Polycarbonate to steel: 716

Fixture Time and Tack-free Time:

<table>
<thead>
<tr>
<th>Light Source</th>
<th>Irradiance (mW/cm²)</th>
<th>Fixture Time (Sec.)</th>
<th>Tack free Time (Sec.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT 100</td>
<td>20</td>
<td>&lt; 5</td>
<td>N/A</td>
</tr>
<tr>
<td>Fusion ® D bulb</td>
<td>1,000</td>
<td>&lt; 1</td>
<td>&lt; 4</td>
</tr>
<tr>
<td>Uvitrion PortaRay 400R</td>
<td>250</td>
<td>&lt; 2</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Depth of Cure:

<table>
<thead>
<tr>
<th>Light Source</th>
<th>Irradiance (mW/cm²)</th>
<th>Exposure Time 30 Sec. Inch (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 W Metal Halide Bulb</td>
<td>20</td>
<td>0.118 in.(3 mm)</td>
</tr>
</tbody>
</table>

PROCESSING
ITW products are easily applied by syringe dispense or specialty valve spray units. The materials cure extremely fast in bondlines, e.g. where the surfaces are not exposed to air, with UV or Visible radiation. Exposure doses range from .5 - 2 J/cm² depending on the intensity of the lamps and configuration of the assembly.

PRECAUTIONS
Please refer to the appropriate material safety data sheet (MSDS) prior to using this product.
STORAGE
Store the unopened product in a cool, dry, well ventilated location away from sources of heat. Optimal storage temperatures should range between 10 °C (50 °F) and 32 °C (90 °F). Do not expose the product to light. It may polymerize upon prolonged exposure to ambient or artificial light. Product removed from the containers during use should not be returned to original containers in order to avoid potential contamination.

CONVERSIONS
(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
μm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N-m x 8.851 = lb-in
N-m x 0.738 = lb-ft
N-mm x 0.142 = oz-in
mPa·s = CP

WARRANTY
ITW will replace any material found to be defective. Because the storage, handling and application of this material are beyond our control, we can accept no liability for the results obtained.

NOTE
The following supersedes any provision in your company's forms, letters and papers. ITW makes NO WARRANTY, WHETHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE FOR THIS PRODUCT. No statements or recommendations contained in the product literature are to be construed as inducements to infringe any relevant patent, now or thereafter in existence. UNDER NO CIRCUMSTANCES SHALL ITW BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES FROM ALLEGED NEGLIGENCE BREACH OF WARRANTY, STRICT LIABILITY OR ANY OTHER THEORY, ARISING OUT OF THE USE OR HANDLING OF THIS PRODUCT. The sole liability of ITW for any claims arising out of the manufacture, use or sale of its products shall be to refund the buyer's purchase price, provided such products have been demonstrated in ITW sole opinion, to justify such refund.

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