

# Properties for Rapid Casting Materials



| PROPERTIES  | ABS-Like Urethane                   | Clear or Tinted                          | Lexan™-like Urethane                | Fire Retardant   | TEST METHOD |
|---|-------------------------------------|--|-------------------------------------|--|-------------|
| Color   | Natural Translucent                 | Transparent, Water-White                 | White                               | White  | Visual      |
| Cured Hardness, Shore D                                       | 80 – 82 D                           | 80-85D                                   | 70 – 75 D                           | 80 °F  | ASTM D2240  |
| Specific Volume, cu.in. /lb                                   | 24.9                                | 24.2 cu.in. /lb                          | 25.56                               | 22.97  | ASTM D792   |
| Tensile Strength, psi   | 10,262 psi                          | 10,080 psi                               | 7,263 psi                           | 7,480 psi  | ASTM D638   |
| Elongation at Break, %  | 7.5 %                               | 41 %                                     | 7.6 %                               | 4.73 %   |             |
| Tensile Modulus, psi  | 357,765 psi                         | 69,720 psi                               | 238,110 psi                         | 505,965 psi  |             |
| Flexural Strength, psi  | 14,800 psi                          | 13,576 psi                               | 10,253 psi                          | 14,333 psi   | ASTM D790   |
| Flexural Modulus, psi   | 369,110 psi                         | 3.52 x 10 <sup>5</sup> psi               | 244,498 psi                         | 532.035 psi  |             |
| Compressive Strength, psi                                     | 14,457 psi                          | 11,010 psi                               | 9,273 psi                           | 13,305 psi   | ASTM D695   |
| Compressive Modulus, psi                                      | 393,170 psi                         | 3.63 x 10 <sup>5</sup> psi               | 276,097 psi                         | 450,270 psi  |             |
| Glass Transition Temperature (T <sub>g</sub> )                | 207 °F                              | 166°F                                    | 216 °F                              | 192°F  | TMA         |
| Coefficient of Thermal Expansion, Range: 50 °C to 100 °C      | 6.11 x 10 <sup>-5</sup> in./in./ °F | 4.94 x 10 <sup>-5</sup> inch / inch / °F | 7.40 x 10 <sup>-3</sup> in./in./ °F | 5.532 x10 <sup>-5</sup> in. / in. / °F                 | ASTM D696   |
| Heat Deflection Temp., <sup>66 psi</sup><br>264 psi           | <b>166 °F</b><br>151 °F             | -  | <b>175 °F</b><br>166 °F             | <b>161°F</b>   | ASTM D648   |
| Izod Impact Strength, ft.lbs./in <b>Notched</b><br>Un-notched | <b>0.46</b><br>3.5                  | -  | <b>0.42</b><br>3.6                  | <b>0.76(Method A)</b><br><b>4.82(Method E)</b><br>7.36 | ASTM D256   |
| Flammability per UL 94-Specification, 0.125” Sample           | -                                   | -  | -                                   | Pass V-0   | UL94        |
| Water Absorption, /s inch Sample,24 hours immersion @ 150°F   | -                                   | -  | -                                   | 0.64 %   | ASTM D570   |

## Properties for Rapid Casting Materials, contd.



### Santoprene-Like Urethane

| PROPERTIES  | SHORE<br>A-40 | SHORE<br>A-50 | SHORE<br>A-60 | SHORE<br>A-70 | TEST<br>METHOD |
|---|---------------|---------------|---------------|---------------|----------------|
| Color   | Lt. Amber     | Lt. Amber     | Lt. Amber     | Lt. Amber     | Visual         |
| Cured Hardness, Shore D                                       | 40 A±5        | 50 A±5        | 60 A±5        | 70 A±5        | ASTM D2240     |
| Specific Volume, cu.in. /lb.                                  | 26.2          | 26.2          | 26.1          | 25.9          | ASTM D792      |
| Tensile Strength, psi   | 800 psi       | 775 psi       | 1400 psi      | 1375 psi      | ASTM D638      |
| Elongation at Break, %  | 525 %         | 450 %         | 500 %         | 400 %         |                |
| Elongation Modulus @100%                                      | 175 psi       | 200 psi       | 300 psi       | 500 psi       | ASTM D412      |
| Elongation Modulus @200%                                      | 300 psi       | 375 psi       | 560 psi       | 875 psi       |                |
| Elongation Modulus @300%                                      | 520 psi       | 550 psi       | 1010 psi      | 1200 psi      |                |
| Tear Strength, pli, Die C                                     | 180 pli       | 165 pli       | 195 pli       | 340 pli       | ASTM D624      |
| Compression Set, %  | 45 %          | 30 %          | 29 %          | 27 %          | ASTM D395      |
| Bashore Rebound   | 65 %          | 64 %          | 60 %          | 60 %          | ASTM D2632     |
| Taber Abrasion, H18 Wheel,<br>1000grams, 1000 cycles, mg loss | 6 mg          | 5 mg          | 10.2 mg       | 2 mg.         | ASTM D1044     |