

## Product Data

# Somos<sup>®</sup> WaterShed XC 11122

### Description

DSM's Somos<sup>®</sup> WaterShed XC 11122 is a low viscosity liquid photopolymer that produces strong, tough, water-resistant, ABS-like parts. Most importantly, parts created with Somos<sup>®</sup> WaterShed XC 11122 are nearly colorless, and look more like true, clear engineered plastic.

In addition, Somos<sup>®</sup> WaterShed XC 11122 has been formulated with the Somos<sup>®</sup> Oxetane Advantage™ — an advanced chemistry platform that produces parts with outstanding water resistance and high dimensional stability.

### Applications

This ABS-like photopolymer is used in solid imaging processes, like stereolithography, to build three-dimensional parts. Somos<sup>®</sup> WaterShed XC 11122 offers many properties that mimic traditional engineering plastics, including ABS and PBT. This makes the material ideal for many applications in the automotive, medical and consumer electronic markets and include lenses, packaging, water flow analysis, RTV patterns, durable concept models, wind tunnel testing and investment casting patterns.

#### TECHNICAL DATA - LIQUID PROPERTIES

|            |                                 |
|------------|---------------------------------|
| Appearance | Optically clear, near colorless |
| Viscosity  | ~260 cps @ 30°C                 |
| Density    | ~1.12 g/cm <sup>3</sup> @ 25°C  |

#### TECHNICAL DATA - OPTICAL PROPERTIES

|                 |                         |  |
|-----------------|-------------------------|--|
| E <sub>c</sub>  | 11.5 mJ/cm <sup>2</sup> | [critical exposure]                                  |
| D <sub>p</sub>  | 6.50 mils               | [slope of cure-depth vs. ln (E) curve]               |
| E <sub>10</sub> | 54 mJ/cm <sup>2</sup>   | [exposure that gives 0.254 mm (.010 inch) thickness] |

| TECHNICAL DATA        |                           |  |                    |                       |                    |                                |               |
|-----------------------|---------------------------|--|--------------------|-----------------------|--------------------|--------------------------------|---------------|
| Mechanical Properties |                           | Somos® WaterShed XC 11122<br>UV Postcure |                    | ABS*<br>(Transparent) |                    | Polybutylene*<br>Terephthalate |               |
| ASTM Method           | Property Description      | Metric                                   | Imperial           | Metric                | Imperial           | Metric                         | Imperial      |
| D638M                 | Tensile Strength at Break | 47.1 - 53.6 MPa                          | 6.8 - 7.8 ksi      | 45.7 MPa              | 6.8 ksi            | 55 MPa                         | 8.0 ksi       |
| D638M                 | Elongation at Break       | 11 - 20%                                 | 11 - 20%           | 41.6%                 | 41.6%              | 20%                            | 20%           |
| D638M                 | Elongation at Yield       | 3%                                       | 3%                 | N/A                   | N/A                | 3.5 - 9%                       | 3.5 - 9%      |
| D638M                 | Modulus of Elasticity     | 2,650 - 2,880 MPa                        | 384 - 420 ksi      | 2,000 MPa             | 290 ksi            | 2,700 MPa                      | 391 ksi       |
| D790M                 | Flexural Strength         | 63.1 - 74.2 MPa                          | 9.2 - 10.8 ksi     | 73.5 MPa              | 11 ksi             | 80 MPa                         | 11.6 ksi      |
| D790M                 | Flexural Modulus          | 2,040 - 2,370 MPa                        | 296 - 344 ksi      | 2,300 MPa             | 334 ksi            | 2,500 MPa                      | 363 ksi       |
| D256A                 | Izod Impact (Notched)     | 0.2 - 0.3 J/m                            | 0.4 - 0.6 ft-lb/in | 1.6 J/m               | 1.5 - 2.0 ft-lb/in | 1.2 J/m                        | 0.56 ft-lb/in |
| D542                  | Index of Refraction       | 1.512 - 1.515                            | 1.512 - 1.515      | 1.52                  | 1.52               | N/A                            | N/A           |
| D1004-09              | Graves Tear               | 150,288 N/m                              | 833 - 858 ft-lb/in | N/A                   | N/A                | N/A                            | N/A           |
| D570-98               | Water Absorption          | 0.35%                                    | 0.35%              | 0.20 - 0.45%          | 0.20 - 0.45%       | 0.16%                          | 0.16%         |

| TECHNICAL DATA                 |                                  |  |                    |                       |                     |                                |                     |
|--------------------------------|----------------------------------|--|--------------------|-----------------------|---------------------|--------------------------------|---------------------|
| Thermal/ Electrical Properties |                                  | Somos® WaterShed XC 11122<br>UV Postcure |                    | ABS*<br>(Transparent) |                     | Polybutylene*<br>Terephthalate |                     |
| ASTM Method                    | Property Description             | Metric                                   | Imperial           | Metric                | Imperial            | Metric                         | Imperial            |
| E831-05                        | C.T.E. -40 - 0°C (-40 - 32°F)    | 66 - 67 µm/m°C                           | 37 µin/in°F        | 60 - 130<br>µm/m°C    | 33 - 72<br>µin/in°F | 50 - 145<br>µm/m°C             | 28 - 81<br>µin/in°F |
| E831-05                        | C.T.E. 0 - 50°C (32 - 122°F)     | 90 - 96 µm/m°C                           | 50 - 53 µin/in°F   |                       |                     |                                |                     |
| E831-05                        | C.T.E. 50 - 100°C (122 - 212°F)  | 170 - 189 µm/m°C                         | 94 - 105 µin/in°F  |                       |                     |                                |                     |
| E831-05                        | C.T.E. 100 - 150°C (212 - 302°F) | 185 - 189 µm/m°C                         | 103 - 105 µin/in°F |                       |                     |                                |                     |
| D150-98                        | Dielectric Constant 60 Hz        | 3.9 - 4.1                                | 3.9 - 4.1          | 3.7                   | 3.7                 | 2.9 - 4.0                      | 2.9 - 4.0           |
| D150-98                        | Dielectric Constant 1 KHz        | 3.7 - 3.9                                | 3.7 - 3.9          | N/A                   | N/A                 | 2.9 - 4.0                      | 2.9 - 4.0           |
| D150-98                        | Dielectric Constant 1 MHz        | 3.4 - 3.5                                | 3.4 - 3.5          | 3.7                   | 3.7                 | 2.9 - 4.0                      | 2.9 - 4.0           |
| D149-97A                       | Dielectric Strength              | 15.4 - 16.3 kV/mm                        | 390 - 413 V/mil    | 13.8 - 19.7 kV/mm     | 350 - 500 V/mil     | 14.7 - 30 kV/mm                | 373 - 762 V/mil     |
| E1545-00                       | Tg                               | 39 - 46°C                                | 102 - 109°F        | N/A                   | N/A                 | 41°C                           | 106°F               |
| D648                           | HDT @ 0.46 MPa (66 psi)          | 45.9 - 54.5°C                            | 115 - 130°F        | 94 - 207°C            | 201 - 405°F         | 150°C                          | 302°F               |
| D648                           | HDT @ 1.81 MPa (264 psi)         | 49.0 - 49.7°C                            | 120°F              | 86 - 194°C            | 187 - 381°F         | 61°C                           | 142°F               |

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