

Product Data

Somos[®] ProtoGen 18920

Description

DSM's Somos[®] ProtoGen 18920 is a liquid photopolymer that produces accurate, ABS-like parts ideal for general purpose applications. Somos[®] ProtoGen resins are the first stereolithography resins to demonstrate different material properties based on machine exposure control. Based on Somos[®] Oxetane[™] chemistry, Somos[®] ProtoGen 18920 offers superior chemical resistance, a wide processing latitude and excellent tolerance to a broad range of temperature and humidity, both during and after the build.

Applications

This high-temperature resistant, ABS-like photopolymer is used in solid imaging processes, such as stereolithography, to build three-dimensional parts. Somos[®] ProtoGen 18920 provides considerable processing latitude and is ideal for the medical, electronic, aerospace and automotive markets that demand accurate RTV patterns, durable concept models, highly accurate humidity & temperature resistant parts.

TECHNICAL DATA - LIQUID PROPERTIES

| | |
|------------|--------------------------------|
| Appearance | Grey |
| Viscosity | ~350 cps @ 30°C |
| Density | ~1.16 g/cm ³ @ 25°C |

TECHNICAL DATA - OPTICAL PROPERTIES

| | | |
|-----------------|------------------------|--|
| E _c | 7.0 mJ/cm ² | [critical exposure] |
| D _p | 4.20 mils | [slope of cure-depth vs. ln (E) curve] |
| E ₁₀ | 76 mJ/cm ² | [exposure that gives 0.254 mm (.010 inch) thickness] |

| TECHNICAL DATA | | | | | | | |
|-----------------------|-----------------------|--|----------------------|--|----------------------|--|----------------------|
| Mechanical Properties | | Somos® ProtoGen 18920 UV Postcure at HOC -2 | | Somos® ProtoGen 18920 UV Postcure at HOC +3 | | Somos® ProtoGen 18920 UV & Thermal Postcure | |
| ASTM Method | Property Description | Metric | Imperial | Metric | Imperial | Metric | Imperial |
| D638M | Tensile Strength | 46.6 - 47.8 MPa | 6.8 - 6.9 ksi | 56.1 - 56.9 MPa | 8.1 - 8.3 ksi | 69.2 - 69.6 MPa | 10.0 - 10.1 ksi |
| D638M | Tensile Modulus | 2,103 - 2,317 MPa | 305.0 - 336.0 ksi | 2,577 - 2,623 MPa | 373.7 - 380.4 ksi | 2,544 - 2,916 MPa | 369.0 - 423.0 ksi |
| D638M | Elongation at Break | 13 - 19% | 13 - 19% | 5 - 12% | 5 - 12% | 4 - 9% | 4 - 9% |
| D790M | Flexural Strength | 73.0 - 75.0 MPa | 10.6 - 10.9 ksi | 85.0 - 87.0 MPa | 12.3 - 12.6 ksi | 92.1 - 98.1 MPa | 13.4 - 14.2 ksi |
| D790M | Flexural Modulus | 2,126 - 2,314 MPa | 308.3 - 335.6 ksi | 2,442 - 2,518 MPa | 354.2 - 365.2 ksi | 2,504 - 2,696 MPa | 363.1 - 391.0 ksi |
| D2240 | Hardness (Shore D) | 85 - 86 | 85 - 86 | 86 - 87 | 86 - 87 | 86 - 88 | 86 - 88 |
| D256A | Izod Impact (Notched) | 0.18 - 0.28 J/m | 0.26 - 0.52 ft-lb/in | 0.22 - 0.26 J/m | 0.41 - 0.49 ft-lb/in | 0.20 - 0.24 J/m | 0.37 - 0.45 ft-lb/in |
| D570-98 | Water Absorption | 0.78% | 0.78% | 0.74% | 0.74% | 0.38% | 0.38% |

| TECHNICAL DATA | | | | | |
|-------------------------------|----------------------------------|--|-----------------|--|-----------------|
| Thermal/Electrical Properties | | Somos® ProtoGen 18920 UV Postcure at HOC -2 | | Somos® ProtoGen 18920 UV & Thermal Postcure | |
| ASTM Method | Property Description | Metric | Imperial | Metric | Imperial |
| E831-05 | C.T.E. -40 - 0°C (-40 - 32°F) | 69.4 µm/m°C | 38.6 µin/in°F | 64.7 µm/m°C | 35.9 µin/in°F |
| E831-05 | C.T.E. 0 - 50°C (32 - 122°F) | 74.0 µm/m°C | 41.1 µin/in°F | 74.2 µm/m°C | 41.2 µin/in°F |
| E831-05 | C.T.E. 50 - 100°C (122 - 212°F) | 106.0 µm/m°C | 58.9 µin/in°F | 79.2 µm/m°C | 44.0 µin/in°F |
| E831-05 | C.T.E. 100 - 150°C (212 - 302°F) | 130.3 µm/m°C | 72.4 µin/in°F | 138.8 µm/m°C | 77.1 µin/in°F |
| D150-98 | Dielectric Constant 60 Hz | 3.53 | 3.53 | 3.28 | 3.28 |
| D150-98 | Dielectric Constant 1 KHz | 3.44 | 3.44 | 3.23 | 3.23 |
| D150-98 | Dielectric Constant 1 MHz | 3.21 | 3.21 | 3.04 | 3.04 |
| D149-97A | Dielectric Strength | 15.4 - 15.9 kV/mm | 391 - 403 V/mil | 14.3 - 15.2 kV/mm | 364 - 386 V/mil |
| E1545-00 | Tg | 6.90°C | 156°F | 97.5°C | 208°F |
| D648 | HDT @ 0.46 MPa (66 psi) | 58.7°C | 137°F | 96.5°C | 205°F |
| D648 | HDT @ 1.81 MPa (264 psi) | 51.0°C | 123°F | 78.6°C | 175°F |

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