

Cyclo-Olefin Polymer Diagnostic Grades

| Property | Test Standard | Unit | ZEONOR® 1020R* | ZEONOR® 1060R | ZEONOR® 1420R | ZEONOR® 1430R |
|---|---------------|--|----------------|------------------|---------------|---------------|
| Physical Properties | | | | | | |
| Specific gravity | ASTM D792 | - | 1.01 | 1.01 | 1.02 | 1.02 |
| Melt flow rate (MFR) (280 °C, 21.18 N) | ISO 1133 | g/10min | 18.2 | 12.6 (230 °C) | 16.9 | 30 |
| Water absorption (23 °C/24 hrs) | ASTM D570 | % | 0.01 | 0.01 | 0.01 | 0.01 |
| Water vapor transmission (40 °C, 90% rh, @100µm) | ASTM F1249 | g/m ² ·day | 1.1 | / | 1.0 | / |
| Oxygen transmission (23 °C, 0% rh, @100µm) | ASTM D3985 | cm ³ / (m ² ·day·atm) | 365.5 | / | 346.5 | / |
| Optical Properties | | | | | | |
| Light transmittance (3mm thickness) | ASTM D1003 | % | 91.5 | 91.5 | 91.5 | 91.5 |
| Mechanical Properties | | | | | | |
| Tensile strength | ISO 527 | MPa | 51.81 | 52.01 | 63.33 | 63.87 |
| Tensile modulus | ISO 527 | MPa | 2141 | 2204 | 2450 | 2467 |
| Flexural modulus | ISO 178 | MPa | 2065 | 2078 | 2282 | 2302 |
| Flexural strength | ISO 178 | MPa | 81.13 | 82.04 | 100.7 | 101.7 |
| Elongation at break | ISO 527 | % | 89.1 | 99.3 | 60.6 | 61.1 |
| Izod impact strength (3.2 mm with notch) | ASTM D256 | J/m | 40 | 34 | 25 | 24 |
| Thermal Properties | | | | | | |
| Glass transition temperature | JIS K7121 | °C | 101.7 | 98.8 | 136 | 134.5 |
| Heat deflection temperature (1.82 MPa) | ASTM D648 | °C | 88 | 88 | 120 | 119 |
| Coefficient of linear thermal expansion | ASTM E831 | cm/cm °C | 6E-05 | 6E-05 | 6E-05 | 6E-05 |
| Solvent Compatibility | | | | | | |
| Alcohols | | | Good | Good | Good | Good |
| Acids/Bases | | | Good | Good | Good | Good |

Typical properties. Not to be used for purposes of establishing specification(s).

*ZEONOR® 1020R has been assessed for compliance with USP Class VI <87>, <88> and <661.1> , ISO10993, EU 3.1.3 and 3.1.5, and JP 7.02. FDA Drug Master File and more information available upon request.

ZEON | www.zeonsmi.com | customerservice@zeonsmi.com | +1-408-641-7899 (USA) | +49.211.52.67.0 (EU) | +81.3.3216.1769 (Asia)

The information contained herein is believed to be reliable, but no representations, guarantees or warranties of any kind are made as to accuracy, suitability for particular applications or the results to be obtained there from. The information is based on laboratory work with small-scale equipment and does not necessarily indicate end product performance. Because of the variations in methods, conditions and equipment used commercially in processing these materials, no warranties or guarantees are made as to the suitability of the products for the applications disclosed. Full-scale testing and end product performance are the responsibility of the user. Zeon Specialty Materials the SELLER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING TO THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Nothing contained herein is to be considered as permission, recommendation, nor as an inducement to practice any patented invention without permission of the patent owner.