

## SABIC Innovative Plastics Lexan® HPS1R PC

Category : Polymer , Thermoplastic , Polycarbonate (PC)

### Material Notes:

Med/high flow polycarbonate. For medical devices and pharmaceutical applications. Healthcare management of change, biocompatible (ISO10993 or USP Class VI). EtO, e-beam and gamma sterilizable. Contains a higher amount of mold release than HPS1.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_SABIC-Innovative-Plastics-Lexan-HPS1R-PC.php](http://www.lookpolymers.com/polymer_SABIC-Innovative-Plastics-Lexan-HPS1R-PC.php)

| Physical Properties                | Metric                            | English                           | Comments                                |
|------------------------------------|-----------------------------------|-----------------------------------|---|
| Specific Gravity                   | 1.20 g/cc                         | 1.20 g/cc                         | ASTM D792                               |
| Density                            | 1.19 g/cc                         | 0.0430 lb/in <sup>3</sup>         | ASTM D792                               |
|                                    | 1.20 g/cc                         | 0.0434 lb/in <sup>3</sup>         | ISO 1183                                |
| Water Absorption                   | 0.15 %                            | 0.15 %                            | ASTM D570                               |
|                                    | @Time 86400 sec                   | @Time 24.0 hour                   |   |
| Moisture Absorption at Equilibrium | 0.35 %                            | 0.35 %                            | ASTM D570                               |
|                                    | 0.58 %                            | 0.58 %                            |   |
|                                    | @Temperature 100 °C               | @Temperature 212 °F               | ASTM D570                               |
| Linear Mold Shrinkage, Flow        | 0.0050 - 0.0070 cm/cm             | 0.0050 - 0.0070 in/in             | SABIC Method                            |
|                                    | @Thickness 3.20 mm                | @Thickness 0.126 in               |   |
| Melt Flow                          | 25 g/10 min                       | 25 g/10 min                       | ASTM D1238                              |
|                                    | @Load 1.20 kg, Temperature 300 °C | @Load 2.65 lb, Temperature 572 °F |   |
| Melt Index of Compound             | 23 g/10 min                       | 23 g/10 min                       | MVR [cm <sup>3</sup> /10 min]; ISO 1133 |
|                                    | @Load 1.20 kg, Temperature 300 °C | @Load 2.65 lb, Temperature 572 °F |   |

| Mechanical Properties     | Metric   | English   | Comments                     |
|---------------------------|----------|-----------|------------------------------|
| Hardness, Rockwell M      | 70       | 70        | ASTM D785                    |
| Hardness, Rockwell R      | 118      | 118       | ASTM D785                    |
| Hardness, H358/30         | 95.0 MPa | 13800 psi | ISO 2039-1                   |
| Tensile Strength at Break | 50.0 MPa | 7250 psi  | 50 mm/min; ISO 527           |
|                           | 65.0 MPa | 9430 psi  | Type I, 50 mm/min; ASTM D638 |
| Tensile Strength, Yield   | 62.0 MPa | 8990 psi  | Type I, 50 mm/min; ASTM D638 |

| Mechanical Properties          | Metric                 | English                    | Comments                                      |
|--------------------------------|------------------------|----------------------------|---|
| Elongation at Break            | 70 %                   | 70 %                       | 50 mm/min; ISO 527                            |
|                                | 120 %                  | 120 %                      | Type I, 50 mm/min; ASTM D638                  |
| Elongation at Yield            | 6.0 %                  | 6.0 %                      | Type I, 50 mm/min; ASTM D638                  |
|                                | 6.0 %                  | 6.0 %                      | 50 mm/min; ISO 527                            |
| Tensile Modulus                | 2.35 GPa               | 341 ksi                    | 1 mm/min; ISO 527                             |
|                                | 2.37 GPa               | 344 ksi                    | 50 mm/min; ASTM D638                          |
| Flexural Yield Strength        | 90.0 MPa               | 13100 psi                  | 2 mm/min; ISO 178                             |
|                                | 93.0 MPa               | 13500 psi                  | 1.3 mm/min, 50 mm span; ASTM D790             |
| Flexural Modulus               | 2.30 GPa               | 334 ksi                    | 1.3 mm/min, 50 mm span; ASTM D790             |
|                                | 2.30 GPa               | 334 ksi                    | 2 mm/min; ISO 178                             |
| Izod Impact, Notched           | 1.06 - 6.40 J/cm       | 1.99 - 12.0 ft-lb/in       | colors; ASTM D256                             |
|                                | 6.40 J/cm              | 12.0 ft-lb/in              | natural, tints; ASTM D256                     |
| Izod Impact, Unnotched         | 32.04 J/cm             | 60.02 ft-lb/in             | ASTM D4812                                    |
| Izod Impact, Notched (ISO)     | 12.0 kJ/m <sup>2</sup> | 5.71 ft-lb/in <sup>2</sup> | 80*10*4; ISO 180/1A                           |
|                                | 10.0 kJ/m <sup>2</sup> | 4.76 ft-lb/in <sup>2</sup> | 80*10*4; ISO 180/1A                           |
|                                | @Temperature -30.0 °C  | @Temperature -22.0 °F      |   |
| Izod Impact, Unnotched (ISO)   | NB                     | NB                         | 80*10*4; ISO 180/1U                           |
|                                | NB                     | NB                         | 80*10*4; ISO 180/1U                           |
|                                | @Temperature -30.0 °C  | @Temperature -22.0 °F      |   |
| Charpy Impact, Notched         | 1.20 J/cm <sup>2</sup> | 5.71 ft-lb/in <sup>2</sup> | Edgew 80*10*4 sp=62mm; ISO 179/1eA            |
|                                | 1.00 J/cm <sup>2</sup> | 4.76 ft-lb/in <sup>2</sup> | Edgew 80*10*4 sp=62mm; ISO 179/1eA            |
|                                | @Temperature -30.0 °C  | @Temperature -22.0 °F      |   |
| Tensile Impact Strength        | 378 kJ/m <sup>2</sup>  | 180 ft-lb/in <sup>2</sup>  | Type S; ASTM D1822                            |
| Dart Drop, Total Energy        | 54.0 J                 | 39.8 ft-lb                 | Instrumented Impact Energy @ peak; ASTM D3763 |
|                                | 169 J                  | 125 ft-lb                  | ASTM D3029                                    |
| Taber Abrasion, mg/1000 Cycles | 10                     | 10                         | CS-17, 1 kg; ASTM D1044                       |

| Thermal Properties                          | Metric   | English   | Comments                           |
|---|--|---|------------------------------------|
| CTE, linear, Parallel to Flow               | 68.4 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ | 38.0 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$  | ASTM E 831                         |
|   | @Temperature -40.0 - 95.0 $^{\circ}\text{C}$     | @Temperature -40.0 - 203 $^{\circ}\text{F}$         |                                    |
|   | 70.0 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ | 38.9 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$  | ISO 11359-2                        |
|   | @Temperature 23.0 - 80.0 $^{\circ}\text{C}$      | @Temperature 73.4 - 176 $^{\circ}\text{F}$          |                                    |
| Specific Heat Capacity                      | 1.25 J/g- $^{\circ}\text{C}$                     | 0.299 BTU/lb- $^{\circ}\text{F}$                    | ASTM C351                          |
| Thermal Conductivity                        | 0.190 W/m-K                                      | 1.32 BTU-in/hr-ft <sup>2</sup> - $^{\circ}\text{F}$ | ASTM C177                          |
|   | 0.200 W/m-K                                      | 1.39 BTU-in/hr-ft <sup>2</sup> - $^{\circ}\text{F}$ | ISO 8302                           |
| Deflection Temperature at 0.46 MPa (66 psi) | 133 $^{\circ}\text{C}$                           | 271 $^{\circ}\text{F}$                              | Edgew 120*10*4 sp=100mm; ISO 75/Be |
|   | 137 $^{\circ}\text{C}$<br>@Thickness 6.40 mm     | 279 $^{\circ}\text{F}$<br>@Thickness 0.252 in       | unannealed; ASTM D648              |
| Deflection Temperature at 1.8 MPa (264 psi) | 121 $^{\circ}\text{C}$                           | 250 $^{\circ}\text{F}$                              | Edgew 120*10*4 sp=100mm; ISO 75/Ae |
|   | 126 $^{\circ}\text{C}$<br>@Thickness 6.40 mm     | 259 $^{\circ}\text{F}$<br>@Thickness 0.252 in       | unannealed; ASTM D648              |
| Vicat Softening Point                       | 139 $^{\circ}\text{C}$                           | 282 $^{\circ}\text{F}$                              | Rate B/50; ISO 306                 |
|   | 140 $^{\circ}\text{C}$                           | 284 $^{\circ}\text{F}$                              | Rate B/120; ISO 306                |
| Oxygen Index                                | 25 %   | 25 %  | ISO 4589                           |

| Optical Properties    | Metric             | English             | Comments            |
|-----------------------|--------------------|---------------------|---------------------|
| Refractive Index      | 1.586              | 1.586               | ASTM D542           |
| Haze                  | 1.0 %              | 1.0 %               | ASTM D1003          |
|                       | @Thickness 2.54 mm | @Thickness 0.100 in |                     |
| Transmission, Visible | 88 %               | 88 %                | 2.54 mm; ASTM D1003 |

| Electrical Properties | Metric                        | English                       | Comments       |
|-----------------------|-------------------------------|-------------------------------|----------------|
| Volume Resistivity    | $\geq 1.00\text{e}+15$ ohm-cm | $\geq 1.00\text{e}+15$ ohm-cm | IEC 60093      |
|                       | $\geq 1.00\text{e}+17$ ohm-cm | $\geq 1.00\text{e}+17$ ohm-cm | ASTM D257      |
| Surface Resistance    | $\geq 1.00\text{e}+15$ ohm    | $\geq 1.00\text{e}+15$ ohm    | ROA; IEC 60093 |
|                       | 2.7                           | 2.7                           |                |

| Electrical Properties | Metric                       | English                      | Comments            |
|-----------------------|------------------------------|------------------------------|---------------------|
|                       | @Frequency 1.00e+6<br>Hz     | @Frequency 1.00e+6<br>Hz     |                     |
|                       | 2.7                          | 2.7                          | IEC 60250           |
|                       | @Frequency 50.0 - 60.0<br>Hz | @Frequency 50.0 - 60.0<br>Hz |                     |
|                       | 2.96                         | 2.96                         | ASTM D150           |
|                       | @Frequency 1.00e+6<br>Hz     | @Frequency 1.00e+6<br>Hz     |                     |
|                       | 3.17                         | 3.17                         | ASTM D150           |
|                       | @Frequency 50.0 - 60.0<br>Hz | @Frequency 50.0 - 60.0<br>Hz |                     |
| Dielectric Strength   | 14.9 kV/mm                   | 378 kV/in                    | in air; ASTM D149   |
|                       | @Thickness 3.20 mm           | @Thickness 0.126 in          |                     |
|                       | 17.0 kV/mm                   | 432 kV/in                    | in oil; IEC 60243-1 |
|                       | @Thickness 3.20 mm           | @Thickness 0.126 in          |                     |
| Dissipation Factor    | 0.00090                      | 0.00090                      | ASTM D150           |
|                       | @Frequency 50.0 - 60.0<br>Hz | @Frequency 50.0 - 60.0<br>Hz |                     |
|                       | 0.0010                       | 0.0010                       | IEC 60250           |
|                       | @Frequency 50.0 - 60.0<br>Hz | @Frequency 50.0 - 60.0<br>Hz |                     |
|                       | 0.010                        | 0.010                        | IEC 60250           |
|                       | @Frequency 1.00e+6<br>Hz     | @Frequency 1.00e+6<br>Hz     |                     |
|                       | 0.010                        | 0.010                        | ASTM D150           |
|                       | @Frequency 1.00e+6<br>Hz     | @Frequency 1.00e+6<br>Hz     |                     |

| Descriptive Properties            | Value                  | Comments       |
|-----------------------------------|------------------------|----------------|
| Ball Pressure Test, 125°C +/- 2°C | PASSES                 | IEC 60695-10-2 |
| Specific Volume                   | 0.83cm <sup>3</sup> /g | ASTM D792      |

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