

# LEXAN™ HPS2 resin

Polycarbonate

SABIC Innovative Plastics

## Message:

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

| General Information                        |                             |                        |                 |
|--------------------------------------------|-----------------------------|------------------------|-----------------|
| Additive                                   | demoulding                  |                        |                 |
| Features                                   | Electron beam disinfection  |                        |                 |
|                                            | Radiation disinfection      |                        |                 |
|                                            | Ethylene oxide disinfection |                        |                 |
|                                            | High liquidity              |                        |                 |
|                                            | Biocompatibility            |                        |                 |
|                                            | Disinfect with steam        |                        |                 |
| Uses                                       | Drug                        |                        |                 |
|                                            | Medical/nursing supplies    |                        |                 |
| Agency Ratings                             | ISO 10993                   |                        |                 |
|                                            | USP Class VI                |                        |                 |
| Processing Method                          | Injection molding           |                        |                 |
| Physical                                   | Nominal Value               | Unit                   | Test Method     |
| Specific Gravity                           |                             |                        | ASTM D792       |
| --                                         | 1.20                        | g/cm <sup>3</sup>      | ASTM D792       |
| --                                         | 1.19                        | g/cm <sup>3</sup>      | ASTM D792       |
| Specific Volume                            | 0.835                       | cm <sup>3</sup> /g     | ASTM D792       |
| Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)   | 18                          | g/10 min               | ASTM D1238      |
| Melt Volume-Flow Rate (MVR) (300°C/1.2 kg) | 16.0                        | cm <sup>3</sup> /10min | ISO 1133        |
| Molding Shrinkage - Flow (3.20 mm)         | 0.50 - 0.70                 | %                      | Internal method |
| Water Absorption                           |                             |                        | ASTM D570       |
| 24 hr                                      | 0.15                        | %                      | ASTM D570       |
| Equilibrium, 23°C                          | 0.35                        | %                      | ASTM D570       |
| Equilibrium, 100°C                         | 0.58                        | %                      | ASTM D570       |
| Hardness                                   | Nominal Value               | Unit                   | Test Method     |
| Rockwell Hardness                          |                             |                        | ASTM D785       |
| Class m                                    | 70                          |                        | ASTM D785       |
| Class r                                    | 118                         |                        | ASTM D785       |
| Mechanical                                 | Nominal Value               | Unit                   | Test Method     |

|                                                              |               |                   |              |
|--------------------------------------------------------------|---------------|-------------------|--------------|
| Tensile Modulus                                              |               |                   |              |
| -- <sup>1</sup>                                              | 2380          | MPa               | ASTM D638    |
| --                                                           | 2350          | MPa               | ISO 527-2/1  |
| Tensile Strength                                             |               |                   |              |
| Yield <sup>2</sup>                                           | 62.1          | MPa               | ASTM D638    |
| Yield                                                        | 63.0          | MPa               | ISO 527-2/50 |
| Fracture <sup>3</sup>                                        | 68.9          | MPa               | ASTM D638    |
| Fracture                                                     | 65.0          | MPa               | ISO 527-2/50 |
| Tensile Elongation                                           |               |                   |              |
| Yield <sup>4</sup>                                           | 7.0           | %                 | ASTM D638    |
| Yield                                                        | 6.0           | %                 | ISO 527-2/50 |
| Fracture <sup>5</sup>                                        | 130           | %                 | ASTM D638    |
| Fracture                                                     | 100           | %                 | ISO 527-2/50 |
| Flexural Modulus                                             |               |                   |              |
| 50.0mm span <sup>6</sup>                                     | 2140          | MPa               | ASTM D790    |
| -- <sup>7</sup>                                              | 2300          | MPa               | ISO 178      |
| Flexural Stress                                              |               |                   |              |
| --                                                           | 90.0          | MPa               | ISO 178      |
| Yield, 50.0mm span <sup>8</sup>                              | 96.5          | MPa               | ASTM D790    |
| Taber Abrasion Resistance (1000 Cycles, 1000 g, CS-17 Wheel) | 10.0          | mg                | ASTM D1044   |
| Impact                                                       | Nominal Value | Unit              | Test Method  |
| Charpy Notched Impact Strength                               |               |                   |              |
| 23°C <sup>9</sup>                                            | 10            | kJ/m <sup>2</sup> | ISO 179/1eA  |
| 23°C                                                         | 35            | kJ/m <sup>2</sup> | ISO 179/2C   |
| Charpy Unnotched Impact Strength <sup>10</sup>               |               |                   | ISO 179/1eU  |
| -30°C                                                        | No Break      |                   | ISO 179/1eU  |
| 23°C                                                         | No Break      |                   | ISO 179/1eU  |
| Notched Izod Impact                                          |               |                   |              |
| Colors                                                       | 110 - 690     | J/m               | ASTM D256    |
| Natural, Tints                                               | 690           | J/m               | ASTM D256    |
| 23°C <sup>11</sup>                                           | 12            | kJ/m <sup>2</sup> | ISO 180/1A   |
| Unnotched Izod Impact                                        |               |                   |              |
| 23°C                                                         | 3200          | J/m               | ASTM D4812   |
| -30°C <sup>12</sup>                                          | No Break      |                   | ISO 180/1U   |
| 23°C <sup>13</sup>                                           | No Break      |                   | ISO 180/1U   |
| Instrumented Dart Impact (23°C, Energy at Peak Load)         | 62.1          | J                 | ASTM D3763   |
| Dart Drop Impact (23°C)                                      | 169           | J                 | ASTM D3029   |
| Tensile Impact Strength <sup>14</sup>                        | 473           | kJ/m <sup>2</sup> | ASTM D1822   |
| Thermal                                                      | Nominal Value | Unit              | Test Method  |
| Deflection Temperature Under Load                            |               |                   |              |
| 0.45 MPa, unannealed, 6.40mm                                 | 138           | °C                | ASTM D648    |

|                                                 |               |           |                      |
|-------------------------------------------------|---------------|-----------|----------------------|
| 0.45 MPa, unannealed, 100 mm span <sup>15</sup> | 133           | °C        | ISO 75-2/Be          |
| 1.8 MPa, unannealed, 6.40mm                     | 129           | °C        | ASTM D648            |
| 1.8 MPa, unannealed, 100 mm span <sup>16</sup>  | 122           | °C        | ISO 75-2/Ae          |
| Vicat Softening Temperature                     |               |           |                      |
| --                                              | 140           | °C        | ISO 306/B50          |
| --                                              | 141           | °C        | ISO 306/B120         |
| Ball Pressure Test (125°C)                      | Pass          |           | IEC 60695-10-2       |
| CLTE - Flow                                     |               |           |                      |
| -40 to 95°C                                     | 6.8E-5        | cm/cm/°C  | ASTM E831            |
| 23 to 80°C                                      | 7.0E-5        | cm/cm/°C  | ISO 11359-2          |
| Specific Heat                                   | 1260          | J/kg/°C   | ASTM C351            |
| Thermal Conductivity                            |               |           |                      |
| --                                              | 0.19          | W/m/K     | ASTM C177            |
| --                                              | 0.20          | W/m/K     | ISO 8302             |
| Electrical                                      | Nominal Value | Unit      | Test Method          |
| Surface Resistivity                             | > 1.0E+15     | ohms      | IEC 60093            |
| Volume Resistivity                              |               |           |                      |
| --                                              | > 1.0E+17     | ohms · cm | ASTM D257            |
| --                                              | > 1.0E+15     | ohms · cm | IEC 60093            |
| Dielectric Strength                             |               |           |                      |
| 3.20 mm, in Air                                 | 15            | kV/mm     | ASTM D149            |
| 3.20mm, in oil                                  | 17            | kV/mm     | IEC 60243-1          |
| Dielectric Constant                             |               |           |                      |
| 50 Hz                                           | 3.17          |           | ASTM D150            |
| 60 Hz                                           | 3.17          |           | ASTM D150            |
| 1 MHz                                           | 2.96          |           | ASTM D150            |
| 50 Hz                                           | 2.70          |           | IEC 60250            |
| 60 Hz                                           | 2.70          |           | IEC 60250            |
| 1 MHz                                           | 2.70          |           | IEC 60250            |
| Dissipation Factor                              |               |           |                      |
| 50 Hz                                           | 9.0E-4        |           | ASTM D150            |
| 60 Hz                                           | 9.0E-4        |           | ASTM D150            |
| 1 MHz                                           | 0.010         |           | ASTM D150, IEC 60250 |
| 50 Hz                                           | 1.0E-3        |           | IEC 60250            |
| 60 Hz                                           | 1.0E-3        |           | IEC 60250            |
| Flammability                                    | Nominal Value | Unit      | Test Method          |
| Oxygen Index                                    | 25            | %         | ISO 4589-2           |
| Optical                                         | Nominal Value | Unit      | Test Method          |
| Refractive Index                                | 1.586         |           | ASTM D542            |
| Transmittance (2540 µm)                         | 88.0          | %         | ASTM D1003           |
| Haze (2540 µm)                                  | 1.0           | %         | ASTM D1003           |
| Injection                                       | Nominal Value | Unit      |                      |

|                        |               |     |
|------------------------|---------------|-----|
| Drying Temperature     | 121           | °C  |
| Drying Time            | 3.0 - 4.0     | hr  |
| Drying Time, Maximum   | 48            | hr  |
| Suggested Max Moisture | 0.020         | %   |
| Suggested Shot Size    | 40 - 60       | %   |
| Rear Temperature       | 260 - 282     | °C  |
| Middle Temperature     | 271 - 293     | °C  |
| Front Temperature      | 282 - 304     | °C  |
| Nozzle Temperature     | 277 - 299     | °C  |
| Processing (Melt) Temp | 282 - 304     | °C  |
| Mold Temperature       | 71.1 - 93.3   | °C  |
| Back Pressure          | 0.345 - 0.689 | MPa |
| Screw Speed            | 40 - 70       | rpm |
| Vent Depth             | 0.025 - 0.076 | mm  |

#### NOTE

|     |                  |
|-----|------------------|
| 1.  | 50 mm/min        |
| 2.  | Type 1, 50mm/min |
| 3.  | Type 1, 50mm/min |
| 4.  | Type 1, 50mm/min |
| 5.  | Type 1, 50mm/min |
| 6.  | 1.3 mm/min       |
| 7.  | 2.0 mm/min       |
| 8.  | 1.3 mm/min       |
| 9.  | 80*10*4 sp=62mm  |
| 10. | 80*10*4 sp=62mm  |
| 11. | 80*10*4          |
| 12. | 80*10*4          |
| 13. | 80*10*4          |
| 14. | Type S           |
| 15. | 120*10*4 mm      |
| 16. | 120*10*4 mm      |

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