

# LEXAN™ COPOLYMER EXL1414

REGION EUROPE

## DESCRIPTION

LEXAN EXL1414 polycarbonate (PC) siloxane copolymer resin is a medium flow opaque injection molding (IM) grade. This resin offers extreme low temperature (-40 °C) ductility in combination with excellent processability and release with opportunities for shorter IM cycle times compared to standard PC. LEXAN EXL1414 resin is a product available in wide range of opaque colors and may be an excellent candidate for a wide variety of applications.

## TYPICAL PROPERTY VALUES

Revision 20180905

| PROPERTIES                                   | TYPICAL VALUES | UNITS             | TEST METHODS |
|----------------------------------------------|----------------|-------------------|--------------|
| <b>MECHANICAL</b>                            |                |                   |              |
| Tensile Stress, yld, Type I, 50 mm/min       | 55             | MPa               | ASTM D 638   |
| Tensile Stress, brk, Type I, 50 mm/min       | 50             | MPa               | ASTM D 638   |
| Tensile Strain, yld, Type I, 50 mm/min       | 6              | %                 | ASTM D 638   |
| Tensile Strain, brk, Type I, 50 mm/min       | 98             | %                 | ASTM D 638   |
| Tensile Modulus, 50 mm/min                   | 2020           | MPa               | ASTM D 638   |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 92             | MPa               | ASTM D 790   |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 2230           | MPa               | ASTM D 790   |
| Hardness, Rockwell L                         | 89             | -                 | ASTM D 785   |
| Hardness, Rockwell R                         | 121            | -                 | ASTM D 785   |
| Tensile Stress, yield, 50 mm/min             | 57             | MPa               | ISO 527      |
| Tensile Stress, break, 50 mm/min             | 60             | MPa               | ISO 527      |
| Tensile Strain, yield, 50 mm/min             | 6              | %                 | ISO 527      |
| Tensile Strain, break, 50 mm/min             | 120            | %                 | ISO 527      |
| Tensile Modulus, 1 mm/min                    | 2150           | MPa               | ISO 527      |
| Flexural Stress, yield, 2 mm/min             | 85             | MPa               | ISO 178      |
| Flexural Modulus, 2 mm/min                   | 2250           | MPa               | ISO 178      |
| <b>IMPACT</b>                                |                |                   |              |
| Izod Impact, notched, 23°C                   | 865            | J/m               | ASTM D 256   |
| Izod Impact, notched, -30°C                  | 774            | J/m               | ASTM D 256   |
| Instrumented Impact Total Energy, 23°C       | 70             | J                 | ASTM D 3763  |
| Izod Impact, unnotched 80*10*3 +23°C         | NB             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, unnotched 80*10*3 -30°C         | NB             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, notched 80*10*3 +23°C           | 70             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*3 -30°C           | 60             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Charpy 23°C, V-notch Edgew 80*10*3 sp=62mm   | 70             | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy -30°C, V-notch Edgew 80*10*3 sp=62mm  | 65             | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy 23°C, Unnotch Edgew 80*10*3 sp=62mm   | NB             | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy -30°C, Unnotch Edgew 80*10*3 sp=62mm  | NB             | kJ/m <sup>2</sup> | ISO 179/1eU  |
| <b>THERMAL</b>                               |                |                   |              |
| Vicat Softening Temp, Rate B/50              | 145            | °C                | ASTM D 1525  |
| HDT, 0.45 MPa, 3.2 mm, unannealed            | 139            | °C                | ASTM D 648   |
| HDT, 1.82 MPa, 3.2mm, unannealed             | 124            | °C                | ASTM D 648   |
| CTE, -40°C to 40°C, flow                     | 6.97E-05       | 1/°C              | ASTM E 831   |
| CTE, -40°C to 40°C, xflow                    | 7.47E-05       | 1/°C              | ASTM E 831   |

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|-----------------------------------------------|----------------|------------|----------------|
| CTE, 23°C to 80°C, flow                       | 7.2E-05        | 1/°C       | ISO 11359-2    |
| CTE, 23°C to 80°C, xflow                      | 7.2E-05        | 1/°C       | ISO 11359-2    |
| Ball Pressure Test, 125°C +/- 2°C             | Passes         | -          | IEC 60695-10-2 |
| Vicat Softening Temp, Rate B/50               | 145            | °C         | ISO 306        |
| Vicat Softening Temp, Rate B/120              | 146            | °C         | ISO 306        |
| HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm       | 140            | °C         | ISO 75/Be      |
| HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm       | 128            | °C         | ISO 75/Ae      |
| Relative Temp Index, Elec                     | 130            | °C         | UL 746B        |
| Relative Temp Index, Mech w/impact            | 120            | °C         | UL 746B        |
| Relative Temp Index, Mech w/o impact          | 125            | °C         | UL 746B        |
| PHYSICAL                                      |                |            |                |
| Specific Gravity                              | 1.18           | -          | ASTM D 792     |
| Mold Shrinkage, flow, 3.2 mm                  | 0.4 – 0.8      | %          | SABIC method   |
| Mold Shrinkage, xflow, 3.2 mm                 | 0.4 – 0.8      | %          | SABIC method   |
| Melt Flow Rate, 300°C/1.2 kgf                 | 10             | g/10 min   | ASTM D 1238    |
| Density                                       | 1.19           | g/cm³      | ISO 1183       |
| Water Absorption, (23°C/sat)                  | 0.35           | %          | ISO 62         |
| Moisture Absorption (23°C / 50% RH)           | 0.15           | %          | ISO 62         |
| Melt Volume Rate, MVR at 300°C/1.2 kg         | 9              | cm³/10 min | ISO 1133       |
| ELECTRICAL                                    |                |            |                |
| Volume Resistivity                            | >1.E+15        | Ohm-cm     | ASTM D 257     |
| Surface Resistivity                           | >1.E+15        | Ohm        | ASTM D 257     |
| Dielectric Strength, in oil, 0.8 mm           | 16.2           | kV/mm      | ASTM D 149     |
| Relative Permittivity, 100 Hz                 | 2.68           | -          | ASTM D 150     |
| Relative Permittivity, 1 MHz                  | 2.64           | -          | ASTM D 150     |
| Dissipation Factor, 100 Hz                    | 0.0012         | -          | ASTM D 150     |
| Dissipation Factor, 1 MHz                     | 0.0093         | -          | ASTM D 150     |
| FLAME CHARACTERISTICS                         |                |            |                |
| UL Recognized, 94HB Flame Class Rating        | 0.4            | mm         | UL 94          |
| Glow Wire Flammability Index 850°C, passes at | 0.8            | mm         | IEC 60695-2-12 |
| Glow Wire Flammability Index 960°C, passes at | 1              | mm         | IEC 60695-2-12 |
| Glow Wire Ignitability Temperature, 1.0 mm    | 875            | °C         | IEC 60695-2-13 |
| Glow Wire Ignitability Temperature, 3.0 mm    | 875            | °C         | IEC 60695-2-13 |
| INJECTION MOLDING                             |                |            |                |
| Drying Temperature                            | 120            | °C         |                |
| Drying Time                                   | 3 – 4          | hrs        |                |
| Drying Time (Cumulative)                      | 48             | hrs        |                |
| Maximum Moisture Content                      | 0.02           | %          |                |
| Melt Temperature                              | 295 – 315      | °C         |                |
| Nozzle Temperature                            | 290 – 310      | °C         |                |
| Front - Zone 3 Temperature                    | 295 – 315      | °C         |                |
| Middle - Zone 2 Temperature                   | 280 – 305      | °C         |                |
| Rear - Zone 1 Temperature                     | 270 – 295      | °C         |                |
| Mold Temperature                              | 70 – 95        | °C         |                |
| Back Pressure                                 | 0.3 – 0.7      | MPa        |                |

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|-----------------------|----------------|-------|--------------|
| Screw Speed           | 40 – 70        | rpm   |              |
| Shot to Cylinder Size | 40 – 60        | %     |              |
| Vent Depth            | 0.025 – 0.076  | mm    |              |

## DISCLAIMER

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