

## LARIL 13 G/20

Modified Polyphenylene Oxide (PPOm) based compound.

Glass fibers. Low thermal expansion coefficient. Good thermal properties.

| PHYSICAL PROPERTIES                   | STANDARD    | VALUE MEASURE UNITS         |
|---------------------------------------|-------------|-----------------------------|
| Density                               | ISO 1183    | 1.21 g/cm <sup>3</sup>      |
| Linear shrinkage at moulding          |             |                             |
| Longitudinal (0.078in/8,700psi)       | ISO 294-4   | 0.004 ÷ 0.007 in/in         |
| Transversal (0.078in/8,700psi)        | ISO 294-4   | 0.004 ÷ 0.007 in/in         |
| Dimensional stability                 | ---         | 56                          |
| Moisture absorption (in air)          |             |                             |
| after 24hrs                           | ISO 62-4    | 0.04 %                      |
| MECHANICAL PROPERTIES                 | STANDARD    | VALUE MEASURE UNITS         |
| CHARPY impact strength                |             |                             |
| Unnotched, at +73°F                   | ISO 179-1eU | 11.68 ft.lb/in <sup>2</sup> |
| Unnotched, at -4°F                    | ISO 179-1eU | 11.68 ft.lb/in <sup>2</sup> |
| Notched, at +73°F                     | ISO 179-1eA | 2.80 ft.lb/in <sup>2</sup>  |
| Notched, at -4°F                      | ISO 179-1eA | 2.34 ft.lb/in <sup>2</sup>  |
| Tensile elongation                    |             |                             |
| At yield (0.196 in/min), 73°F         | ISO 527 (1) | -                           |
| At yield (0.196 in/min), 140°F        | ISO 527 (1) | 2.0 %                       |
| At yield (0.196 in/min), 195°F        | ISO 527 (1) | 1.8 %                       |
| At yield (0.196 in/min), 250°F        | ISO 527 (1) | 1.7 %                       |
| At break (0.196 in/min), 73°F         | ISO 527 (1) | 2.5 %                       |
| At break (0.196 in/min), 140°F        | ISO 527 (1) | 2.5 %                       |
| At break (0.196 in/min), 195°F        | ISO 527 (1) | 2.5 %                       |
| At break (0.196 in/min), 250°F        | ISO 527 (1) | 4.0 %                       |
| Tensile strength                      |             |                             |
| At yield (0.196 in/min), 73°F         | ISO 527 (1) | -                           |
| At yield (0.196 in/min), 140°F        | ISO 527 (1) | 8700 psi                    |
| At yield (0.196 in/min), 195°F        | ISO 527 (1) | 6800 psi                    |
| At yield (0.196 in/min), 250°F        | ISO 527 (1) | 4400 psi                    |
| At break (0.196 in/min), 73°F         | ISO 527 (1) | 11600 psi                   |
| At break (0.196 in/min), 140°F        | ISO 527 (1) | 8700 psi                    |
| At break (0.196 in/min), 195°F        | ISO 527 (1) | 6500 psi                    |
| At break (0.196 in/min), 250°F        | ISO 527 (1) | 3600 psi                    |
| Elastic modulus                       |             |                             |
| Tensile (speed 0.04 in/min), at 73°F  | ISO 527 (1) | 910 kpsi                    |
| Tensile (speed 0.04 in/min), at 140°F | ISO 527 (1) | 910 kpsi                    |
| Tensile (speed 0.04 in/min), at 195°F | ISO 527 (1) | 840 kpsi                    |
| Tensile (speed 0.04 in/min), at 250°F | ISO 527 (1) | 610 kpsi                    |

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| THERMAL PROPERTIES                                    | STANDARD         | VALUE MEASURE UNITS |
|-------------------------------------------------------|------------------|---------------------|
| <b>Coefficient of linear thermal expansion (CLTE)</b> |                  |                     |
| +86°C to +212°F (longitudinal)                        | ISO 11359-2      | 17 µin/(in.°F)      |
| <b>VICAT - Softening point</b>                        |                  |                     |
| 11 lb (heating rate 122°F/h)                          | ISO 306          | 284 °F              |
| <b>HDT - Heat Deflection Temperature</b>              |                  |                     |
| 66 psi                                                | ISO 75           | 275 °F              |
| 264 psi                                               | ISO 75           | 257 °F              |
| <b>C.U.T. - Continuous Use Temperature</b>            |                  |                     |
| Long period (20,000h)                                 | ASTM E1641/E1877 | 248 °F              |
| <b>FLAMMABILITY</b>                                   |                  |                     |
| <b>Oxygen Index</b>                                   | ASTM D 2863      | 25 %                |
| <b>ELECTRICAL PROPERTIES</b>                          |                  |                     |
| <b>CTI - Comparative Tracking Index</b>               |                  |                     |
| solution A (without surfactant)                       | IEC 60112        | 225 V               |
| <b>Electrical resistivity</b>                         |                  |                     |
| Surface                                               | ASTM D 257       | 1E12 ohm            |

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### MATERIAL - STORAGE

Sealed, undamaged packages has to be kept in dry storage facilities, providing they are also able to protect them from weather and accidental damages.

### HANDLING AND SAFETY

Detailed information about a safe treatment of the material are indicated in the "Material Safety Data Sheet" (MSDS) furnished with the first material supply. The MSDS may be also sent again in case of loss.

### PREDRYING CONDITIONS

At least 3 hours at 212 ÷ 230°F

These are the suggested conditions to reduce the moisture content to adequate levels. Temperature and drying time can be reduced by using vacuum ovens

### ACTUAL MELT TEMPERATURE

518 ÷ 572°F

The injection molding machine settings needed to obtain the suggested melt temperature will depend greatly on shot size and machine capacity, as well as other molding parameters such as: injection speed, screw RPM, back pressure, etc. On small machines, running short cycles, it is possible to use higher melt temperatures to improve plastification, fluidity and surface appearance, paying attention to any indication of material degradation.

### MOLD TEMPERATURE

176 ÷ 194°F

The mold temperature suggested above is the actual tool steel temperature. This can be significantly different from the tool settings, due to the cooling system efficiency and the accuracy of the temperature control on the tool.

### INJECTION SPEED

Medium

The advisable injection speed greatly depends on cavity geometry and injection molding machine size. The use of high injection speed can improve the surface appearance, but it can also cause outgassing and burn marks due to overheating through shear stress.

### REGRIND USAGE

The use of regrind is possible, but should be assessed on the basis of the project, moulding parameters, and type of grinding used. The effect of using regrind on material properties must be evaluated by the customer on its specific project and process. High percentages of regrind may cause a reduction in viscosity and fibre length, reducing mechanical properties, first resilience.

### HOT RUNNER MOLDS

Hot runner moulds may be used when a very tight temperature control is assured.

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### TO AVOID

Shut-off nozzles and internally heated hot runners have to be avoided. In order to prevent any material degradation, over-dimensioned machines should be avoided.

### NOTES

**Versions of product mentioned herein are suitable for applications in contact with foodstuff or for potable water transportation, or for toy manufacturing. However, manufactured parts have to be verified according to the specific directives. The products mentioned herein are not suitable for applications in the pharmaceutical, medical or dental sector.**

### CONTACTS

**LATI Industria Termoplastici S.p.A.**