# Kalix® 2940
## high performance polyamide

Kalix® 2940 is a bio-sourced, polyamide-based compound with 40% by weight glass fiber reinforcement. This material is specifically formulated for high strength and stiffness applications where good impact resistance and excellent dimensional stability after molding are required. The formulation also addresses warpage issues associated with the anisotropic shrinkage of glass fiber reinforced materials so that close tolerance molding is more easily achieved. Its low viscosity and excellent flow properties make the material ideal for filling parts with thin-walled sections such as those encountered in the mobile electronics industry.

| General | | |
|---|---|---|
| Material Status | • Commercial: Active | |
| Availability | • Asia Pacific<br>• Europe | • North America |
| Filler / Reinforcement | • Glass Fiber, 40% Filler by Weight | |
| Features | • Fast Molding Cycle<br>• Good Dimensional Stability<br>• Good Impact Resistance<br>• Good Surface Finish<br>• High Flow<br>• High Stiffness | • High Strength<br>• Hot Water Moldability<br>• Low Warpage<br>• Paintable<br>• Platable |
| Uses | • Cell Phones<br>• Electrical Parts | • Electrical/Electronic Applications<br>• Thin-walled Parts |
| RoHS Compliance | • Contact Manufacturer | |
| Appearance | • White | |
| Forms | • Pellets | |
| Processing Method | • Injection Molding | • Water-Heated Mold Injection Molding |

| Physical | Typical Value | Unit | Test method |
|---|---|---|---|
| Specific Gravity | 1.40 | | |
| Molding Shrinkage[1] | | | Internal Method |
| Across Flow | 0.55 | % | |
| Flow | 0.15 | % | |
| Water Absorption (24 hr, 23°C) | 0.13 | % | ASTM D570 |

| Mechanical | Typical Value | Unit | Test method |
|---|---|---|---|
| Tensile Modulus | 13000 | MPa | ISO 527-1 |
| Tensile Stress | 175 | MPa | ISO 527-2 |
| Tensile Strain (Break) | 3.0 | % | ISO 527-2 |
| Flexural Modulus | 11000 | MPa | ISO 178 |
| Flexural Stress | 290 | MPa | ISO 178 |
| Flexural Strain at Break | > 3.5 | % | ISO 178 |

| Impact | Typical Value | Unit | Test method |
|---|---|---|---|
| Notched Izod Impact Strength | 20 | kJ/m² | ISO 180/1A |
| Unnotched Izod Impact Strength | 80 | kJ/m² | ISO 180 |

| Thermal | Typical Value | Unit | Test method |
|---|---|---|---|
| Deflection Temperature Under Load | | | |
| 0.45 MPa, Unannealed | 223 | °C | ISO 75-2/B |
| 1.8 MPa, Unannealed | 218 | °C | ISO 75-2/A |
| Glass Transition Temperature | 55.0 | °C | ASTM D3418 |

| Electrical | Typical Value | Unit | Test method |
|---|---|---|---|
| Dielectric Constant | | | ASTM D150 |
| 1 kHz | 3.83 | | |
| 1 MHz | 3.62 | | |
| Dissipation Factor | | | ASTM D150 |
| 1 kHz | 0.012 | | |
| 1 MHz | 0.012 | | |

## Additional Information

Typical values shown tested on Dry as Molded samples.

Standard Packaging and Labeling:

- Kalix® resin is packaged in foil lined, multiwall paper bags containing 25 kg (55 pounds) of material. Individual packages will be plainly marked with the product number, the color, the lot number, and the net weight.

| Injection | Typical Value | Unit |
|---|---|---|
| Drying Temperature | 80 | °C |
| Drying Time | 4.0 to 12 | hr |
| Suggested Max Moisture | 0.090 | % |
| Rear Temperature | 265 to 300 | °C |
| Middle Temperature | 280 to 330 | °C |
| Front Temperature | 280 to 330 | °C |
| Processing (Melt) Temp | 280 to 330 | °C |
| Mold Temperature | 50 to 130 | °C |

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## Injection Notes

Storage:

- Kalix® compounds are shipped in moisture-resistant packages at moisture levels according to specifications. Sealed, undamaged bags should be preferably stored in a dry room at a maximum temperature of 50°C (122°F) and should be protected from possible damage. If only a portion of a package is used, the remaining material should be transferred into a sealable container. It is recommended that Kalix® resins be dried prior to molding following the recommendations found in this datasheet and/or in the Kalix® processing guide.

Drying:

- Kalix® is supplied in sealed bags. It should be dried before molding because excessive moisture content will result in reduced mechanical properties and processing issues, such as excessive nozzle drooling, foaming and splay visible on the molded parts.

- Use of a desiccant dryer with -40°C dewpoint is strongly suggested to ensure Kalix® material has reached optimum moisture content before processing.

Injection Molding:

- Set injection pressure to give rapid injection. Adjust holding pressure to one-half injection pressure. Set hold time to maximize part weight. Transfer from injection to hold pressure at the screw position just before the part is completely filled.
- For light colors use lower melt temperature if possible. If operating in the 330°C melt temperature range, keep residence times below 5 minutes.
- Actual mold temperatures of 80°C or above are recommended to improve flow and part surface finish. The use of mold temperatures below 80°C is safe for mechanical properties but may result in higher necessary injection pressure and inferior surface finish.

## Notes

Typical properties: these are not to be construed as specifications.

[1] Solvay Test Method. Shrink rates can vary with part design and processing conditions. Please consult a Solvay Technical Representative for more information.

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