

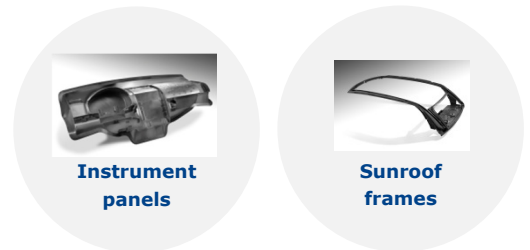
# XIRAN<sup>®</sup> engineering plastics for automotive structural parts

Polyscope offers a broad portfolio of engineering plastics based on styrene maleic anhydride (SMA) copolymers, compounds, aqueous solutions and styrene maleic anhydride N-phenylmaleimide (SMANPMI) terpolymers.

XIRAN<sup>®</sup> engineering plastics are widely used in the automotive industry and they are available in different grades. In order to meet OEM requirements, the glass reinforced XIRAN<sup>®</sup> SG grades offer a unique combination of properties and are more cost effective than competitive plastics such as PC/ABS, PBT/ASA and PP-LGF, all of which are used in automotive semi-structural parts.

## XIRAN<sup>®</sup> SG grades and applications

Glass reinforced XIRAN<sup>®</sup> SG grades provide an excellent property profile for interior parts such as instrument panels, carriers, sunroof frames, door trims, center stacks, structural brackets and painted interior parts.



### OEM approvals:

- Bentley
- Fiat-Chrysler
- Ford
- General Motors
- Jaguar-Land Rover
- Nissan
- Opel
- Peugeot-Citroën
- Renault
- Scania
- Toyota
- Volkswagen-Audi-Skoda

### Key properties

### Your benefits

High thermal resistance	Stability, low deformation under high temperature
Homogenous glass distribution	High dimensional precision, low warpage
High surface functionality	Excellent foam, glue and paint adhesion
Excellent shot-to-shot consistency	Lower cost and waste making them environmental friendly
Almost no loss in properties after recycling	Cost saving in serial production

### Warpage

Components molded with amorphous XIRAN<sup>®</sup> SG grades exhibit much less warpage than with semi-crystalline materials (PP-LGF, PBT/ASA-GF, PBT-GF, PA-GF), minimizing "fit and finish" issues in the assembly and performance of sunroof modules.



Molded part warpage is lower in XIRAN<sup>®</sup> SG grades than in PP-GF. IAC Group warpage comparison on a M.A.N. truck sunroof component.

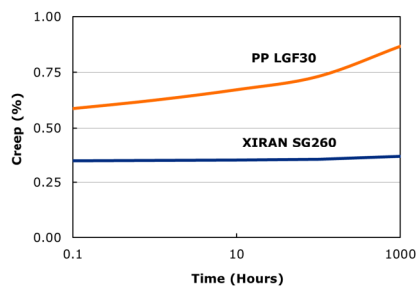


## FRESH THINKING GREAT PRODUCTS



### Creep under stress

The very low creep of XIRAN® SG grades ensures tight mechanical fixations and screw-torque retention over the part's lifetime. XIRAN® SG grades creep significantly less than PP-LGF or PBT/ASA-GF. Fewer metal inserts are needed to secure a sunroof frame molded of XIRAN® SG.



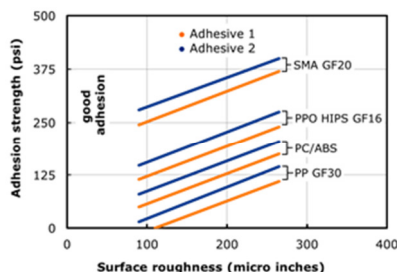
### Thermal performance

XIRAN® SG grades offer excellent retention of properties under temperature variations, e.g. shear modulus remains more stable than in semi-crystalline materials such as PP-LGF. Therefore, parts molded from XIRAN® SG grades experience less dynamic deformation at elevated temperatures.



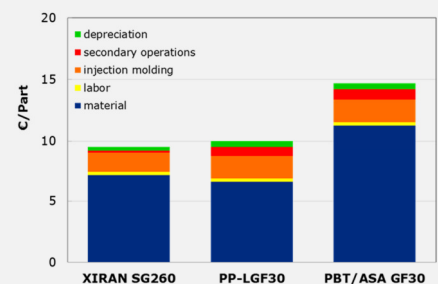
### Adhesion to PUR

XIRAN® SG grades provide excellent adhesion to PUR adhesives used to bond sunroof frames to sheet-metal roofs and glass panels. Foam padded instrument panels in XIRAN® SG grades do not need surface pre-treatment. In contrast, PC/ABS and PP have poor or limited surface adhesion properties which mean added cost and time for surface modification.



### Cost analysis

XIRAN® SG grades are the logical choice for structural parts thanks to an outstanding combination of benefits. The lower density, excellent bonding to PUR foam without primer or surface pre-treatment and the recycling ability up to 20% material make XIRAN® SG grades more cost effective than PP/LGF or PBT/ASA-GF. Versus competitive engineering plastics, XIRAN® SG grades are the ideal solution for today's sunroof frames and automotive structural parts.



### Recyclability

As thermoplastics, Polyscope's XIRAN® engineering plastics are 100% melt-reprocessable and recyclable in non-safety critical applications such as air ducts, center consoles, and retainers. Up to 20% recycled SMA can be used in instrument panels and sunroof frames.

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