

# FORTRON® ICE 504L HR

# Polyphenylene sulfide

FORTRON ICE 504L HR is a 40% glass fiber reinforced polyphenylene sulfide, that belongs to our new generation of Fortron® PPS.

This new technology combines improved hydrolysis resistance with optimization of molding conditions with faster cycle times. Due to the faster crystallization of the material at a higher temperature, the option of mold wall temperature reduction can be subject of advanced process optimization. The potential for optimization of Fortron® ICE by cycle time reduction is possible by standard cavity surface temperatures of 140 °C. The potential for lowering the mold temperature must be checked individually and it depends on process and part design.

#### **Product information**

Resin Identification	PPS-GF40		ISO 1043
Part Marking Code	>PPS-GF40<		ISO 11469
Rheological properties			
	0.3	0/	ISO 294-4, 2577
Moulding shrinkage, parallel Moulding shrinkage, normal	0.6		ISO 294-4, 2577
Woulding Shirikage, normal	0.0	70	100 254 4, 251 1
Typical mechanical properties			
Tensile modulus	16000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.8	%	ISO 527-1/-2
Flexural modulus	15000		ISO 178
Flexural strength		MPa	ISO 178
Charpy notched impact strength, 23°C		kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23°C		kJ/m <sup>2</sup>	ISO 180/1A
Izod impact strength, 23°C		kJ/m²	ISO 180/1U
Poisson's ratio	0.33 <sup>[C]</sup>		
[C]: Calculated			
Thermal properties			
Melting temperature, 10°C/min	280	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min		°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	270	°C	ISO 75-1/-2
Thermal conductivity, flow	0.47	W/(m K)	ISO 22007-2
Thermal conductivity, crossflow		W/(m K)	ISO 22007-2
Thermal conductivity, through plane		W/(m K)	ISO 22007-2
Effective thermal diffusivity, flow	2.7E-7		ISO 22007-4
Effective thermal diffusivity, crossflow	2.4E-7		ISO 22007-4
Effective thermal diffusivity, through plane	2.2E-7		ISO 22007-4
Specific heat capacity of melt	1040	J/(kg K)	ISO 22007-4
Flammability			
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.38		IEC 60695-11-10
Oxygen index	47	%	ISO 4589-1/-2

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### **Electrical properties**

Volume resistivity	1E15 Ohm.m	IEC 62631-3-1
Arc Resistance	134 s	UL 746B

### Physical/Other properties

Water absorption, 2mm	0.02 %	Sim. to ISO 62
Water absorption, Immersion 24h	0.02 %	Sim. to ISO 62
Density	1600 kg/m <sup>3</sup>	ISO 1183

## Injection

Drying Recommended	yes	
Drying Temperature	130	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	330	°C
Min. melt temperature	310	°C
Max. melt temperature	340	°C
Screw tangential speed	0.2 - 0.3	m/s
Mold Temperature Optimum	150	°C
Min. mould temperature	140	°C
Max. mould temperature	160	°C
Hold pressure range	30 - 70	MPa
Back pressure	3	MPa

#### Characteristics

Additives Release agent

#### Additional information

Injection molding

#### Preprocessing

Predrying in a dehumidified air dryer at 130 - 140 degC/3-4 hours is recommended.

#### **Processing**

On injection molding machines with 15-25 D long three-section screws, as are usual in the trade, the FORTRON is processable. A shut-off nozzle is preferred to a free-flow nozzle.

Melt temperature 320-340 degC Mold wall temperature at least 140 degC

A medium injection rate is normally preferred. All mold cavities must be effectively vented.

#### Postprocessing

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Tool temperature of at least 135 degC is recommended for parts to achieve maximum crystallizable potential.

**Processing Notes** 

### **Pre-Drying**

FORTRON should in principle be predried. Because of the necessary low maximum residual moisture content the use of dry air dryers is recommended. The dew point should be =< -  $30^{\circ}$  C. The time between drying and processing should be as short as possible.

## Storage

For subsequent storage the material should be stored dry in the dryer until processed (<= 60 h).

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