

# SCHOTT NEXTREMA®

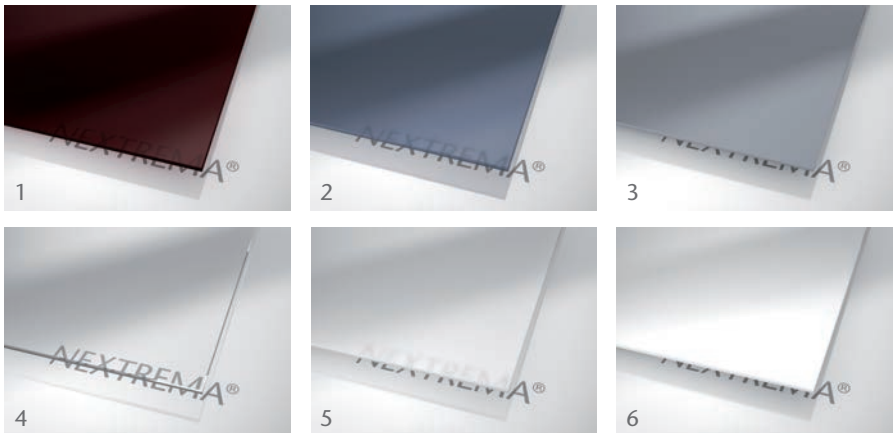
Glass-ceramics engineered and designed for extreme conditions

NEXTREMA® is a unique family of glass-ceramics. This material combines the glossy appearance of glass with exceptional thermal, chemical, optical and mechanical properties like an attractive bending strength of 100 – 160 MPa for materials with a thickness of around 4 mm. With a thermal resistance of 950 °C or for specific applications even higher, combined with a thermal shock resistance of 700 – 820 °C, it ensures a reliable material performance even under extreme temperature conditions. Our six unique glass-ceramic types combined with the wide range of sizes and thicknesses varying from 2 mm to 6 mm (> 6 mm on request) will open up new possibilities in product design and performance. The unique transmission spectra provide new ideas for combining innovative infrared heating functionalities with attractive lighting effects. The versatility of this material will surely impress you.

## Key properties

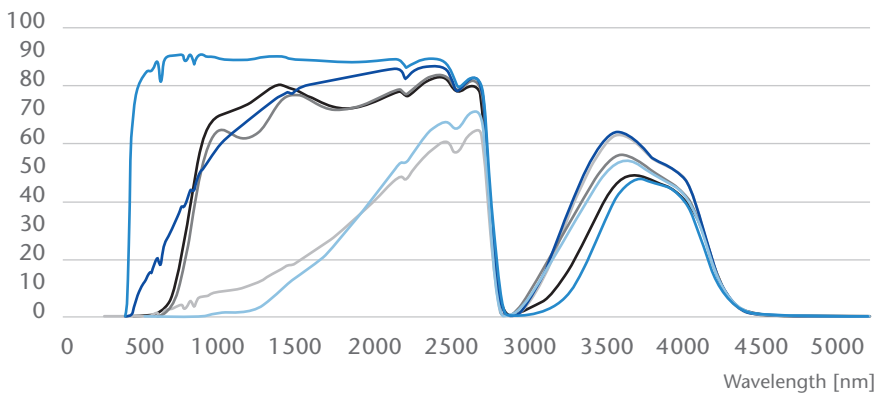
- Very low coefficient of linear thermal expansion
- Excellent temperature and thermal shock resistance
- High transmission in infrared range and unique visible light transmission profiles
- Excellent chemical resistance
- High mechanical strength

## The six glass-ceramic types



- 1 | NEXTREMA® tinted
- 2 | NEXTREMA® translucent bluegrey
- 3 | NEXTREMA® opaque grey
- 4 | NEXTREMA® transparent
- 5 | NEXTREMA® translucent white
- 6 | NEXTREMA® opaque white

## Transmission [%]



- NEXTREMA® 724-8 opaque white
- NEXTREMA® 712-3 tinted
- NEXTREMA® 712-6 translucent bluegrey
- NEXTREMA® 724-3 transparent
- NEXTREMA® 724-5 translucent white
- NEXTREMA® 712-8 opaque grey

This graph is based on data from individual measurements. Deviations may result from manufacturing process. Internal transmissions graph of different ceramization status with sample thickness of approximately 4 mm.

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## Standards forms of delivery

	Standard length	Standard width
Thickness	Min. - Max.	Min. - Max.
2 mm	50 – 1555 mm	50 – 860 mm
3 mm	50 – 1930 mm	50 – 1075 mm
4 mm	50 – 1930 mm	50 – 1075 mm
5 mm	50 – 1930 mm	50 – 1075 mm
6 mm	50 – 1930 mm	50 – 1060 mm
≥ 8 mm	50 – on request	50 – 960 mm

Overview of dimensions: Cut to size panels

## Bent panels

Formats of bent panels on request.

## Surface characteristics

Porosity (ISO 9385): 0 %  
 Roughness: Material 724-3 (t = 4 mm)  
 $R_a \leq 0.20 \mu\text{m}$   
 $R_{\text{rms}} \leq 0.25 \mu\text{m}$

## Chemical characteristics

The chemical resistance of NEXTREMA® is more extensive than that of most other comparable materials.

Acid resistance (DIN 12116) S 1 – 3  
 Alkaline resistance (ISO 695) A 1 – 2  
 Hydrolytic class (DIN ISO 719) HGB 1

All materials fulfill the terms of RoHS without any concerns.

## Mechanical characteristics (at room temperature)

Density:  $\rho$  approx. 2.5 – 2.6 g/cm<sup>3</sup>  
 Modulus of elasticity (ASTM C-1259): E approx. 84 – 95 x 10<sup>3</sup> Mpa  
 Poisson's ratio (ASTM C-1259):  $\mu$  approx. 0.25 – 0.26  
 Knoop hardness (ISO 9385): HK<sub>0.1/20</sub> approx. 570 – 680  
 Bending strength (DIN EN 1288, Part 5, R45):  $\sigma_{\text{bB}}$  approx. 100 – 160 Mpa

All information is subject to change without prior notice.  
 For detailed material properties please see material type specific datasheets.

## Thermal characteristics

CTE in different temperature ranges	
$\alpha$ (-50 °C; 100 °C)	-0.8 – 0.6 x 10 <sup>-6</sup> K <sup>-1</sup>
$\alpha$ (0 °C; 50 °C)	-0.8 – 0.6 x 10 <sup>-6</sup> K <sup>-1</sup>
$\alpha$ (20 °C; 300 °C)	-0.4 – 0.9 x 10 <sup>-6</sup> K <sup>-1</sup>
$\alpha$ (300 °C; 700 °C)	0.1 – 1.6 x 10 <sup>-6</sup> K <sup>-1</sup>

Thermal conductivity (DIN 51936, ASTM E 1461-01)  $\lambda$  (90 °C) 1.5 – 1.7 W / (m x K)

Specific heat capacity  $C_p$  (20 – 100 °C) 0.80 – 0.85 J / (g x K)

## MTG 400 – 800 K

Resistance of the material to temperature differences between a defined hot zone and cold edge of room temperature, without cracking due to thermal stress.

## TSR 700 – 820 °C ( 1,292 - 1,508 °F)

Resistance of the material to thermal shock when the hot material is splashed with cold water at room temperature, without cracking due to thermal stress.

Homogeneous heating of the material	
TTL / Short term load (1h)	[°C] 880 – 950
TTL / Continuous load (5000 h)	[°C] 700 – 850

Inhomogeneous heating of the material	
TTL / Short term load (1h)	[°C] 450 – 750
TTL / Continuous load (5000 h)	[°C] 400 – 560

## Electrical characteristics

Specific electrical volume resistance (DIN 52326)		
log p (250 °C)	$\Omega \cdot \text{cm}$	6.6 – 7.2
log p (350 °C)	$\Omega \cdot \text{cm}$	5.2 – 5.7
*t <sub>K100</sub>	°C	170 – 205

\*Temperature for a specific electric volume resistivity of 10<sup>8</sup>  $\Omega \cdot \text{cm}$

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