SCHOTT® Energy for front doors of baking ovens

Product Description

SCHOTT® Energy is a range of coated glasses for oven front doors of conventional or pyrolytic self-cleaning ovens. A durable, non-visible very thin coating on the glass surface, which, depending on ist position, reflects heat radiation or reduces the emission of heat from the surface, which leads to the fact that energy remains inside an oven. With the use of SCHOTT Energy

- Front temperature reduction of baking oven doors and
- Reduction of energy loss

is easier to achieve. At the same time they allow a clear view into the oven cavity without annoying color shade effects. SCHOTT Energy highly supports the construction of Eco-friendly products and the retrofit of door constructions to comply with European Norm 60335-2-6.

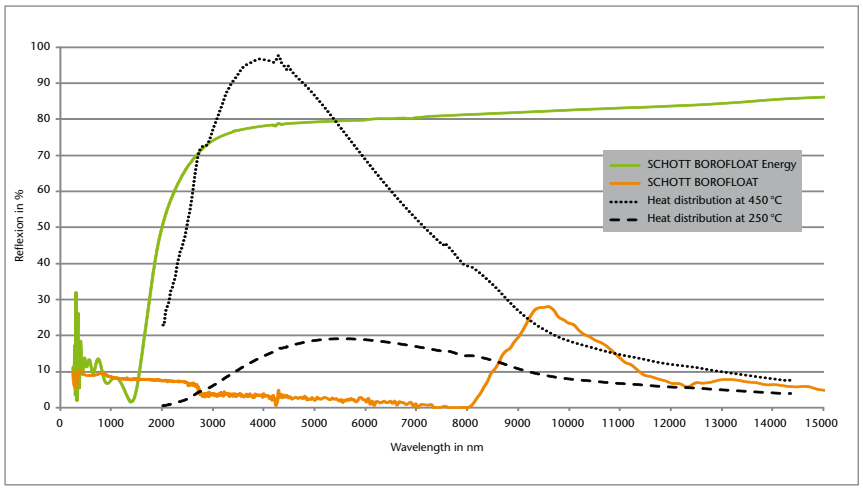
New products for Eco-friendly products

Two new SCHOTT® Energy glass types have been developed that allow further reduction of front temperatures and further energy saving of baking ovens:

- SCHOTT EnergyDouble
- SCHOTT BOROFLOAT Energy

Both SCHOTT Energy glass types are coated in a proprietary process with a heat reflective coating. SCHOTT EnergyDouble is based on a commerically available Low-e glass (single side coated) and is in addition coated on the second surface. Two surfaces combine their function where the side towards the oven cavity reflects heat back to the oven and at the same time the second side highly reduce heat emission outside the oven. With SCHOTT BOROFLOAT Energy we offer the first low-e coated BOROFLOAT glass to the market.

Heat Reflection SCHOTT BOROFLOAT Energy



The coating of SCHOTT BOROFLOAT Energy highly supports a cool door and energy efficiency.

Application

SCHOTT Energy is highly recommended for oven doors of conventional or pyrolytic ovens. Depending of the type of door construction they are typically used as inner side glass panels in door constructions with 2, 3 or 4 glass panels.

SCHOTT Energy is available on clear float glass as well as on special glass BOROFLOAT®. The product range comprises 7 different types. Clear float substrates are fully tempered in the final processing step, which improves both the mechanical and thermal load capacity. A maximum admissible continuous temperature of 280 °C needs to be ensured as higher temperatures lead to a reduction of the tempering effect and may cause early failure. It allows the use as an inner oven door panel. For higher temperature requirements in pyrolitic ovens we recommend the use of SCHOTT BOROFLOAT® Energy.

Coating

SCHOTT Energy is composed of electrically conductive coatings on top of the glass surface. These microscopically thin, virtually invisible coatings, which reflect far infra-red wavelength, are applied onto the glass by the use of chemical vapour deposition (CVD).

These processes ensure that the coating adheres well to the surface and provides excellent optical properties with a good resistance against the loads in practice, plus the reflective properties desired.

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Dimensions

Product	Glass Thickness	Min size in mm	Max size in mm
SCHOTT EnergyDouble, SCHOTT Energy Plus, SCHOTT Energy fasT, SCHOTT Energy	4 mm, others on request	300 x 200	2.300 x 1.400
SCHOTT BOROFLOAT Energy	3,8 mm 3,3 mm on request	300 x 200	2.300 x 1.400

Processing Options

Product	Tempering	Bending	Screen Printing
SCHOTT EnergyDouble, SCHOTT Energy Plus, SCHOTT Energy fasT, SCHOTT Energy	✓ fully toughened*	✓ ***	✓
SCHOTT BOROFLOAT Energy	✓ heat strength-ened**	✓ ***	✓ limited

** highly increased heat shock and impact resistance, fragmentation into small, blunt edged particles*
*** improved heat shock and impact resistance, no breakage into small pieces*
**** upon request*

Assembly of single side and double side coated glass panels

Fundamentally, single side coated panels can be fitted in two ways. Either the coating is positioned towards the heat source or to the outside of the oven. If the coating is faced towards the heat, reflection of heat radiation is the dominating effect. If the coating is positioned to the opposite side of the heat, reduced emission is the main effect. Double side coated glasses combine the above described properties.

The coating arrangement has a different effect on the front panel temperature depending on the mode of operation. We recommend our customers to conduct practical testing to see what direction meets best their requirements.

Please contact us for any further assistance.

Aspect in reflection

	SCHOTT EnergyDouble	SCHOTT Energy Plus	SCHOTT Energy fasT	SCHOTT Energy	SCHOTT BOROFLOAT Energy
Color shade	Light green to purple	Light green to purple	neutral	neutral	purple to green

Cleaning instructions

All types of SCHOTT® Energy glasses can be cleaned with any commercially available glass cleaner. Under no circumstances should abrasive sponges, scouring powders or other corrosive or abrasive cleaners be used, as these can cause damage to the surface of the glass.

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Thermal Properties

	SCHOTT EnergyDouble, SCHOTT Energy Plus, SCHOTT Energy fasT, SCHOTT Energy	SCHOTT BOROFLOAT Energy
Coefficient of Linear Thermal Expansion	$\alpha = 9 \times 10^{-6}\ K^{-1}$ (to ISO 7991)	$\alpha = 3.3 \times 10^{-6}\ K^{-1}$ (to ISO 7991)
Specific Thermal Capacity	$c_{p\ (20-100°C)}$ 0.72 kJ x (kg x K)$^{-1}$	$c_{p\ (20-100°C)}$ 0.83 kJ x (kg x K)$^{-1}$

BOROFLOAT® Energy has a low thermal expansion. Its high thermal shock resistance and its ability to withstand temperatures up to 450 °C for long periods make BOROFLOAT® a good choice for applications which requires good temperature stability (e. g. internal panels in pyrolytic self-cleaning ovens).

Technical Data

Product	Density (at 25 °C) [g/cm³]	Sides coated	Coating Composition	Coating thickness approx. [nm]	Surface resistivity [Ohm/sq]	Emissivity after thoughening
SCHOTT EnergyDouble	2.5	2	SnO2:F	320	30 ± 5	0.25 (hemispheric)
SCHOTT Energy Plus	2.5	1	SiOx/TiOx/SnO2:F	500	10	0.17
SCHOTT Energy fasT	2.5	1	SiOx/SnO2:F	320	20	0.22
SCHOTT Energy	2.5	1	SiOx/SnO2:F	320	20	0.22
SCHOTT BOROFLOAT Energy	2.2	1	SnO2:F	400	25 ± 5	0.25

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