

# SCHOTT® Energy Double for oven doors. Stay cool with high-performance glass.



Improved coatings for a low outer oven door temperature.

## Product Description

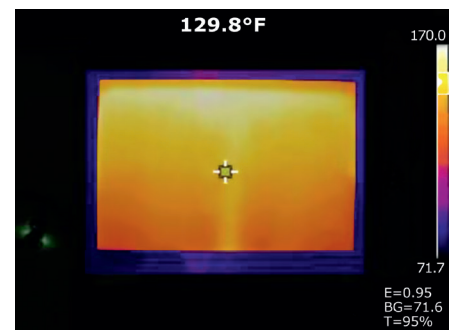
SCHOTT® Energy Double products are outstanding heat reflective inner door glasses that help to save energy and to reduce the front side temperature of oven doors. At the same time they allow a clear view into the appliance unit. They are coated with a durable, virtually invisible heat reflective coating. These durable coatings reflect heat back into the oven cavity and reduce heat loss and emission from the outer surface. SCHOTT® Energy Double glasses include a full range of high-performance coatings for the use in oven doors of pyrolytic or conventional ovens. The low emissivity coatings were developed to further reduce heat loss in all temperature ranges and increase overall energy efficiency. The improved performance of SCHOTT® Energy Double glasses enables simplified oven door constructions.

## Benefit from high-performance coatings:

- Reliable compliance of UL standards with a safety margin
- Differentiate your oven with a “cool door”
- Faciliate large oven door windows
- Reduce complexity of an oven door

## Application range

SCHOTT® Energy Double is due to the excellent low-e properties highly recommended for doors of conventional or pyrolytic ovens. Depending on the type of door construction they are typically used as inner glass panels in door constructions with 2, 3 or 4 glass panels.



Thermal image of a temperature door test.

## Options to reduce complexity:

- Simplified oven door construction
- Reduce the number of glass panels
- Replacement of one coated glass panel with Clear Float glass

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## Range of Coatings

The SCHOTT® Energy Double product range includes 4 standard glasses which differ in the coatings or the type of base glass. All coatings perform highly effectively due to very low emissivity values; combined emissivity values for double sided coated glasses range from  $\epsilon = 0.09 - 0.15$ . Depending on the type of oven cavity, door or viewing window construction they can be used to improve both performance and user safety. Glasses with other emissivity values or detailed heat reflection data are available upon request.

## Pyrolytic Coatings

The glass surface of SCHOTT® Energy Double are composed of electrical conductive coatings. These microscopically thin, virtually invisible coatings, which reflect far infrared wavelength, are applied onto the glass by chemical vapor deposition (CVD). This process ensures that the coating adheres well to the surface and provides excellent optical properties with a good resistance against the loads in practice.

## Glass types

Our range of heat reflective glasses includes two glass types: Clear Float and BOROFLOAT®. In many cases SCHOTT® Energy Double based on Clear Float glass is sufficient. For pyrolytic baking oven doors with large viewing windows the use of BOROFLOAT® glass is recommended. In addition, we offer on request specialty glasses and glass ceramics for commercial or industrial ovens that involve higher temperatures.

## Technical Data

| SCHOTT Product              | Sides Coated | Light Transmission Per ASTM C | Haze Per ASTM C | Surface Resistivity [ $\Omega/\square$ ] | Emissivity From 1.5 to 21 microns @ 250 °C |
|-----------------------------|--------------|-------------------------------|-----------------|--|--|
| SCHOTT® Energy Double N     | 2            | 77.0                          | 0.53            | 30 ± 5                                   | 0.15                                       |
| SCHOTT® Energy Double High  | 2            | 74.4                          | 0.92            | 10 + 5 – 2                               | 0.12                                       |
| SCHOTT® Energy Double Ultra | 2            | 73.0                          | 1.20            | 8 + 5 – 2                                | 0.09                                       |
| SCHOTT BOROFLOAT® Double    | 2            | 73.0                          | 1.03            | 8 + 5 – 2                                | 0.09                                       |

Emissivity values are a combined value for a two sided part when used as a heat reflective viewing window for temperatures ranging from 245 °C to 500 °C

## Thermal Properties

|   | SCHOTT Energy Double                                     | SCHOTT BOROFLOAT Double                                    |
|---|--|--|
| Coefficient of Linear Thermal Expansion | $\alpha = 9 \times 10^{-6} \text{ K}^{-1}$ (to ISO 7991) | $\alpha = 3.3 \times 10^{-6} \text{ K}^{-1}$ (to ISO 7991) |
| Specific Thermal Capacity               | cp (20 – 100 °C) 0.72 kJ x (kg x K) <sup>-1</sup>        | cp (20 – 100 °C) 0.83 kJ x (kg x K) <sup>-1</sup>          |

Our SCHOTT® Energy Double glasses are fully tempered (except BOROFLOAT) which improves both the mechanical and thermal load capacity.

## Assembly of double side coated glass panels

Fundamentally, double side coated glass panels combine two heat effects:

- Increase of heat reflection
- Reduction of heat emission

The positioning of the coated glass panel within an oven door construction might have a different effect on the front side temperature. We recommend our customers to conduct practical testing to see what position meets their requirements best. Please contact us for any further assistance.

## Dimensions

| Glass Type        | Max Size          | Thickness |
|-------------------|-------------------|-----------|
| Clear Float Glass | 24 inch x 16 inch | 4 + 5 mm  |
| BOROFLOAT         | 24 inch x 28 inch | 3.8 mm    |

## Cleaning Instructions

SCHOTT® Energy Double 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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