



Charge your imagination



Specialty Glass
NSG **TEC**™



NSG **TEC™** for Specialty Applications

Description

Whether your application involves heated glass for commercial refrigeration, heat reflecting, electrochromics, appliance glass, computer screens, touch screens, static control, thin film photovoltaics, EMI/RFI shielding or other electro-optical and insulating applications, there is a durable pyrolytic NSG **TEC™** product to meet your specific performance requirements.

NSG **TEC™** offers a wide range of thermal and heated glass performance properties, while it also increases light transmittance and optimizes electrical conductivity.

Applications

- ▮ Touch screens and displays.
- ▮ White goods, including commercial refrigeration units and freezers.
- ▮ Heated glass for commercial and residential projects.
- ▮ Custom products to meet specific application needs.

Product Features and Benefits

- ▮ Electrically conductive for heated and thermal control, electrostatic dissipation and reduced transmittance of electromagnetic radiation.
- ▮ Available in a variety of glass thicknesses and sheet resistances ranging from 7 ohms/sq. up to several thousand ohms/sq.
- ▮ Color neutral, minimizing reflected color, and will not change color over time.
- ▮ Easily fabricated durable pyrolytic surface can be handled, cut, insulated, laminated, heat-strengthened and tempered.
- ▮ Bendable which allows the glass to be heat processed and bent after production.
- ▮ Excellent availability for reduced lead times and control of costs, and offers virtually unlimited shelf-life.
- ▮ Durable pyrolytic surface which is scratch and abrasion resistance.



There are a variety of NSG **TEC™** products to meet your specific needs, including:

NSG **TEC™** 15

The best choice for applications requiring passive condensation control and thermal performance with low emissivity and clear color-neutral appearance.

NSG **TEC™** 35, 50, 70, and 250

For use in heated glass applications, these products combine thermal control with superior electro-optical properties.

NSG **TEC™** SB

A barrier layer to block sodium migration into a deposited film, particularly at elevated temperatures. Therefore, the performance of an off-line coating is unaffected with the use of NSG **TEC™** SB as the coating substrate.

Product	Thickness (mm)	Visible Light Transmittance (%)	Sheet Resistance (Ohms/sq.)	Haze (%)	Hemispherical Emittance
NSG TEC™ Product Properties					
NSG TEC™ 7	2.2, 3.0, 3.2	80-82	6-8	≤2	0.12
NSG TEC™ 8	2.2, 3.2	80-81.5	7-9	12	0.12
NSG TEC™ 15	2.2, 3.0, 3.2, 4.0, 5.0, 6.0	82-84.5	12-14	≤0.74	0.15
NSG TEC™ 35	3.2, 6.0	82-84	32-48	≤0.65	0.36
NSG TEC™ 70	3.2, 4.0	82-84	58-72	≤0.55	0.48
NSG TEC™ 250	3.2, 4.0	84-85	260-325	≤0.70	0.67
NSG TEC™ 1000	3.2	88	1000-3000	≤0.5	
NSG TEC™ SB	2.2, 3.2	90	—	—	0.84
Clear	3.2	90	—	—	0.84

Notes: Nominal values shown. Specifications subject to change. Substrate = Clear soda lime glass.

Glazing (Room/Cool Side)	Airspaces (Number)	U-Value	Room-Side Glass Temp. (C)	Condensation RH** (%)	RH Improvement (%)	Heat Flow Through Glass (W/m²)	Heat Flow Reduction (%)	Power Density (W/m²)
NSG TEC™ Refrigerator Door Applications*								
Clear/Clear	1	2.4	20	64	Base Case	54	Base Case	0
Triple Clear***	2	2.0	21	69	8	45	17	0
NSG TEC™ 15/Clear	1	1.7	22	73	14	38	30	0

* Room-side temperature = 27°C, refrigeration temperature = 4°C.

*** No power.

Glazing (Room/Cool Side)	Airspaces (Number)	U-Value	Room-Side Glass Temp. (C)	Condensation RH** (%)	RH Improvement (%)	Heat Flow Through Glass (W/m²)	Heat Flow Reduction (%)	Power Density (W/m²)
NSG TEC™ Freezer Door Applications*								
Triple Clear***	2	1.9	15	48	Base Case	87	Base Case	0
NSG TEC™ 70/Clear/Clear	2	1.7	24	81	70	82	6	82
NSG TEC™ 70/NSG TEC™ 15	1	1.6	25	87	82	75	14	82
NSG TEC™ 70/NSG TEC™ 15/clear	2	1.5	25	90	88	73	17	82

* Room-side temperature = 27°C, freezer temperature = -20°C.

** Condensation along the room-side glass surface away from the frame when the relative humidity (RH) within the room is greater than the value noted.

Notes: All glass 3.2mm; Airspace 12mm for doubles, 6mm for triples; Airspace filled with air; All simulations utilizing LBL Windows 5.2; Demist heater power of 100 Watts (82 W/m²); Input voltage = 120 volts; Units 800mm × 1,700mm, bus bars along 800mm dimensions.

NSG **TEC™** for Photovoltaics

Thin Film Photovoltaic Applications

NSG **TEC™** products make a great choice for thin film photovoltaic (PV) applications. NSG produces a range of transparent conductive oxides on glass substrates that have been specifically tuned to meet the requirements of the thin film PV industry.

Standard products include NSG **TEC™** 15, 7, 8, and NSG **TEC™** TCO, a high conducting, high haze product for a-Si market. In addition, other variants are available to meet individual customer requirements.

NSG **TEC™** 7

Offers the lowest resistivity value in the

NSG **TEC™** range. Combined with relatively low haze, it can be used for a wide range of applications including dye solar cells, electromagnetic shielding and thin film photovoltaics.

NSG **TEC™** 8

Designed for use specifically with amorphous silicon thin film photovoltaics. This product combines the low resistivity of NSG **TEC™** 7 with a high haze coating required for good conversion efficiencies of amorphous silicon modules.

These products are available in thicknesses varying from 2.3mm to 6mm. Reference the Solar Energy product literature for further information.



This publication provides only a general description of the product. Further, more detailed, information may be obtained from your local supplier of Pilkington products. It is the responsibility of the user to ensure that the use of this product is appropriate for any particular application and that such use complies with all relevant legislation, standards, codes of practice and other requirements. To the fullest extent permitted by applicable laws, Nippon Sheet Glass Co. Ltd. and its subsidiary companies disclaim all liability for any error in or omission from this publication and for all consequences of relying on it. Pilkington and "NSG TEC" are trademarks owned by Nippon Sheet Glass Co. Ltd, or a subsidiary thereof.



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