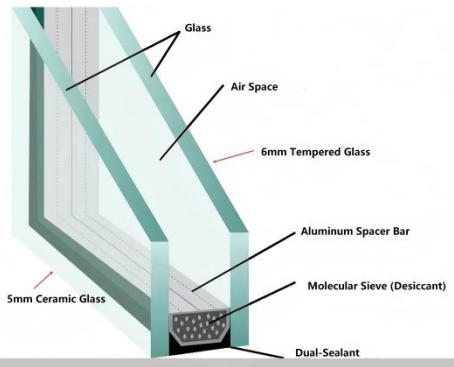


LUMIGLAS®

High-Temperature Explosion-Proof Glass — Glass-Ceramic Insulating Glazing Unit



LUMIGLAS® High-Temperature Explosion-Proof Glass-Ceramic Insulating Glazing Unit



5 mm Glass-Ceramic (hot side) 16A Aluminium Spacer + Argon/Air 6 mm Tempered Glass (cold side)

Glass-Ceramic IGU cross-section

Product Overview

The LUMIGLAS® High-Temperature Explosion-Proof Glazing Unit is a composite insulating glass assembly combining NEG Neoceram transparent glass-ceramic (the inner, heat-facing pane) with a thermally toughened safety glass outer pane, separated by an aluminium spacer. The assembly provides outstanding thermal performance, explosion resistance and long service life in furnace doors, kiln observation windows, industrial ovens and high-temperature process enclosures.

Glass Unit Construction

Layer	Specification
Inner Pane (Heat-Facing)	NEG Neoceram Transparent Glass-Ceramic · 5 mm 1120 × 1120 mm · heat source facing side
Spacer	Aluminium spacer bar · 16 mm cavity (16A) 1100 × 1100 mm effective insulating area
Outer Pane (Cold Side)	Thermally toughened safety glass · 6 mm 1120 × 1120 mm
Total Unit Size	1120 × 1120 × 27 mm (5 + 16A + 6)

Applications

- Industrial furnace and kiln observation windows
- High-temperature oven doors and inspection glazing
- Fireplace and biomass boiler viewing panels
- Process vessel and reactor thermal observation windows
- Any application requiring continuous visibility at elevated temperatures

Key Advantages

- Near-zero thermal expansion ($-1 \times 10^{-7}/K$, 0–750 °C) — virtually no thermal stress
- Continuous service temperature ≤ 950 °C · Short-term ≤ 1000 °C
- Exceptional thermal shock resistance — 800 °C tested on 100×100×5 mm samples
- IGU construction significantly reduces outer surface temperature for operator safety
- Explosion-resistant — glass-ceramic fractures to safe fragments
- High transparency and low distortion for clear process observation

NEG Neoceram Transparent Glass-Ceramic — Technical Data

Thermal Properties

Property	Value
Thermal Expansion Coefficient α ($\times 10^{-7}/K$) -50 ~ 0 °C	-6
Thermal Expansion Coefficient α ($\times 10^{-7}/K$) 0 ~ 50 °C	-4
Thermal Expansion Coefficient α ($\times 10^{-7}/K$) 30 ~ 380 °C	-1

Optical Properties

Property	Value
Refractive Index n_d	1.54
Abbe Number v_d	57
Stress-Optical Coefficient $\mu\mu/cm / kg/cm^2$ (25 °C)	3.1

Thermal Expansion Coefficient α ($\times 10^{-7}/K$) 30 ~ 750 °C	1
Specific Heat J/kg·K (25 °C)	800
Thermal Conductivity W/m·K (25 °C)	1.6
Max. Service Temp. — Continuous °C	≤ 950
Max. Service Temp. — Short-term °C	≤ 1000
Thermal Shock Resistance °C	800

Thermal shock test: specimen heated to 110 °C then immersed in 10 °C water — no cracks exhibited. Service temperature measured per 100×300×3.8t mm sample, 280 mm span; 1 mm deflection after 1000 h continuous or 24 h short-term heating.

Mechanical Properties

Property	Value
Density $\times 10^3$ kg/m ³	2.5
Flexural (Bending) Strength MPa	170
Vickers Hardness HV	700
Young's Modulus GPa	94

Chemical Properties

Property	Value
Acid Resistance mg/cm ² (90 °C, 24 h)	0.05
Alkali Resistance mg/cm ² (90 °C, 24 h)	0.3

Electrical Properties

Property	Value
Volume Resistivity $\Omega \cdot \text{cm}$ (25 °C)	10^{13}
Volume Resistivity $\Omega \cdot \text{cm}$ (250 °C)	10^7
Volume Resistivity $\Omega \cdot \text{cm}$ (350 °C)	10^5
Permittivity 1 MHz, 25 °C	8
Loss Factor $\times 10^{-3}$ 1 MHz, 25 °C	19

IGU Unit Specifications

Parameter	Value
Overall Unit Size	1120×1120×27 mm
Inner Pane (Glass-Ceramic)	1120×1120×5 mm
Spacer Bar	1100×1100×16A mm
Outer Pane (Toughened)	1120×1120×6 mm
Inner Pane Material	NEG Neoceram
Outer Pane Material	Thermally toughened glass
Spacer Material	Aluminium (16A)
Custom Sizes	Available on request

Qualifications

- ISO 9001:2015 — Cert. No. F02326Q00058R002 Bureau Veritas (UKAS No. 0008) · Valid: 10 Feb 2026 – 09 Feb 2029
- ISO 14001:2015 — Environmental Management System
- EJ/T 9001:2014 — Nuclear Industry Quality Management
- GJB 9001C:2017 — Military Quality Management System
- PED 2014/68/EU — Annex I §4.3 · LRQA (NB No. 0343) Cert. No. 0343/PEDM/BJG00003063/A · Valid: 10 May 2026 – 09 May 2029

Installation Instructions

- ⚠ The inner pane (glass-ceramic) **MUST** face the heat source at all times.
- ⚠ Do not reverse the orientation of the IGU unit.

1. Identify the Glass-Ceramic Face

The inner glass-ceramic pane (NEG Neoceram, 5 mm) is identified by the Neoceram label affixed to its surface. This face **MUST** be oriented toward the heat source. Confirm the label orientation before installation and do not remove the label until installation is complete.

2. Prepare the Frame Rebate

Ensure the frame rebate is clean, flat and free of debris. The rebate depth must be sufficient to accommodate the full 27 mm unit thickness (5 + 16A + 6) plus the 2–3 mm rubber setting block at the base.

3. Install Rubber Setting Blocks

Place 2–3 mm thick rubber setting blocks at the bottom contact



Glass-ceramic pane MUST face heat source

points between the glass unit and the metal frame. Rubber setting blocks prevent direct hard contact between the glass and metal, absorb vibration and accommodate differential thermal expansion. Use heat-resistant rubber rated for the expected operating temperature.

4. Set the Glass Unit in Position

Lower the IGU unit into the frame with the glass-ceramic pane (Neoceram label) facing the heat source. Centre the unit in the opening. The unit must rest on the rubber setting blocks at the bottom edge. All four edges must be in contact with the frame or sealing rebate.

5. Apply High-Temperature Sealant

Apply high-temperature silicone sealant (rated $\geq 750\text{ }^{\circ}\text{C}$) around the full perimeter of the unit where it meets the frame. Tool the sealant to a smooth finish. Ensure no gaps or voids are present.

6. Sealant Curing

Allow the high-temperature sealant to cure before first use. Curing rate: 2–3 mm depth per 24 hours at ambient temperature. Ensure full cure across the entire joint depth before exposing the assembly to elevated temperatures. Do not force-heat to accelerate curing.

7. Final Check

Confirm the glass-ceramic label is facing the heat source. Confirm sealant is fully applied with no voids. Confirm rubber setting blocks are in position. Remove the Neoceram label after installation confirmation.

Installation Key Points

- Glass-ceramic face (Neoceram label) → heat source
- Rubber setting blocks: 2–3 mm, heat-resistant
- No hard metal-to-glass contact at any edge
- Sealant: high-temperature rated $\geq 300\text{ }^{\circ}\text{C}$
- Sealant cure rate: 2–3 mm / 24 hours
- Full cure required before first high-temperature use

Technical Notes

The near-zero thermal expansion coefficient (-1 to $+1 \times 10^{-7}/\text{K}$ over $0\text{--}750\text{ }^{\circ}\text{C}$) means glass-ceramic exhibits virtually no thermal stress during rapid heating or cooling cycles.

The outer toughened glass pane acts as a thermal barrier, significantly reducing the outer surface temperature and providing mechanical protection.

All data are typical measured values and are not guaranteed design values. Consult Lumistar for specific application engineering support.

All specifications subject to change without prior notice. Custom sizes available on request. For technical support and project-specific engineering assistance, contact Lumistar Special Glass Technology Co., Ltd. (Tel/WhatsApp: Sophia +86 18913035768; Email:sophia@js-lumiglas.com)