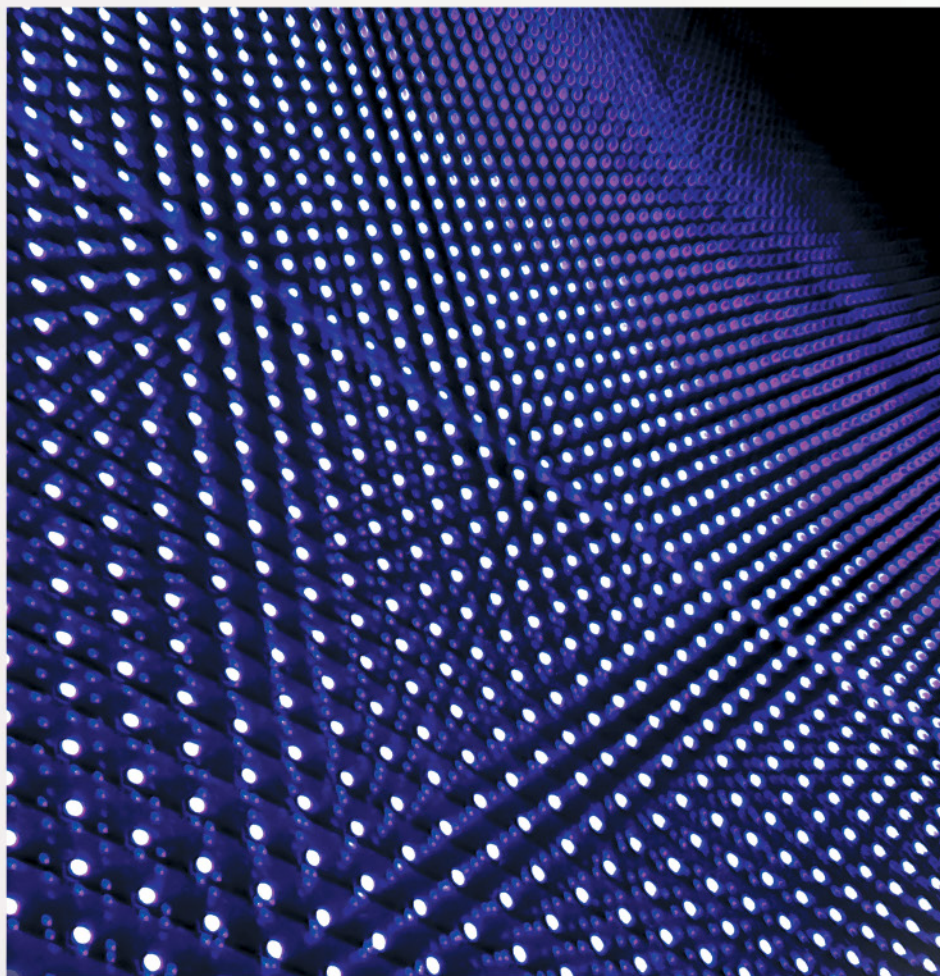




sapphire™

9

BY GROGLASS



PRODUCT CATALOGUE

# HIGH PERFORMANCE ANTI-REFLECTIVE GLASS



HOME OF TRANSPARENCY



## Sapphire™ by Groglass

Groglass advanced magnetron sputtering technology guarantees striking and consistent optical coatings that are valued across various industries.

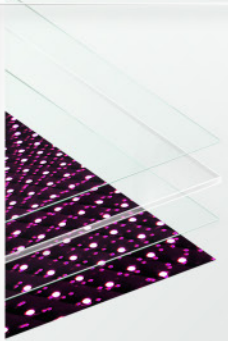
- OPTICAL NANO COATINGS FOR IMPROVED GLASS PERFORMANCE
- ADVANCED DOUBLE-SIDED MAGNETRON SPUTTERING TECHNOLOGY
- UNIFORM AND DURABLE PRODUCT DESIGN



# Sapphire by Groglass

## OUR PRODUCTS

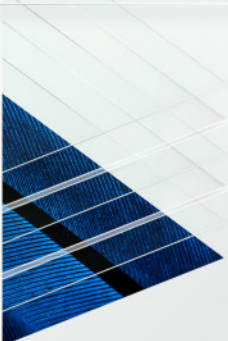
## APPLICATIONS



Anti-reflective glass



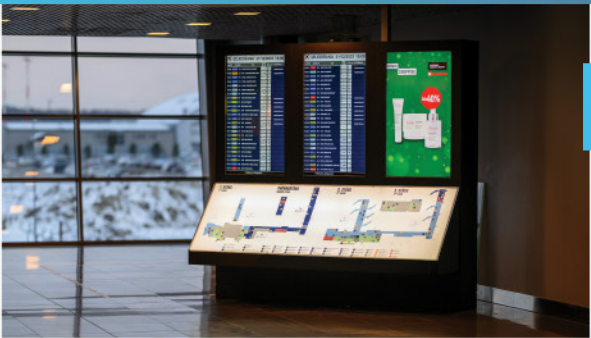
Low-emissivity anti-reflective glass



Laminated anti-reflective glass



Semi-transparent mirrors and beamsplitters



### ELECTRONIC DISPLAYS

Anti-reflective glass protects your displays, improves the visibility of information, and provides special solutions to assist in thermoregulation. Suitable for indoor and outdoor use, our products add value to a range of display applications.



### FOOD DISPLAYS

Refrigerated cabinets closed with doors produced using Sapphire™ AR Low-E glass are energy efficient and eliminate visual barrier compared to regular glass. Choose Sapphire™ AR Low-E glass for displaying your products under unmatched quality glass.



### LIGHTING

Light transmission is one of the most important aspects in lighting fixtures and achieving maximum lighting efficiency. Explore how Sapphire™ anti-reflective products can save energy and improve the effectiveness of your lighting solutions.



### SHOWCASES & VITRINES

Reduce the visual noise from your showcases by choosing Sapphire™ anti-reflective glass. It removes distractions and adds an inviting quality to your displays. Choose Sapphire™ AR or Sapphire™ AR 99 Protect for maximum clarity.



### ARCHITECTURE

Sapphire™ high-performance products can add value to various architectural projects and improve visibility. Explore our product properties or contact us to find the best product for your requirements.

## ALSO BY GROGLASS



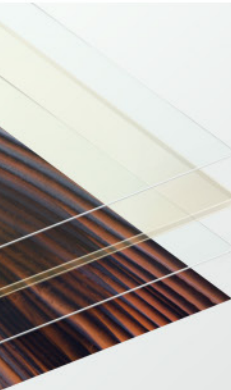
Anti-reflective acrylic



Anti-reflective polycarbonate



Anti-reflective borosilicate glass



Anti-reflective ceramic glass



# Sapphire™ AR

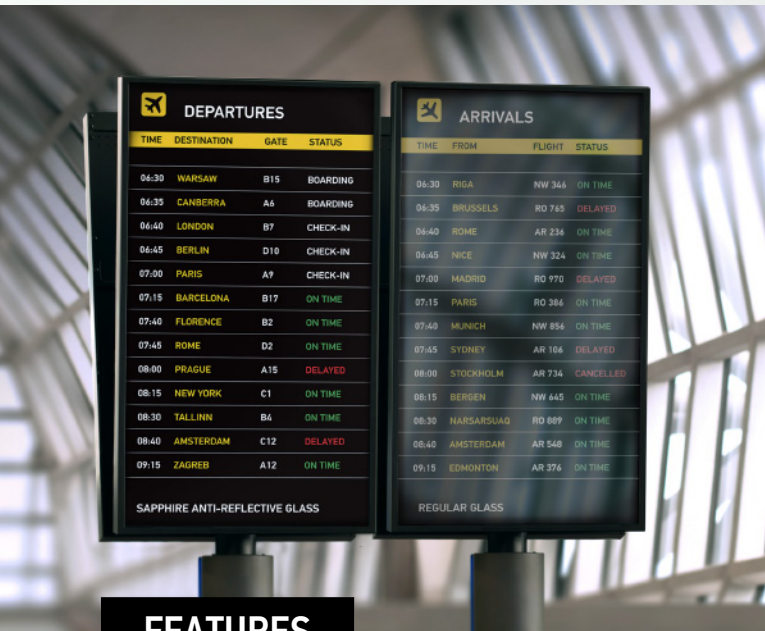
## HIGH-PERFORMANCE ANTI-REFLECTIVE GLASS

## APPLICATIONS

ANTI-REFLECTIVE  
COATING DESIGN

IMPROVED LIGHT  
TRANSMISSION, UP TO 99%

EASY TO PROCESS TO  
YOUR SPECIFICATIONS



## FEATURES

- Increased light transmission
- Reflection reduced to <1%
- Suitable for tempering and toughening
- Suitable for indoor and outdoor use
- Improved abrasion and corrosion resistance
- Smooth and easy to clean

Anti-reflective  
coating

Low-iron or float  
glass substrate

Anti-reflective  
coating

Sapphire™ anti-reflective glass is widely used across industries because of its improved light transmission and high-performance coating design.

Sapphire™ AR is manufactured in compliance with ISO standards in one of the world's largest double-sided magnetron sputtering deposition systems.



Sapphire™ AR is suited for indoor and outdoor glass applications and can be processed the same way as regular glass.

INDOOR AND OUTDOOR  
ELECTRONIC DISPLAYS

EFFICIENT LIGHTING  
SOLUTIONS

ARCHITECTURE  
APPLICATIONS



## PRODUCT PROPERTIES



Substrate	Low-iron or premium float glass
Thickness	2-12 mm
Reflection	<1%
Light transmission	Up to 99%
Maximum sheet size	2250 x 3210 mm
Reflection color	Blue / Green



# Sapphire™ AR Low-E

NEAR-INVISIBLE GLASS  
FOR FOOD DISPLAYS

## APPLICATIONS

- TWO-SIDED ANTI-REFLECTIVE COATINGS ON LOW-E GLASS
- IMPROVED ENERGY EFFICIENCY & VISIBILITY
- DURABLE, HOMOGENOUS & EASY TO CLEAN



Sapphire™ food display anti-reflective glass offers visibility close to that of open cabinets, and allows consumers to have a clear view of the products inside.

Food displays with Sapphire™ AR glass reduce the energy required for cooling products and significantly improve temperature uniformity as compared to open refrigerated cabinets.

## FEATURES

- Minimized reflections
- Improved U-value
- Suitable for thermal processing
- Scratch resistant and easy to clean
- Suitable for bending\* and printing
- Corrosion and oxidizing protection
- Suitable for DGU designs

Anti-reflective coating

Float glass substrate

Low emissivity coating

Anti-reflective coating

Sapphire™ AR Low-E offers improved insulation, combined with impeccable visibility

- FOOD DISPLAY CABINETS
- CONFECTIONARY SHOWCASES
- VENDING MACHINES



## PRODUCT PROPERTIES AND PERFORMANCE

	Substrate	Soft Low-E on float glass	Hard Low-E on float glass
	Thickness	4 mm	4 mm
	Reflection	<1%	<1%
	Visible light transmission	>93.5%	>92%
	Maximum sheet size	2250 x 3210 mm	2250 x 3210 mm

	THERMAL TRANSMITTANCE, w/m2k		REFLECTION	
Regular float	5.8		~8%	
Sapphire™ AR Low-E	3.2	3.7	<1%	<1%
Sapphire™ AR DGU with Low-E (Configuration 4/14Ar/4Low-E)	1.1	1.5	~1.4%	<1.3%
	SOFT LOW-E	HARD LOW-E	SOFT LOW-E	HARD LOW-E



# Sapphire™ AR 99 Protect

LAMINATED  
ANTI-REFLECTIVE GLASS

## APPLICATIONS

ANTI-REFLECTIVE COATINGS  
FOR MAXIMUM VISIBILITY

SHATTER-RESISTANT  
& UV-PROTECTIVE

SCRATCH-RESISTANT  
& EASY TO CLEAN



Sapphire™ AR 99 Protect is the highest quality, virtually invisible laminated glass. It offers the highest UV protection and is a physical safety solution.

Because of its durability and ease of handling, Sapphire™ AR 99 Protect is the preferred anti-reflective glass of the world's leading designers and architects.



Sapphire™ AR 99 Protect is suited for applications that require elegant glass finish combined with shatter-resistance

MUSEUM & RETAIL  
SHOWCASES

INDOOR & OUTDOOR GLASS  
DISPLAY APPLICATIONS

ARCHITECTURE  
SOLUTIONS



## FEATURES

- Maximum glass clarity
- Reflections reduced to ~1%
- Conservation-grade UV protection
- Scratch resistant and durable
- Shatter resistant
- Easy to clean

Anti-reflective  
coating

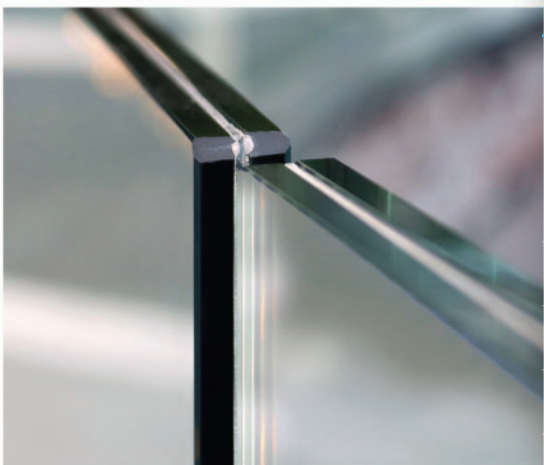
Low-iron glass  
substrate

PVB film

Low-iron glass  
substrate

Anti-reflective  
coating

## PRODUCT PROPERTIES



	Substrate	Laminated low-iron glass
	Thickness	4.4 - 13.5 mm
	Reflection	~ 1%
	Light transmission	Up to 98%
	Maximum sheet size	2250 x 3210 mm
	UV protection	up to 100%

# Sapphire™ Semi-Transparent Mirror

## HIGH-REFLECTIVE MIRRORS

# Sapphire™ AR Beamsplitter

ELEGANT MIRROR FINISH

VARIOUS REFLECTION LEVELS

HIGH-REFLECTIVE COATING DESIGN

ELIMINATED “GHOSTING” EFFECT






EXCEPTIONAL OPTICAL PERFORMANCE

DURABLE & SCRATCH RESISTANT COATING DESIGN



Sapphire™ Semi-Transparent Mirror is a high reflective glass product that can transform glass into a multi-functional and elegant mirror.

### FEATURES






-  Stable reflection color
-  Uniform and homogeneous coating design
-  Durable and scratch resistant
-  Suitable for chemical tempering
-  Can be applied to other substrates

#### PRODUCT PROPERTIES

##### Sapphire™ Semi-Transparent Mirror 35 / 50

Substrate	Low-iron glass *
Thickness	4 mm
Reflection	35% or 50%
Light transmission	~65% or ~50%
Maximum sheet size	2250 x 3210 mm

##### Sapphire™ AR Beamsplitter 35 / 50






	Low-iron glass *
	4 mm
	~35% or ~50%
	~65% or ~50%
	2250 x 3210 mm

\* Other product thicknesses and substrates available



Our high-performance beamsplitter products range between 35% and 50% reflectance, providing partially transparent, uniform, and durable semi-transparent glass.

### FEATURES

- High performance angle reflectance 
- Stable reflection color 
- Durable and scratch resistant 
- Suitable for chemical tempering 
- Can be applied to other substrates 

High-reflective coating  
Low-iron glass substrate

High-reflective coating  
Low-iron glass substrate  
Anti-reflective coating



# Other products by Groglass







## OTHER SUBSTRATES



### Acrylic and polycarbonate

Groglass knowledge of coating technology extends beyond glass substrate. Anti-reflective coatings on acrylic and polycarbonate substrate create products that are ideal for applications where safety and visual precision are paramount.

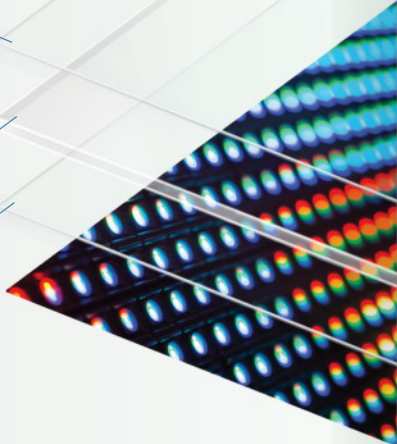
### FEATURES

-  Stable reflection color
-  Uniform and homogeneous coating design
-  Improved durability and scratch resistance
-  One-sided or two-sided AR coating
-  Acrylic substrate with 99% UV protection
-  Easy to clean

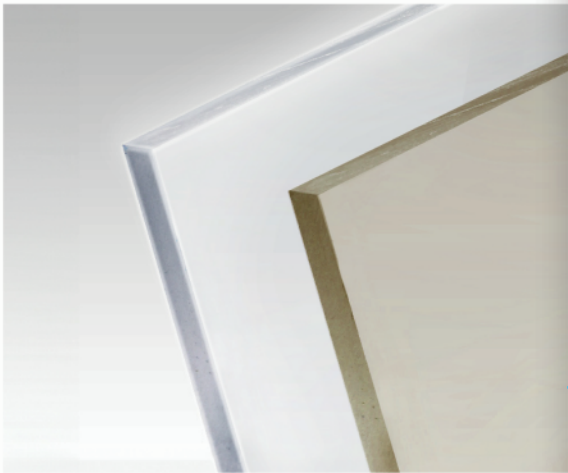
Anti-reflective coating

Acrylic or polycarbonate substrate

Anti-reflective coating



## COATING SERVICES



### Borosilicate, ceramics and other substrates

Groglass advanced vertical vacuum coating technology is versatile and adaptable, making it suitable also for other substrates, such as borosilicate and glass ceramics.







Whether you require exceptional anti-reflective performance or high-reflective mirror coatings, our technology ensures precise and reliable results on various materials.

### FEATURES AND PROPERTIES

### Research and development

Our high-performance coatings are developed by leading scientists to achieve extraordinary product quality:

- Processing guidance and support
- Product-specific technical information
- New product development

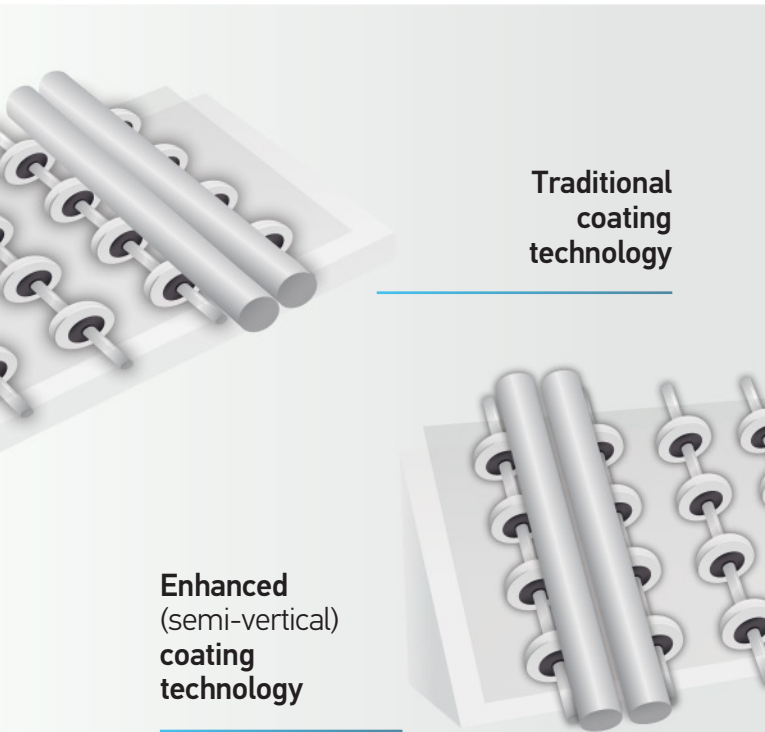
-  Adaptable to customer specifications
-  Versatile application possibilities
-  R&D and application engineer support
-  Scratch resistant and durable
-  One-sided or two-sided optical coatings
-  Size: up to 2250 x 3210 mm\*

\* Standard sizes: 2250 x 1650 mm, 2100 x 1266 mm, thickness upon request



# Coating technology

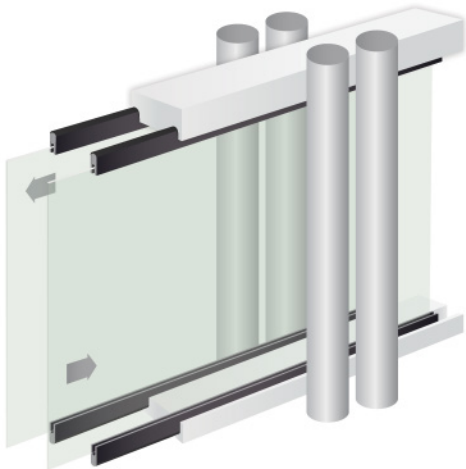
Anti-reflective coatings by Groglass are applied in one of the largest vertical vacuum coaters, providing superior quality, uniformity and performance.



- Defects caused by coated side being in contact with transport rollers.
- Handling defects caused by the two-step manufacturing process.
- Coating defects caused by debris falling on the glass during the manufacturing process.



## Groglass unique vertical coating technology



- Two side coating in a single manufacturing step
- No direct contact with glass surface
- No debris falling on the glass
- Achieves premium quality

## QUALITY STANDARDS



### Trusted materials

Certified materials, sourced exclusively from our longstanding and trusted partners

### 1. OBTAINING GLASS



### Lab tests

After each round of manipulation, the glass samples are tested in our laboratories, according to our quality guidelines for the product's optical performance.

### 2. SAPPHIRE™ DEVELOPMENT



### Safe packaging

Our premium glass is safely packaged and delivered around the world.

### 3. SHIPPING



## CERTIFICATIONS

Sapphire™ products comply with requirements and test methods related to artificial weathering and abrasion of coatings on glass.

■ EN 1096-2



Other international standards:

■ ISO 45001

■ ISO 50001

■ ISO 9001

■ ISO 14001

ABOUT US

MADE IN

EUROPEAN UNION



20 YEARS OF EXCELLENCE

2 PRODUCTION PLANTS

GLOBAL SHIPPING



Sapphire™ is produced by Groglass – one of the world's leading developers and manufacturers of anti-reflective and other high-performance coatings on glass and other substrates.

Groglass quality has been put to test since the very beginning, with Artglass™ products for picture framing. Sapphire™ offers this exceptional technology for a wide range of technical applications.

CONTACT US




Elevate your business with our high-performance coating solutions for your applications!

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# HOME OF TRANSPARENCY