

SCHOTT
glass made of ideas

MIROGARD®

Anti-Reflective Glass
for Art Glazing



SCHOTT is an international technology group with 130 years of experience in the areas of specialty glasses and materials and advanced technologies. With our high-quality products and intelligent solutions, we contribute to our customers' success and make SCHOTT part of everyone's life.

SCHOTT works closely with architects and designers to extend the boundaries of design and create new opportunities for building culture – in terms of design and space, indoors and outdoors, aesthetics and functionality. That's what makes SCHOTT a qualified partner for architecture.

SCHOTT MIROGARD® is an anti-reflective, completely transparent glass for use in glazing pictures. In addition it is available in two versions: MIROGARD® plus and MIROGARD® Protect, which also features enhanced UV-protection. It minimizes reflections to less than 1% and provides artlovers with an experience of the work that is true to the original. The ideal invisible protection – for Old Masters and young talents alike.



Masterful picture glazing

Low in reflection, neutral in color, nearly invisible

Museums, collections and galleries all over the world have been relying on SCHOTT MIROGARD® Anti-Reflective Glass for decades. This practically invisible glass features an anti-reflective optical interference coating that protects valuable works of art without disturbing the pleasure of looking at them.

Conventional glass reflects approximately 8 % of incident light, creating undesirable reflections. MIROGARD® Anti-Reflective Glass reduces reflections to under 1 %, giving viewers an unobstructed view of the artwork. MIROGARD® Anti-Reflective Glass is also completely neutral in color, which means the brilliance of the glazed artwork remains true to the original and is rendered in its natural colors.

UV-protection made to order

MIROGARD® Anti-Reflective Glass also protects paintings, graphics and prints from the destructive effects of UV-radiation. 48 % of the UV-radiation in wavelengths from 300 to 380 nanometers is absorbed and reflected. This means MIROGARD® Anti-Reflective Glass already offers better protection than other art glazing products, even in its standard version. Extremely sensitive artworks can be displayed with MIROGARD® plus and MIROGARD® Protect, giving them added protection that absorbs or reflects up to 99 % of UV-radiation.

High-tech manufacturing

SCHOTT invest a great deal of effort to ensure that art lovers the world over are not distracted by the glazing. MIROGARD® Anti-Reflective Glass is dip coated using the sol-gel process. The coating production process takes place under clean room conditions. Multiple titanium dioxide and silicon dioxide layers are applied one after another with nanometer accuracy and then burned in. The result is a high-tech, anti-reflective art glass of the highest quality with a surface that is extremely stable and easy to clean.

SCHOTT MIROGARD® – Anti-Reflective Glass for Art Glazing

- Anti-reflective to the highest extent possible
- Up to less than 1 % residual reflection
- Highly transparent
- Up to 99 % light transmission
- Color rendering index up to $R_a=100$
- Durable
- Easy to clean
- Product variations **MIROGARD® plus** and **MIROGARD® Protect** are available for higher and even the highest UV protection.

Left: MIROGARD® Anti-Reflective Glass in the Ciurlionis Museum in Lithuania

Right: Various graphic works from Pablo Picasso's art books from the exhibition "Picasso Art Books" at the Museum Brandhorst, Munich

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1948 Teilnahme am zweiten Weltfriedenskongress in Sheffield | participates at the second world peace conference in Sheffield
 1950 Vertreibung der Lenin-Friedenspreisträger | expulsion of the Lenin peace medal winners
 1951 Ermordung des kommunistischen Führers Kim Il-sung | assassination of the communist leader Kim Il-sung
 1952 Bombardierung von Korea als Protest gegen die amerikanische Invasion Koreas | bombing of Korea as protest against the American invasion of Korea
 1953 Portrait Stalin für die Zehnjährige des Sozialismus | portrait of Stalin for the ten-year anniversary of socialism
 1954 Portrait Stalins für die Zehnjährige des Sozialismus | portrait of Stalin for the ten-year anniversary of socialism

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Black-and-white photography displayed with minimal reflections and UV protected by MIROGARD® Anti-Reflective Glass in a living room.

SCHOTT MIROGARD® – Anti-Reflective Glass for Art Glazing

Proven and innovative

The anti-reflective specialty glass MIROGARD® has been constantly further developed since it was first introduced in the 1970s. For instance, SCHOTT recently optimized the color shade of its minimal residual reflection based on intensive research by its experts. The coating that the company has further developed improves the visual impression of the residual reflection that can be seen from certain viewing angles. Now, the color shade no longer distracts attention from the actual artwork.

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SCHOTT MIROGARD® – Anti-Reflective Glass for Art Glazing

Technical Data Sheet

| Dimensions (net/without dipping edge (min.)) | Thickness / (Type) | | Thickness tolerance | Standard box contents | | | Luminous reflectance | Luminous trans- mittance | UV trans- mittance | Color rendering index |
|---|--------------------|-----|------------------------|-----------------------|--|-----------------|-------------------------|--------------------------------|-----------------------|-----------------------------|
| | mm × mm | mm | | mm | m ² | Pieces | | | | |
| MIROGARD® | | | | | | | | | | |
| 1,770 × 1,220 | 2.0 | | 0 -0.2 | approx. 33 | 5 small-scale- packaging à 3 sheets, approx. 35 kg | approx. 260 | 0.9 | 99 | 52 | 100 |
| 1,770 × 1,220 | 2.0 | | 0 -0.2 | approx. 50 | 23 | approx. 330 | 0.9 | 99 | 52 | 100 |
| 885 × 1,220 | 2.0 | | 0 -0.2 | approx. 55 | 10 small-scale- packaging à 5 sheets, approx. 29 kg | approx. 335 | 0.9 | 99 | 52 | 100 |
| 885 × 1,220 | 2.0 | | 0 -0.2 | approx. 50 | 46 | approx. 310 | 0.9 | 99 | 52 | 100 |
| 1,770 × 1,220 | 3.0 | | 0 -0.2 | approx. 40 | 18 | approx. 370 | 0.9 | 99 | 51 | 100 |
| 1,770 × 1,220 | 4.0 | | 0 -0.2 | approx. 30 | 14 | approx. 420 | 0.9 | 99 | 49 | 100 |
| 3,180 × 1,770 | 3.0 | | 0 -0.2 | approx. 140 | 25 | approx. 1300 | 0.9 | 99 | 51 | 100 |
| 3,180 × 1,770 | 4.0 | | 0 -0.2 | approx. 124 | 22 | approx. 1350 | 0.9 | 99 | 49 | 100 |
| MIROGARD® plus | | | | | | | | | | |
| 1,770 × 1,220 | 2.0 | | 0 -0.2 | approx. 33 | 5 small-scale- packaging à 3 sheets, approx. 35 kg | approx. 260 | 1.1 | 98 | 18 ± 2 | 98 |
| 1,770 × 1,220 | 2.0 | | 0 -0.2 | approx. 50 | 23 | approx. 330 | 1.1 | 98 | 18 ± 2 | 98 |
| 885 × 1,220 | 2.0 | | 0 -0.2 | approx. 50 | 46 | approx. 310 | 1.1 | 98 | 18 ± 2 | 98 |
| 885 × 1,220 | 2.0 | | 0 -0.2 | approx. 54 | 10 small-scale- packaging à 5 sheets, approx. 29 kg | approx. 335 | 1.1 | 98 | 18 ± 2 | 98 |
| 1,770 × 1,220 | 3.0 | | 0 -0.2 | approx. 38 | 18 | approx. 370 | 1.1 | 98 | 18 ± 2 | 98 |
| 3,180 × 1,770 | 3.0 | | 0 -0.2 | approx. 140 | 25 | approx. 1300 | 1.1 | 98 | 18 ± 2 | 98 |
| 3,180 × 1,770 | 4.0 | | 0 -0.2 | approx. 124 | 22 | approx. 1350 | 1.1 | 98 | 18 ± 2 | 98 |
| MIROGARD® Protect | | | | | | | | | | |
| 1,770 × 1,220 | 4.4 | 4/2 | 0 -0.4 | approx. 15 | 7 | approx. 260 | 0.9 | 98 | < 1 | 100 |
| 1,770 × 1,220 | 6.4 | 6/2 | 0 -0.4 | approx. 15 | 7 | approx. 310 | 0.9 | 98 | < 1 | 100 |
| 1,770 × 1,220 | 8.4 | 8/2 | 0 -0.4 | approx. 13 | 6 | approx. 325 | 0.9 | 98 | < 1 | 100 |

* (300 nm to 380 nm)



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Technical Data Sheet

Virtually no reflections

Conventional glass reflects about 8 % of light. This results in an undesirable reflection effect. With SCHOTT's optical interference coated Anti-Reflective Glass, reflection is reduced to approx. 1 %, which means it is virtually eliminated.

Highest transparency

Normal glass has light transmission of only 91 %. With MIROGARD® glasses, it is close to 99 %. This means that MIROGARD®, MIROGARD® plus and MIROGARD® Protect are nearly invisible under normal viewing conditions. MIROGARD® and MIROGARD® Protect portray the colors of the pictures glazed as neutrally as possible thanks to their high color rendering index $R_a=100$. The result: The brilliance of colors in works of art is reproduced without losing any of its original quality.

Protection from UV-radiation

All types of MIROGARD® glass reduce UV-radiation by absorption and reflection. Various versions of the product are available, depending on the level of protection required.

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