



ISOLAR
ARDOREX®



**PREVENTIVE
FIRE PROTECTION
WITH GLASS**

**ISOLAR®
GLAS**

MEHR AUS GLAS

FIRE AND SMOKE ARE THE MAIN CAUSE OF FATALITIES IN A FIRE. WITH ARDOREX® FIRE-RESISTANT GLASS, YOU ARE PREPARED FOR PRECARIOUS SITUATIONS AND GET SAFELY OUT OF A BURNING BUILDING.

■ PREVENTIVE FIRE PROTECTION IS A LEGAL REQUIREMENT

Conventional glazing hardly provides any fire resistance. In the event of a fire, fire-resistant glazing can save lives because it prevents fire from spreading from one section of a building to another. Escape routes and stairwells are thus protected from fire and smoke and allow people to leave buildings safely. The precaution to stop the spread of smoke and fire is regulated in various guidelines of best practice and nations and international buildings codes. Besides the safety concept for a building there might be regulations to stop the spread of fire between buildings close to each other. The legally prescribed fire protection mainly applies to places where many people gather. This includes, for example, offices, event halls, industrial facilities or other public and commercially used spaces.

Our ARDOREX® fire-resistant glass is an indispensable component of fire-resistant glazing, which not only consist of the glass but also of the frame construction as well as all fixings and connections. Fire-resistant glazing is only tested and approved in Germany in this complete form. Therefore the fire resistant glazing units are always tested with the frame construction. ARDOREX® was tested by independent third party institutes and got its approval from the German Institute for Building Technology. These include various steel constructions, aluminium constructions with and without doors, constructions made of hardwood and softwood as a wall with glazing bars indoors or as a continuous rooflight outdoors, as well as stud walls covered in plasterboard.



In the event of a fire in a building, minutes or even seconds can often be decisive. ARDOREX® fire-resistant glass enables fire- and smoke-free escape routes.

■ TEMPORARY PROTECTION AGAINST FIRE

Fire-resistant glazing does not provide permanent but temporary protection against fire. Standards classify how long fire-resistant glazing must withstand fire. A distinction is made between resistance times of 15, 30, 60, 120 and 180 minutes. ARDOREX® fire-resistant glazing is available in versions from 30 to 120 minutes, which means that it protects against fire, smoke and flashover for at least this period. Dangerous heat radiation can also be prevented by fire-resistant glazing. This is because even if the separating building material is not combustible, the radiated heat can lead to

spontaneous combustion of nearby building components, equipment or chemicals in adjacent rooms.

In order to achieve the protective effect of fire-resistant glazing, a special construction of laminated or multi-pane insulating glass is necessary, using laminated glass of fire-resistant glass class F(EI) 30-120, with a transparent hydrogel layer in the space between the panes. If a fire occurs, the water in the gel evaporates and forms a heat-insulating, opaque layer.

■ HOW FIRE-RESISTANT GLASS WORKS



At the start of the fire: The flame of the fire attacks the glass from the right side.



After approx. 2 minutes, the glass detaches from the gel on the fire side and the gel releases water vapour.



After about 6 minutes, the fire-side glass breaks and falls off.



The gel evaporates. On the opposite side (left) it remains cold.



After reaching the specified time, the pane remains on the cold side of the residual ash.

The heat generated by the fire causes the hydrogel layer between the panes to react. This layer evaporates very slowly, whilst dissipating heat and therefore protecting the pane fa-

cing away from the fire from breaking. In this way, the glazing provides temporal protection against a fire.



ARODREX® fire-resistant glass in the Caslte Altena, Germany.

FIRE-RESISTANT GLASS – THE MOST IMPORTANT ADVANTAGES

- High light transmission
- High airborne sound insulation
- Low weight and thin panes (especially for higher classes such as F(EI) 60 and 90)
- No splintering in the areas to be protected
- Combination with sun protection, laminated safety glass, alarm and radiation protection panes, ornamental glass, Viennese glazing bars, leaded glass etc. possible
- UV-resistant without additional coating and UV-permeable for plants
- Large pane sizes possible
- Thermal insulation in insulating glass up to $U_g = 0.5/W/m^2K$
- Safety glass through the use of ESG or VSG in production

TECHNICAL DETAILS AT A GLANCE

| Product name | Glass construction | EN 673 | EN 410 | | | | | EN ISO 717-1 | Thick-ness | Weight |
|---|----------------------|-----------------------|--------------------|---------|---------------------------|---------------------------|---------------------------------------|---|-------------------|--------|
| | | U _s -Value | Light Transmission | g-Value | Light Reflection external | Light Reflection internal | Colour Rendering Index R _a | Sound insulation R _w / C / C _{tr} | | |
| | W/(m ² K) | % | % | % | % | | dB | mm | kg/m ² | |
| ARDOREX® Arnold Fire EI 30.12 / | Laminated glass | 4,9 | ≤ 86 | ≤ 69 | ≤ 8 | ≤ 8 | 98 | 43 | ≥ 22 | ≥ 40 |
| ARDOREX® Arnold Fire EI 30.15 / | Laminated glass | 4,8 | ≤ 86 | ≤ 69 | ≤ 8 | ≤ 8 | 98 | 43 | ≥ 25 | ≥ 43 |
| ARDOREX® Arnold Fire EI 60.18 / | Laminated glass | 4,6 | ≤ 85 | ≤ 68 | ≤ 8 | ≤ 8 | 98 | 44 | ≥ 28 | ≥ 46 |
| ARDOREX® Arnold Fire EI 60.22 / | Laminated glass | 4,5 | ≤ 85 | ≤ 67 | ≤ 8 | ≤ 8 | 98 | 44 | ≥ 32 | ≥ 51 |
| ARDOREX® Arnold Fire EI 90.24 / | Laminated glass | 4,4 | ≤ 84 | ≤ 66 | ≤ 8 | ≤ 8 | 98 | 46 | ≥ 34 | ≥ 54 |
| ARDOREX® Arnold Fire EI 90.28 / | Laminated glass | 4,2 | ≤ 84 | ≤ 65 | ≤ 8 | ≤ 8 | 98 | 46 | ≥ 38 | ≥ 59 |
| ARDOREX® Arnold Fire EI 120.38 / | Laminated glass | 3,9 | ≤ 82 | ≤ 64 | ≤ 8 | ≤ 8 | 98 | 47 | ≥ 48 | ≥ 70 |
| ARDOREX® advance Arnold Fire EI 30.12 // | DGU | 1,1 | 77 | 59 | 11 | 11 | 97 | - | ≥ 44 | ≥ 55 |
| ARDOREX® advance Arnold Fire EI 30.15 // | DGU | 1,1 | 77 | 59 | 11 | 11 | 97 | - | ≥ 47 | ≥ 58 |
| ARDOREX® advance Arnold Fire EI 60.18 // | DGU | 1,1 | 77 | 59 | 11 | 11 | 97 | - | ≥ 50 | ≥ 61 |
| ARDOREX® advance Arnold Fire EI 60.22 // | DGU | 1,1 | 76 | 59 | 11 | 11 | 97 | - | ≥ 54 | ≥ 69 |
| ARDOREX® advance Arnold Fire EI 90.24 // | DGU | 1,1 | 76 | 59 | 11 | 11 | 97 | - | ≥ 56 | ≥ 74 |
| ARDOREX® advance Arnold Fire EI 90.28 // | DGU | 1,1 | 75 | 59 | 11 | 11 | 97 | - | ≥ 60 | ≥ 85 |
| ARDOREX® advance Arnold Fire EI 30.12 /// | TGU | 0,7 | 70 | 50 | 14 | 14 | 95 | - | ≥ 56 | ≥ 65 |
| ARDOREX® advance Arnold Fire EI 30.15 /// | TGU | 0,7 | 70 | 50 | 14 | 13 | 96 | - | ≥ 59 | ≥ 68 |
| ARDOREX® advance Arnold Fire EI 60.18 /// | TGU | 0,7 | 69 | 50 | 14 | 13 | 96 | - | ≥ 62 | ≥ 71 |
| ARDOREX® advance Arnold Fire EI 60.22 /// | TGU | 0,7 | 69 | 50 | 14 | 13 | 96 | - | ≥ 66 | ≥ 75 |
| ARDOREX® advance Arnold Fire EI 90.24 /// | TGU | 0,7 | 69 | 50 | 14 | 13 | 96 | - | ≥ 68 | ≥ 77 |
| ARDOREX® advance Arnold Fire EI 90.28 /// | TGU | 0,7 | 68 | 50 | 14 | 13 | 96 | - | ≥ 72 | ≥ 81 |

ARDOREX® Arnold Fire fire protection glass has been tested and approved in metal, wood and gypsum systems. When used outside of the approval, a project-related type approval is required. Arnold Fire can be used in the following approvals: Z-19.14-1646, Z-19.14-1833, Z-19.14-2118, Z-19.14-1723, Z-19.14-1086, Z-19.14-1507, Z-19.14-1950, Z-19.14-2015, Z-19.14-2228, Z-6.20-1920, Z-19.14-1993, Z-6.20-2266, Z-6.20-2555, movable fire protection closures with CE mark in outer walls. See also ISOLAR® Compass 03/2021: Fire resistant glazing (www.isolar.de/en).

AVAILABILITY AND COMBINATIONS:

- Available as laminated safety glass in the categories F(EI) 30, 60, 90 and 120
- Available as insulating glass in the categories F(EI) 30, 60, 90
- Can be combined with all ISOLAR® functional glasses incl. decorative glasses
- All constructions available as alarm glass

CLEAR BENEFITS WITH ISOLAR®

ISOLAR® is one of the largest associations of independent insulating glass manufacturers in Europe with members from twelve countries. Thanks to the close cooperation within the group, our products are constantly optimised and new developments are driven forward. You will find an ISOLAR® partner in your area as well, who will support you as an experienced full-range supplier with comprehensive consulting expertise and who will supply you with high-quality functional glass for windows and façades.



Heat insulation



Solar control



Bird protection



Design



Fire protection



Radio transparency



Sound insulation



Attack resistance



Safety glass



Fall protection

WE'RE HERE TO HELP.

ISOLAR Glas Beratung GmbH is your competent partner when it comes to glass. We turn your wishes into clear solutions. Ask us.

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www.isolar.de/en

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