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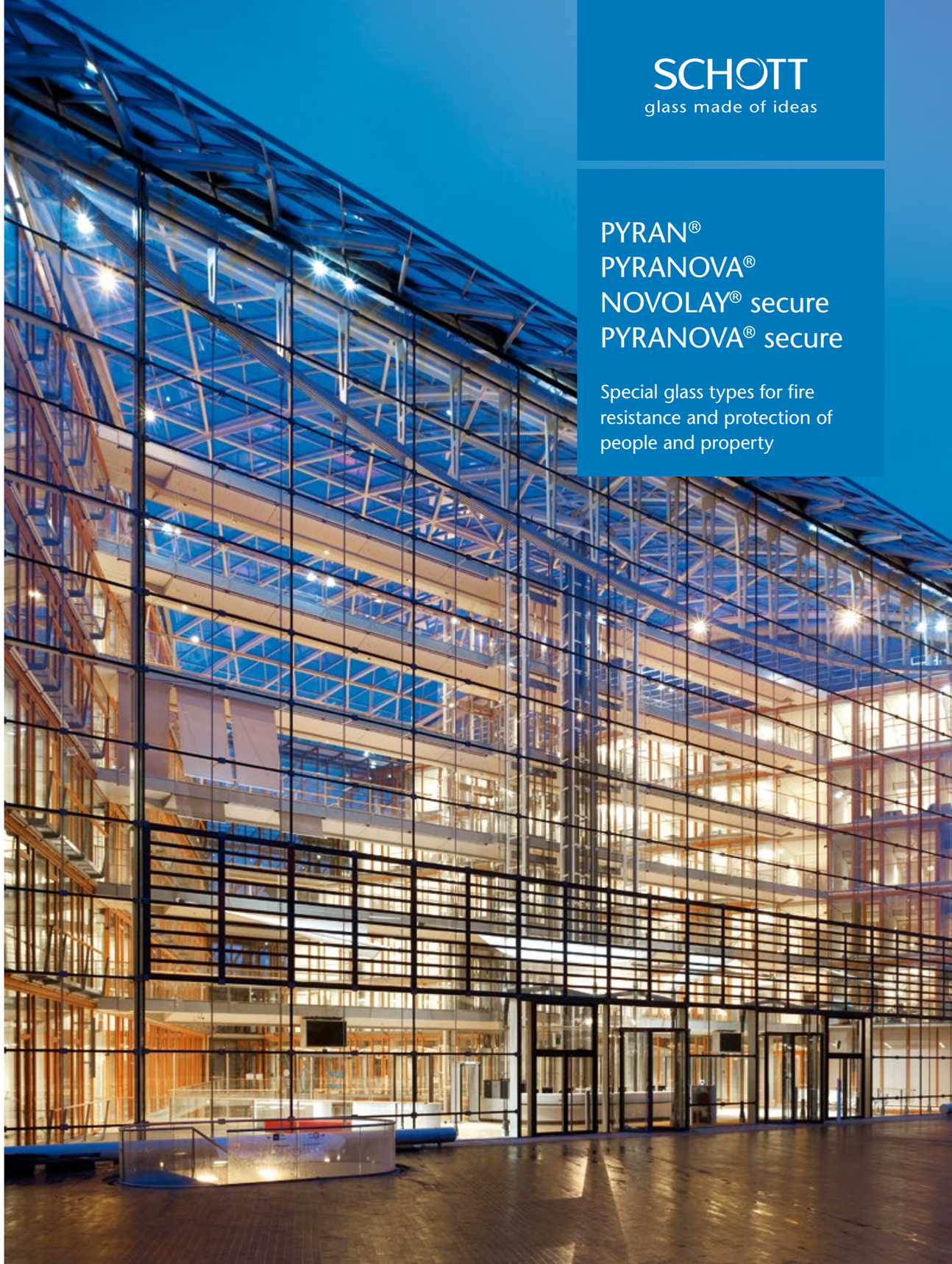


SCHOTT
glass made of ideas

PYRAN®
PYRANOVA®
NOVOLAY® secure
PYRANOVA® secure

Special glass types for fire resistance and protection of people and property

SCHOTT is a leading international technology group in the areas of specialty glass and glass-ceramics. With more than 130 years of outstanding development, materials and technology expertise we offer a broad portfolio of high-quality products and intelligent solutions that contribute to our customers' success.

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, for solar power and fire protection, aesthetics and functionality – sustainable and custom-tailored. That's what makes SCHOTT a qualified partner for architecture and design.

Westdeutsche Immobilienbank in Mainz,
Fire-resistant roof G30 built by Krause Company
PYRAN® S Special glass from SCHOTT.

Contents

Meeting today‘s standards is simple, when you are working with the glass of the future.

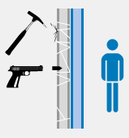
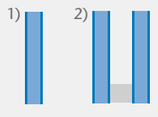
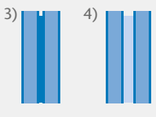
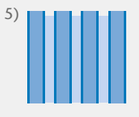
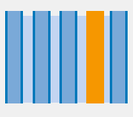
Classification of products according to individual protection requirements.

Fire-resistant glass is classified using a combination of letters and numbers in accordance with EN 13501-2:

E Guarantees integrity in case of fire, hot gases and smoke.

EW Guarantees integrity in case of fire, hot gases and smoke and provides protection against heat radiation.

EI Guarantees integrity in case of fire, hot gases and smoke and provides additional thermal insulation.

Fire protection				
			Protection of persons and property	
			Fire protection in accordance with EN 13501-2 + Manual attack resistance and bullet resistance in accordance with EN 356 and EN 1063	Manual attack resistance and bullet resistance in accordance with EN 356 and EN 1063
E	**EW**	**EI**	**EI**	
				
PYRAN® S [1] **DGU PYRAN® S** [2] **PYRAN® L PYRAN® Platinum**	**PYRAN®** [3] **PYRANOVA®** [4]	**PYRANOVA®** [5] **DGU PYRANOVA®**	**PYRANOVA® secure**	**NOVOLAY® secure** [6] **DGU NOVOLAY® secure**
				

LEFT: PYRAN® S fire protective glazings with melting valves at the “glass whale” in Bálna, Budapest

Maximum protection with SCHOTT PYRAN®. Protecting the freedom for your ideas, too.

Fire resistant glass with an extra plus for more design options.

PYRAN® is far superior to the traditional types of glass used in fire resistant glass. The secret lies in the interaction between the material and the production process. Manufactured in a micro float facility, which is unique within the world, the fire resistant properties of the special float glass surpass those of soda lime glass by far. The unique combination of borosilicate glass and the float process result in the special glass type PYRAN® S with outstanding properties.
As a component in a wide variety of end products, it has a long record of proven performance in fire resistant glazing that meet the requirements of fire resistance classes E 30 to E 120 or EW 30 and EW 60 in a wide range of buildings. The well-known Swiss Federal Institute of Sports in Magglingen represents an impressive example of PYRAN®'s application. Here and in many other buildings, PYRAN® guarantees safety, multifunctionality and aesthetics.
PYRAN® Platinum is the world's only floated glass ceramic. With its UL certification, PYRAN® Platinum is able to fulfill even the highest standards for fire resistant glazing in accordance with US norms.

Function

Fire resistant glazing with PYRAN® protects against the spread of fire, hot gases and smoke. Even under high thermal loads, the glazing stays transparent, ensuring that the burning building can be safely evacuated.

Areas of application

PYRAN® can be used for all applications which must meet high safety requirements but that demand original design as well.

With 25 years of extensive experience in the fire protection industry, SCHOTT Technical Glass Solutions GmbH is both highly competent and innovative. In cooperation with system partners, SCHOTT develops designs with PYRAN® that have been internationally approved and are ideally suited for:

- Facades
- Partition walls
- Skylights and rooflights
- Doors
- Roofs
- Smoke screens
- Lift door glazing
- Lift shaft glazing

Facts

- Higher ability to withstand temperature differentials: In comparison to soda-lime glass, tempered borosilicate glass can better withstand temperature differentials and can therefore be glazed with normal edge covers (15±2 mm).
- Higher softening temperature: Because the glass is self-supporting for more than 30 minutes, large panes and simple frame constructions are now possible.
- Higher viscosity: The glass flow rate is low due to the high viscosity and durability of borosilicate glass, so with more edge cover, greater fire resistance times in excess of 90 minutes can be achieved.
- NiS crystals do not form: Due to the chemical composition of borosilicate glass, nickel sulphide crystals cannot form. Spontaneous glass fracture due to embedded NiS crystals cannot happen with PYRAN®.

RIGHT: **Swiss Federal Institute of Sports in Magglingen**

The versatile champion in fire protection.

SCHOTT PYRAN® – multifunctional floated borosilicate glass.

PYRAN® S – Multifunctionality in fire protection

PYRAN® S is a pre-stressed, monolithic borosilicate single-pane safety glass in accordance with EN 13024-1.

As a component in fire-resistant glazing that meets the requirements of resistance classes E 30, E 60, E 90 and E 120, it has proven its outstanding optical and mechanical characteristics over the years in a wide variety of buildings.

PYRAN® S is a regulated building material in accordance with the German regulation, Z-70.4-174 and can be used as single or insulating glass in accordance with the "Technical regulations for the use of glazing with linear supports" without having to conduct the Heat Soak Test described in the regulations.

PYRAN® S as a single pane safety glass meets all requirements for improved safety. In the event of breakage it displays a typical toughened glass breakage i.e. small fragments and meets the requirements of statutory accident insurance as well as the Health and Safety at Work Act, thus providing an added plus in terms of safety and reliability.

Characteristic for PYRAN® S:

- High transmission in the visible and ultraviolet spectral ranges
- Brilliant white glass optics, ensuring natural, pure color reproduction.
- Durability against attack by aggressive environmental factors
- Suitable for outdoor use with no limitations regarding UV radiation or temperature fluctuation
- Durability against abrasive chemical solutions

State Museum of Textile and Industry in Augsburg, PYRAN®

Fire door with SCHOTT special glass

PYRAN® L – Composite safety glass

PYRAN® L composite safety glass as a laminate made of PYRAN® S and soda lime or single-pane safety glass can be used to meet special requirements for noise protection and barrier loads together with the requirements of fire resistance classes E 30 – E 60. The use according to TRLV and TRAV is stipulated in the general type approval Z-70.3-145. In addition to certification of protection against falling, there are general type approval test certificates according to TRAV with timber or steel frames.

PYRAN® Platinum–floated glass ceramic for fire resistant glazing

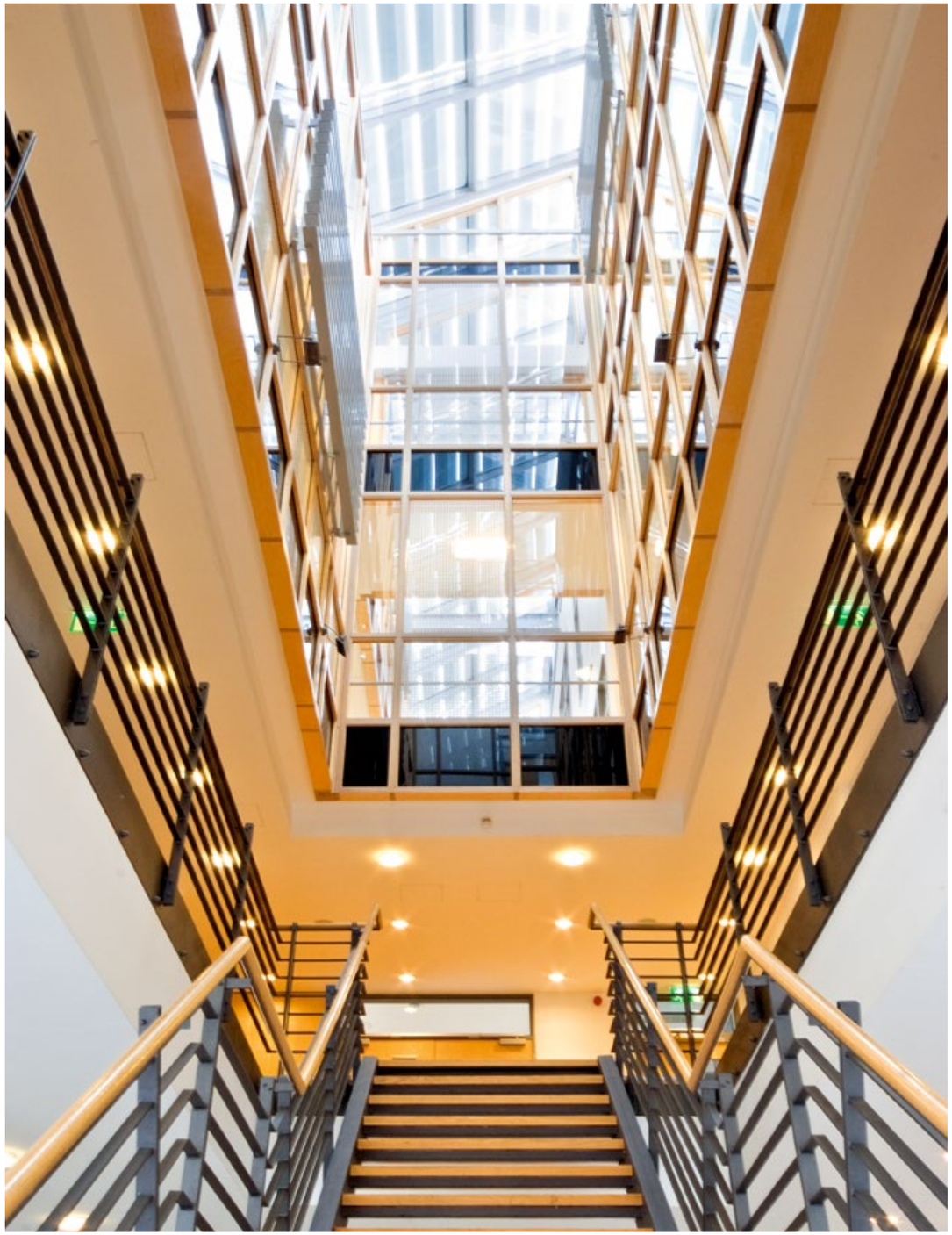
PYRAN® Platinum the worlds first and only floated glass ceramic for fire resistant glazing.

As UL-certified glass ceramic PYRAN® Platinum meets even the highest US standards. This requires that the glass withstand thermal shock immediately following exposure to extremely high temperature. In the test, the hot glass is blasted with cold water at a very high pressure from a fire hose. Only glass ceramic is able to withstand such extremes in temperature difference. PYRAN® Platinum offers fire protection up to 90 min in windows and 180 min in doors.

The glass ceramic is also available as filmed (PYRAN® Platinum F) and laminated (PYRAN® Platinum L) to meet impact requirements.

PYRAN® Platinum offers clear advantages:

- Excellent surface quality
- Neutral color – none of the yellow tint which is typical for other glass ceramics
- No thermal expansion – Withstands thermal shock in hose stream test in accordance with US standards
- Environmentally friendly – certified as world's only environmentally friendly glass ceramic due to an environmentally friendly production process which does not use any heavy metals such as antimony and arsenic.



Safety is more than a feeling.

SCHOTT PYRANOVA® Special glass. Stay cool, calm and collected.

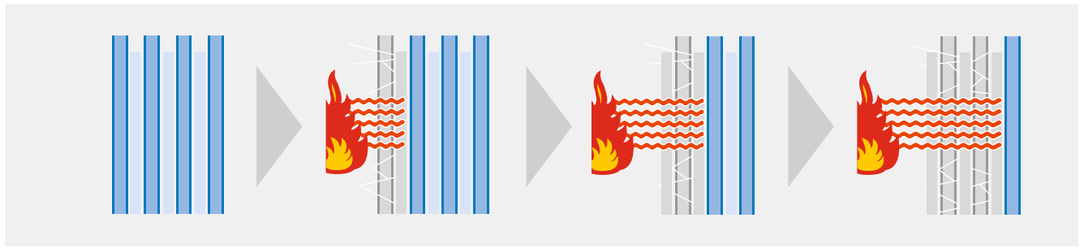


Diagram of how PYRANOVA® special glass works. Special glass for fire resistant glazing.

PYRANOVA® special glass is a clear, laminated composite glass that is made up of several thin panes of float glass. A transparent, fire resistant layer that foams up in the event of a fire has been placed between the panes. When used in fire resistant glazing, PYRANOVA® special glass prevents the passage of fire, smoke and heat radiation. Due to its structure, the standard construction of PYRANOVA® special glass provides protection from either side.

PYRANOVA® special glass when used as a component in fire resistant glazing meets the requirements of fire resistance classes EI 15 to EI 120, or EW 30 to EW 60. For fire barriers, it meets the requirements of T 30 to T 90.

LEFT: **Innovation Park „Manfred von Ardenne“** in Berlin-Köpenick, Fire resistant glazing with PYRANOVA® special glass in a wooden structure ensures the necessary safety standards while at the same time flooding the building with natural daylight.

Function

Fire resistant glazing with PYRANOVA® special glass acts as a barrier against the spread of fire, smoke and heat radiation in the event of fire. The float glass pane facing the fire shatters. The enclosed, transparent fire resistant layers foam up and form an opaque heat shield, which prevents the passage of heat radiation in case of fire. The requirements of an EI glazing are met, if the temperature rise on the non-fire side does not exceed 140 °C (average) or 180°C in any one position. Depending on the thickness of the composite, the fire resistance time can be influenced accordingly

Areas of application

PYRANOVA® is suitable for all areas of application requiring thermal insulation in case of fire. In co-operation with system partners SCHOTT develops internationally approved constructions with PYRANOVA® special glass, which are ideally suited for application in:

- Doors
- Facades
- Partition walls, such as in
- Escape routes and stairways.

Detailed information regarding approved systems can be found in the test certificates and approvals for each country.

PYRANOVA® for interior applications

PYRANOVA® special glass for interior applications is a clear composite glass with fire resistant properties in accordance with DIN EN ISO 12543. Depending on the design, it is manufactured from at least two float glass panes with transparent, fire resistant interlayers, which intumesce up in case of fire.

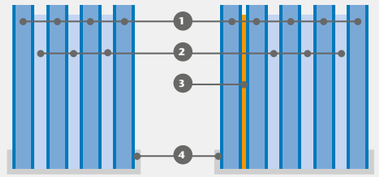
PYRANOVA® for exterior applications

PYRANOVA® special glass for exterior applications is a clear composite glass with fire resistant properties in accordance with DIN EN ISO 12543. In addition to the float glass panes with transparent fire resistant interlayers, which foam up in case of fire, the special glass is manufactured with an external laminated pane to reduce UV degradation of the intumescent interlayer.

The use of various construction designs make PYRANOVA® special glass for fire resistant glazing suitable for internal and external applications.

PYRANOVA® 30
Standard structure for interior applications

PYRANOVA® 30
Standard structure for exterior applications



1. Soda lime float glass
2. Fire resistant layer
3. PVB foil
4. Edge protection tape

LEFT: **Police headquarters Straubing**, Germany

RIGHT: **BMW World, Munich** – designed by Coop Himmelb(l)au

After achieving the maximum fire resistance classes in fire protection, SCHOTT is also setting standards in the protection of people and property.

SCHOTT NOVOLAY® secure and SCHOTT PYRANOVA® secure – Special glass types with outstanding safety properties

Fire resistant glass can now be used in the protection of people and property as attack resistant glazing, fulfilling the additional requirements of protection against impact, burglary and bullet penetration. SCHOTT has developed highly effective and compact, multifunctional laminates for these special applications.

Function

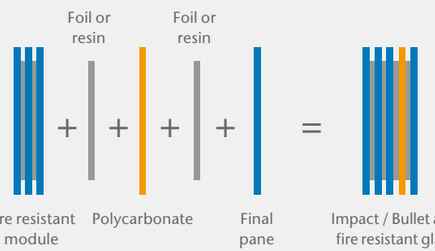
Safety glass with multifunctional laminates from SCHOTT provide protection against mechanical attack. The special float glass types from SCHOTT resist attacks. In addition, PYRANOVA® secure provides an effective barrier against thermal radiation with its enclosed transparent fire resistant layers that intumesce in the event of fire.

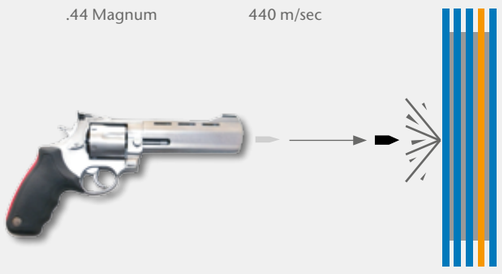
Areas of application

Attack resistant glass is used primarily in the public and commercial area, but can also be of interest for domestic users. Some examples of application are:

- Prisons
- Embassies
- Military facilities
- Jewelry stores
- Ministries
- Museums
- Banks
- Residential buildings

Basic structure





Outstanding bullet resistance
The safety glass from SCHOTT guarantee safety from hand gun projectiles.

Safety glass from SCHOTT for protecting people and property offers clear advantages in comparison with other glass composites:

- Lower thickness: Can be less than half the thickness of comparable glass composites (28 to 70 mm)
- Lower weight: Can be less than half the weight of comparable glass composites (60 to 154 kg)
- High transparency: White glass quality
- Thermal resistance

Impressive transparency
Left: a competitor's product, right: NOVOLAY® secure. In the same safety classes (BR4NS and P8B) NOVOLAY® secure has higher light transmission and significantly clearer, untinted transparency.

Light Transmission (LT) comparison

EN 1063	Product name	Article number	Thick-ness	LT (%)	vs.	Product name	Thick-ness	LT (%)
BR2NS	NOVOLAY® secure BR2NS	1.4.5	24	90		Stratobel 004-1	31	78
BR4NS	NOVOLAY® secure BR4NS	15.3.0	20	87		Stratobel 1207-1	61	65
BR4NS	NOVOLAY® secure BR4NS	1.5.4	44	89		Stratobel 1207-1	61	65
BR6NS	NOVOLAY® secure BR6NS P8B	1.5.7	63	86		Stratobel 408-1	74	61
BR7NS	NOVOLAY® secure BR7NS P8B RC3	1.1.2	74	88		Stratobel 009-1	80	62

PYRANOVA® secure

The tried and proven fire resistant special glass PYRANOVA® manufactured in its special structure as PYRANOVA® secure meets not only the highest standards in fire protection but also displays outstanding safety properties.

PYRANOVA® used in standard laminates refers to a compact multi-pane composite glass which meets the requirements of fire resistance class EI. In case of fire, it provides effective protection against passage of fire, hot gases and smoke, as well as heat radiation, for up to two hours. PYRANOVA® secure effectively combines fire protection with resistance to impact and manual attack in accordance with DIN EN 356 and resistance to bullet attack in accordance with DIN EN 1063.

NOVOLAY® secure

NOVOLAY® secure is manufactured in a microfloat process with cutting-edge technology. A special float glass from SCHOTT with outstanding properties provides the basis for a wide variety of safety applications. In addition to its excellent homogeneity, it displays impressive optical quality – even surpassing low iron glass – while remaining low in specific weight. NOVOLAY® secure is suitable for impact and manual attack resistant glass in accordance with DIN EN 356 and bullet resistance in accordance with DIN EN 1063.

Further technical data and information available at www.schott.com/pyran or at the brochure „NOVOLAY® secure PYRANOVA® secure – Special glass types with outstanding safety properties“

Safety against combined attacks
Even after mechanical stress from bullets, blows or impact, SCHOTT PYRANOVA® secure guarantees effective fire protection.

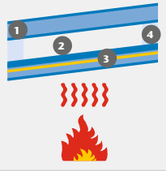
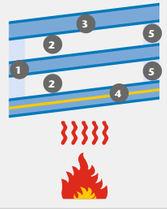
Better safe than sorry.
Yet SCHOTT's special glass can do much more.

Fire resistant glazing with additional functionality.

SCHOTT's multifunctional laminated insulation glasses DGU PYRAN® and DGU PYRANOVA® are used wherever fire resistant glass with barrier times of 30, 60 or even 90 minutes must also fulfill additional functions. DGU PYRAN® and DGU PYRANOVA® are ideal for facades and roof glazing due to their stability upon exposure to UV-radiation, fluctuations in temperature and direct sunlight. In combination with other functional glass for double glazing constructions DGU PYRAN® and DGU PYRANOVA® fulfill aesthetic and energy efficiency requirements.

- Sun protection (anti-glare)
- Thermal insulation
- Sound insulation
- Safety against falling
- Design
- People and property protection
- X-ray protection
- Privacy with an integrated louvre system

Fire resistant glazing is used in roofs to prevent flames spreading from lower to upper floors. Because the glass must be able to withstand heavy loads, building codes require the use of laminated safety glass in accordance with the "Technical regulations for the use of glazing with linear supports" for overhead areas.

Standard structure DGU PYRAN® S, DGU PYRANOVA®	Standard structure DGU PYRAN® S-D	Standard structure TGU PYRAN® R
		
1 Outer panes, ≥ 4 mm thick, can be tinted, printed and/or coated 2 PYRAN® S, PYRANOVA® pane 3 Space between the panes, ≥ 8 mm wide 4 Steel spacer bar Fire resistance up to 90 min	1 PYRAN® S pane ≥ 6 mm thick 2 Space between the panes, ≥ 8 mm wide 3 Inner panes, ≥ 6 mm thick, laminated safety glass (LSG) can be tinted, printed and/or coated 4 Steel spacer bar Fire resistance up to 60 min	1 PYRAN® R middle pane, ≥ 5 mm thick 2 Space between the panes, ≥ 8 mm wide 3 Outer pane, ≥ 6 mm thick, float glass 4 Inner pane, ≥ 6 mm thick, laminated safety glass (LSG), can be tinted, printed or coated 5 Steel spacer bar Fire resistance up to 120 min

Fire protection and thermal insulation

Saving energy is more important today than ever before. Aside from simply lowering heating costs, the demands of environmental awareness calls for action. This can be addressed by using thermal insulation glass with optimal U_g values that keep the heat on the inside and the cold on the outside.

Here the rule is: The lower the U_g- value, the better the insulation. Filling the space between the panes with argon gas while at the same time applying a reflective surface coating lowers the U_g value of SCHOTT's fire resistant thermal insulation glass in accordance with the requirements of the EnEV.

Several components are needed in the manufacture of thermally insulating glass types:
- Highly effective, ultra-thin precious metal coatings
- Inert gas filling (argon) in the space between the panes
- Optimal inter-pane spacing

Fire protection and sun protection

Large sized glass facades reflect the current trend in architecture and the glass should permit maximum daylight transmittance. At the same time the rooms should not be allowed to heat up in summer to such high temperatures which would require costly and environmentally harmful air-conditioning. The application of solar control coatings from established manufacturers makes it possible to combine fire protection and protection against direct sunlight.

Characteristic for such glass are low g-values, good thermal insulation and daylight transmission. By using different precious metal coatings it is possible to meet highest design demands and different degrees of reflection.

Fire protection and noise protection

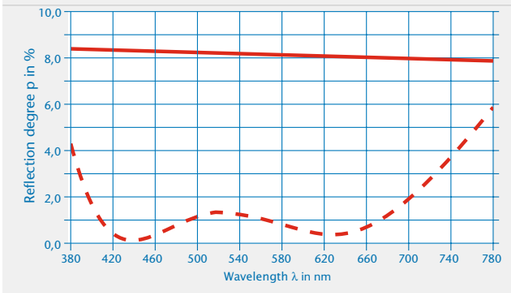
We are faced with noise from cars, trains and planes but also from machines, televisions, radios and household appliances everywhere today. Sound insulation in buildings should reduce outside noise to an acceptable level on the inside. The acoustic insulation property of building materials is expressed by the R_w index which reflects the difference between internal and external noise levels. The R_w index is measured in decibels (dB). The higher the R_w index, the better the sound insulation.

The following measures are used to reduce noise transmission:
- Increased cavity for double glazing
- Asymmetrical glass design; with thick outer panes and thinner inner panes
- Use of acoustic protective foils

Anti-reflective glazing with PYRAN® S

Anti-reflective PYRAN® S is an anti-reflective, enhanced monolithic thermally toughened borosilicate glass that has been dip-coated on both sides. The glass is coated with a hard, weather-resistant and multi-layered interference system, which contains additional metal oxides. As a result, light reflection of 8% with an uncoated float glass can be reduced to 1% using coated borosilicate glass and is ideally suited for use in projection openings such as in cinemas.

Comparison of reflection of anti-reflective PYRAN® S and normal, clear float glass



PYRAN® G – Curved fire resistant glazing

PYRAN® G is a monolithic, thermally annealed borosilicate glass. In a forming process, PYRAN® G takes on its typical, cylindrical shape.
Used in fire resistant glazing that meets the requirements of fire resistance class E 30 in a steel frame, PYRAN® G has the outstanding transparency of white glass combined with visually attractive design.
While flat glass panes arranged in a facetted formation create an interrupted appearance, curved PYRAN® G components facilitate an uninterrupted clear and complete visual look.
PYRAN® G is not a regulated building material and can only be used with an individual building approval.

As changeable as a chameleon – and as your ideas.

PYRAN® and PYRANOVA® unite fire protection and decor in a unique way.

The transparency and lightness of glass in buildings and rooms take on a whole new character through bright colors and attractive decors. The variety of colors and motifs available is virtually unlimited. Now planners and architects responsible for fire protection can also be involved in the overall design creativity of the planning process.

Screen printing with PYRAN® S – that means new ideas which go beyond simple aesthetic considerations:

- Possibility to print entire surfaces of PYRAN® S
- Possibility to regulate transparency and energy flow through design measures such as progressive frit patterns
- Screening and anti-glare protection
- Many different design options with a wide spectrum of brilliant colors and patterns

Mercedes Benz Museum Stuttgart
PYRAN® S – butt joint glazing with two-color screen-printed pattern.

Design with sandblasting

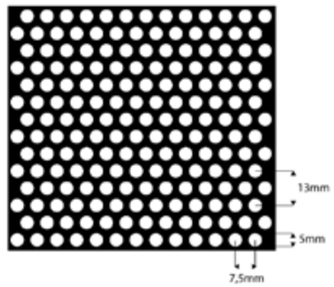
Sandblasting can be used to purposely modify the surface structure of PYRAN® S panes. A visually inconspicuous design is the result, the aesthetics of which are fully revealed with illumination. This process does not diminish the durability or the performance of these functional glasses. When added to the glass surface, extremely thin and nearly invisible functional layers protect it from corrosion, dirt and other contamination.

Design with screen printing

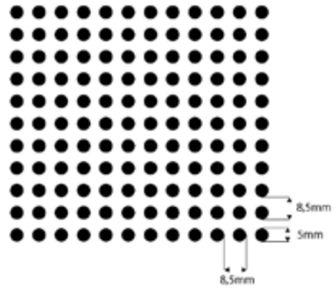
Entire surfaces of PYRAN® S can be printed without restriction on the degree of printing, so that characteristics such as glass transparency, energy flow and/or glare protection can be individually managed. Even the fire performance of SCHOTT special glass types is not reduced and two hour fire rated partitions are still possible.

With rich color nuances and an abundance of patterns, screen printing opens up a wealth of new design possibilities for fire resistant glazing. Depending on the colors chosen, either screen printing or a roller process is used to apply them to the glass surface. In the subsequent thermal tempering process, the colors are burned into the glass surface. The resulting glasses are as colorfast, abrasion-resistant, scratch-resistant and weatherproof as unprocessed glass surfaces, and require the same low maintenance.

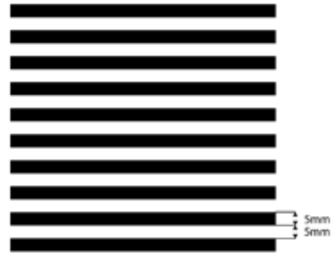
Degree of printing: 60 %



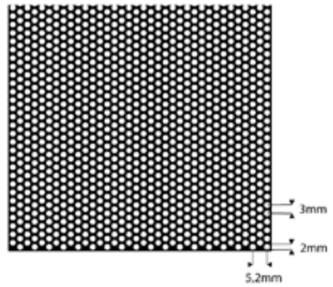
Degree of printing: 27,2 %



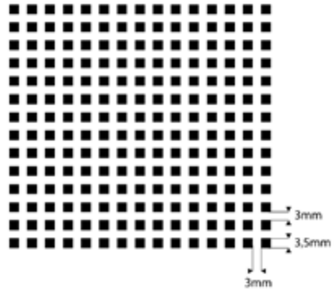
Degree of printing: 50 %



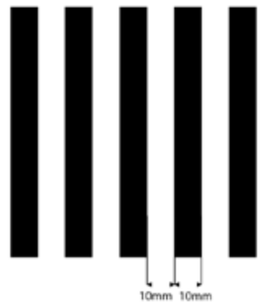
Degree of printing: 60 %



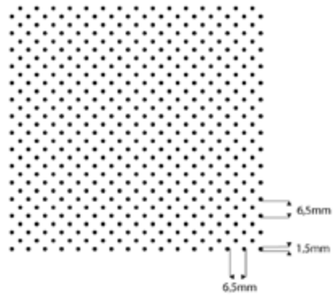
Degree of printing: 29 %



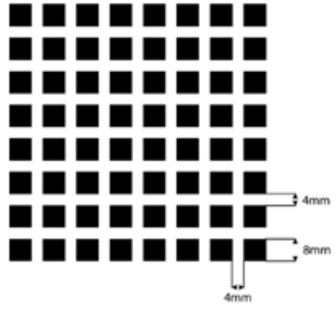
Degree of printing: 50 %



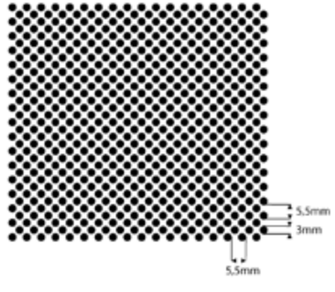
Degree of printing: 8 %



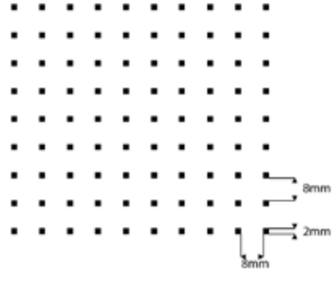
Degree of printing: 44 %



Degree of printing: 47 %



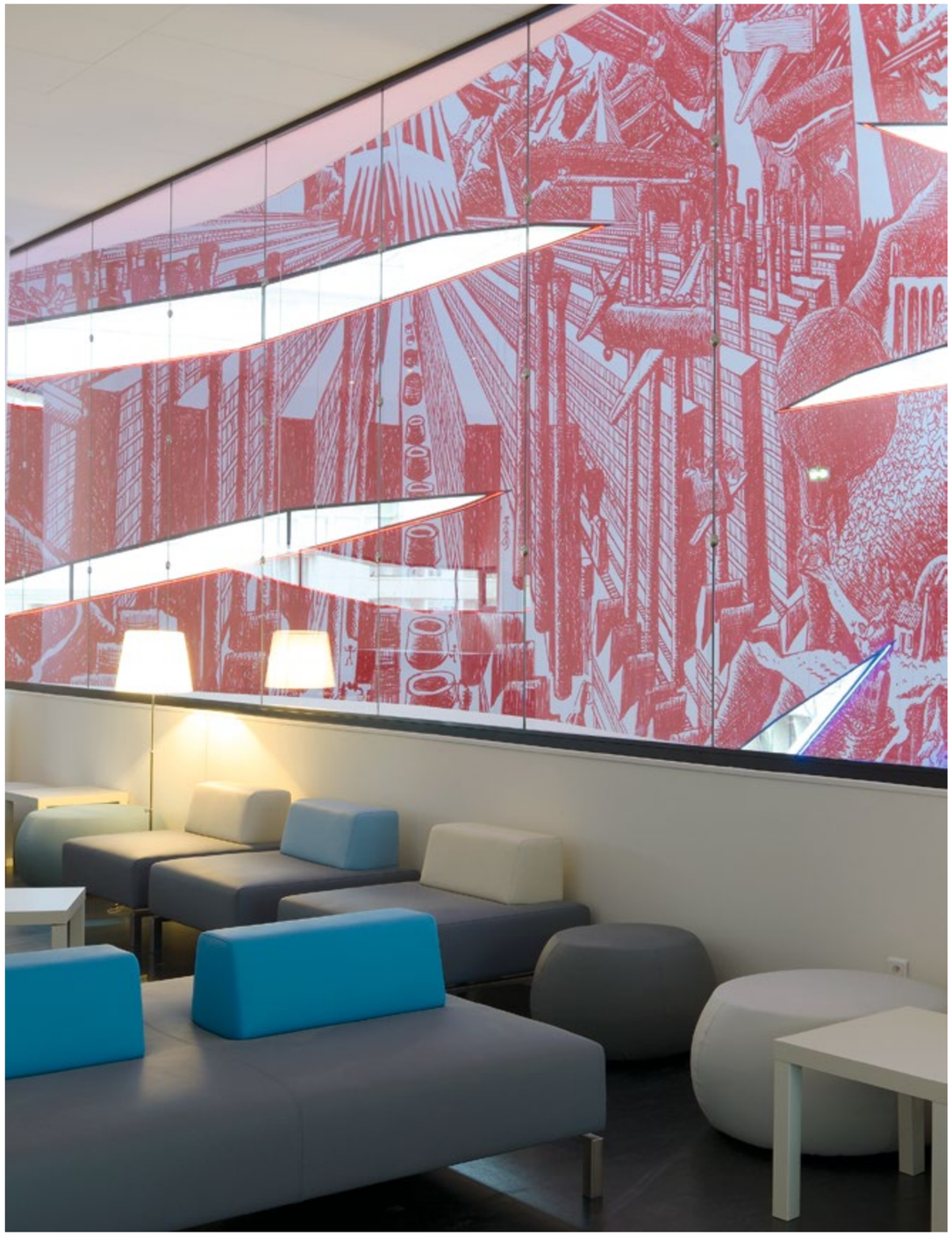
Degree of printing: 4 %



Selection of patterns – Screen printing

Here is a selection of standard patterns for PYRAN® S. All colors and designs are available as grid or graduated grid screen printing. Other colors and patterns are available on request.

The color of the printed PYRAN® S pane can appear different depending on the glass thickness and the viewing side. The maximum pattern dimensions also varies depending on the pattern and pane thickness. It is always advisable to discuss application conditions before choosing the final pattern. Just ask one of our experts. They will be glad to help.



Fire protection comes first? SCHOTT thinks your creativity should, too.

Make sure you get the maximum freedom for your designs – with the wide range of systems for fire resistant glasses from SCHOTT

Modern architects and planners fulfill the highest design and energy requirements. On the one hand, they strive to meet the demands of architects and contractors: Every building should be as innovative as possible with an absolutely unique design. Yet on the other hand, their creativity is strictly limited by the potential of high risk, legal regulations and the demands of fire protection authorities.

Innovative fire resistant glasses from SCHOTT open up the possibility for contemporary showcasing of interiors allowing revolutionary views to unfold. At the same time they easily fulfill all important requirements of fire protection and screening.

Systems with SCHOTT special glasses combine fire protection with maximum design freedom. Together with its system partners, SCHOTT has developed integrated structures that have already been approved or can be approved individually in accordance with building specific requirements.

Butt joint glazing, for example, allows virtually endless sheets of floor to ceiling glass – completely free of distracting mullions. A wide range of individual solutions ensure maximum flexibility to meet complex demands.

	Framing material / System					
Fire resistance class	**Steel**	**Timber**	**Aluminum**	**Plasterboard constuction**	**Butt joint**	**Point-fixed**
E 30	•	•		•	•	•
E 60	•	•		•	•	
E 90	•			•		
E 120	•					
EI 30	•	•	•	•	•	
EI 60	•	•	•		•	
EI 90	•	•			•	
EI 120	•					

LEFT: **Centre culturel et social Aimé Césaire, Gennevilliers**
PYRAN® S – butt joint glazing

Butt joint glazing with PYRAN® S and PYRANOVA®

Fire resistant glazing with SCHOTT special glass integrates easily into creative architectural design. Butt joint systems with PYRAN® S or PYRANOVA® join individual glass panes using a special silicon seal with no need for mullions. Butt joint glazing with PYRAN® S or PYRANOVA® meets the requirements of fire resistance classes E 30–E 60 and EI 30–EI 90. This allows the installation of delicate, virtually endless sheets of glass in timber or steel frames – from floor to ceiling – in varying thicknesses and guarantees clear views from every angle.

Ideal for applications where fire protection must be combined with maximum visibility and minimal visual interruption:

- Design freedom with large areas of glazing
- The view takes in everything – no disruptive jambs or mullions
- Large panes – from floor to ceiling
- Endless sheets of glass
- Over 90 minutes of fire resistance

Point-fixed glazing with PYRAN® S

Point-fixed systems that use PYRAN® S do not need frame constructions at all. This is the result of a perfect symbiosis of glass panes connected to each other by joints that are barely noticeable and point mounts and brackets that secure the glass panes to a strong, but light, supporting structure. PYRAN® S as point-fixed glazing is ideal for smoke screen applications in heavily frequented traffic areas such as atria, shopping centers and underground stations and provides a fire barrier for over 30 minutes.

A frameless, point-supported glass facade was created for the **Bluetower in St. Johann** with SCHOTT fire resistant glazing. The connection of the double-glazed elements with PYRAN® S was achieved using purpose-built steel sections, which were attached with stainless steel point fittings at each intermediate floor.

AgrarBildungsZentrum (ABZ) Altmünster:
Transparent fire protection in timber constructions with PYRANOVA®

For the clear view you‘re accustomed to: Facts and figures.

Technical data for PYRAN® and PYRANOVA®, NOVOLAY® secure und PYRANOVA® secure

PYRAN®

Product	Fire resistance class [EN 13501]	Thickness [mm]	Cavity [mm]	Counterpane	Thickness counterpane [mm]	Layer	Layer level	Weight [kg/m²]	U_g-value [W/m²K] Fill gas: argon	U_g-value [W/m²K] Fill gas: air	g-value [%]	Light transmission [%]	R_w [dB]
Monolithic glass types													
PYRAN® S	E(G) 30 - 120	6						13,7			91	92	31
	E(G) 30 - 120	8						18,2			90	92	32
	E(G) 30 - 120	10						22,8			90	92	33
	E(G) 30 - 120	12						27,4			90	92	34
Laminated glass types													
PYRAN® L	E 60	5		K/N - Float	4	PVB 1,52		21,5			78	89	34
	E 60	6		K/N - Float	6	PVB 1,52		29			77	88	35
Insulation glass types													
DGU PYRAN® S	E(G) 30	5	15	K/N - Float	4					2,7	78	83	33
	E(G) 30 - 90	6	15	K/N - Float	4					2,7	78	83	33
	E(G) 30 - 90	6	15	K/N - Float	6					2,7	75	82	34
Thermal insulation													
DGU PYRAN® S	E(G) 30	5	15	K/N	4	Arcon N33	2		1,1	1,4	60	81	33
	E(G) 30	5	15	K/N	4	Arcon N33	3		1,1	1,4	64	81	33
	E(G) 30 - 90	6	15	K/N	4	Arcon N33	2		1,1	1,4	60	81	34
	E(G) 30 - 90	6	15	K/N	4	Arcon N33	3		1,1	1,4	64	81	34
DGU PYRAN® S-D	E(G) 30 - 60	6	15	K/N - VSG	7 (3.3-2)	Arcon N33	2		1,1	1,4	56	80	
	E(G) 30 - 60	6	15	K/N - VSG	7 (3.3-2)	Arcon N33	3		1,1	1,4	64	80	
	E(G) 30 - 60	6	15	K/N - VSG	9 (4.4-2)	Arcon N33	2		1,1	1,4	55	79	39
	E(G) 30 - 60	6	15	K/N - VSG	9 (4.4-2)	Arcon N33	3		1,1	1,4	64	79	39
Solar protection													
DGU PYRAN® S	E(G) 30	5	15	K/N - Float	6	ipasol neutral 50/27	2		1,1	1,4	28	51	34
	E(G) 30	5	15	K/N - ESG	6	ipasol shine 40/22	2		1,1	1,4	22	41	34
	E(G) 30	5	15	K/N - ESG	6	ipasol sky 30/17	2		1,1	1,4	17	30	34
	E(G) 30	5	15	K/N - Float	6	ipasol platin 47/29	2		1,1	1,4	30	47	34
	E(G) 30 - 90	6	15	K/N - Float	6	ipasol neutral 50/27	2		1,1	1,4	28	51	33
	E(G) 30 - 90	6	15	K/N - ESG	6	ipasol shine 40/27	2		1,1	1,4	22	41	33
	E(G) 30 - 90	6	15	K/N - ESG	6	ipasol sky 30/17	2		1,1	1,4	17	30	33
	E(G) 30 - 90	6	15	K/N - Float	6	ipasol platin 47/29	2		1,1	1,4	29	47	33
Sound protection													
DGU PYRAN® S-D	E(G) 30 - 60	6	20	K/N - VSG	9 (4.4-2 SC)					2,7			42
	E(G) 30 - 60	6	15	K/N - VSG	9 (4.4-2 SC)					2,7			41
	E(G) 30 - 60	8	20	K/N - VSG	17 (8.8-2 SC)					2,7			43
	E(G) 30 - 60	8	24	K/N - VSG	13 (6.6-2 SC)					2,7			43
	E(G) 30 - 60	10	15	K/N - VSG	9 (4.4-2 SC)					2,7			45

K/N = soda-lime glass ; VSG = laminated safety glass ; ESG = safety glass

PYRANOVA®

Product	Fire resistance class [EN 13501]	Thickness [mm]	Cavity [mm]	Counterpane	Thickness counterpane [mm]	Layer	Layer level	Weight [kg/m²]	U_g-value [W/m²K] Fill gas: argon	U_g-value [W/m²K] Fill gas: air	g-value [%]	Light transmission [%]	R_w [dB]
Monolithic glass types													
PYRANOVA (without laminated safety glass)													
PYRANOVA® EW	EW 30	7						17		5,6	78	89	32
PYRANOVA® EW	EI (F) 15 / EW 30	11						26		5,5	74	87	32
PYRANOVA® 30	EI (F) 30	15						36		5,4	72	86	38
PYRANOVA® 45	EI (F) 45	19						46		5,3	78	83	38
PYRANOVA® 60	EI (F) 60	23						55		5,1	76	87	41
PYRANOVA® 90	EI (F) 90	37						86		4,7	71	84	44
PYRANOVA® 120	EI (F) 120	52						106		2,6		75	42
PYRANOVA (with laminated safety glass)													
PYRANOVA® EW	EI (F) 15 / EW 30	10						24		5,5	71	87	36
PYRANOVA® EW	EI (F) 20 / EW 30	14						32		5,4	71	86	38
PYRANOVA® 30	EI (F) 30	19 (3.3-2)						44		5,4	66	84	39
PYRANOVA® 30	EI (F) 30	19 (3.3-2-SC)						44		5,4	66	84	40
PYRANOVA® 30	EI (F) 30	24 (5.5-8)						58		5,2	62	82	40
PYRANOVA® 45	EI (F) 45 / EW 60	19						44		5,2	71	86	38
PYRANOVA® 60	EI (F) 60	27						61		5,0	73	86	41
PYRANOVA® 90	EI (F) 90	40						93		4,7	69	83	44
PYRANOVA® 120	EI (F) 120	54						112		2,6		75	44
Insulation glass types													
DGU PYRANOVA®	EI (F) 30	19	16	K/N - Float	6					2,6	69	76	41
	EI (F) 30	15	8	K/N - VSG	7 (3.3-2)					3,0	65	76	41
	EI (F) 30	15	8	K/N - VSG	7 (3.3-2 SC)					3,0	65	76	43
	EI (F) 30	15	15	K/N - VSG	7 (3.3.2)					2,7	66	76	43
	EI (F) 30	15	15	K/N - VSG	7 (3.3.2 SC)					2,7	66	76	45
	EI (F) 30	19 SC	15	K/N - VSG	7 (3.3.2 SC)					2,6	65	76	46
	EI (F) 30	19 SC	15	K/N - VSG	9 (4.4.2 SC)					2,6	63	75	47
	EI (F) 30	19 SC	18	K/N - VSG	7 (3.3.2 SC)					2,6	65	76	47
	EI (F) 60	23	15	K/N - Float	4					2,6	74	79	
	EI (F) 60	23	15	K/N - Float	6					2,7	72	78	
	EI (F) 60	27	15	K/N - Float	4					2,6	73	78	
	EI (F) 60	27	15	K/N - Float	6					2,5	71	77	
	EI (F) 60	23	16	K/N - VSG	7 (3.3.2)					2,6	67	78	45
	EI (F) 60	23	16	K/N - VSG	7 (3.3.2 SC)					2,6	67	78	47
	EI (F) 60	23	16	K/N - VSG	9 (4.4.2)					2,6	66	77	46
	EI (F) 60	23	16	K/N - VSG	9 (4.4.2 SC)					2,6	66	77	50
	EI (F) 60	23	16	K/N - VSG	13 (6.6.2)					2,5	63	76	47
	EI (F) 60	23	16	K/N - VSG	13 (6.6.2 SC)					2,5	63	76	51

K/N = soda-lime glass ; VSG = laminated safety glass

Product	Fire resistance class [EN 13501]	Thickness [mm]	Cavity [mm]	Counterpane	Thickness counterpane [mm]	Layer	Layer level	Weight [kg/m²]	U_g-value [W/m²K] Fill gas: argon	U_g-value [W/m²K] Fill gas: air	g-value [%]	Light transmission [%]	R_w [dB]
	EI (F) 90	37	15	K/N - Float	4					2,5	73	76	
	EI (F) 90	37	15	K/N - Float	6					2,5	71	75	
	EI (F) 90	40	15	K/N - Float	4					2,5	72	75	
	EI (F) 90	40	15	K/N - Float	6					2,5	70	75	
Thermal insulation													
DGU PYRANOVA®	EI (F) 30	19	15	K/N	4	Arcon N33	2		1,1	1,4	58	75	33
	EI (F) 30	15	15	K/N - VSG	7 (3.3.2)	Arcon N33	2		1,1	1,4	55	75	43
	EI (F) 30	15	15	K/N - VSG	7 (3.3.2 SC)	Arcon N33	2		1,1	1,4	55	75	45
	EI (F) 30	19 SC	15	K/N - VSG	7 (3.3.2 SC)	Arcon N33	2		1,1	1,4	54	74	46
	EI (F) 30	19 SC	15	K/N - VSG	9 (4.4.2 SC)	Arcon N33	2		1,1	1,4	53	73	47
	EI (F) 30	19 SC	18	K/N - VSG	7 (3.3.2 SC)	Arcon N33	2		1,1	1,3	54	74	47
	EI (F) 60	27	15	K/N - Float	4	Arcon N33	2		1,1	1,4	60	76	
	EI (F) 60	27	15	K/N - Float	6	Arcon N33	2		1,1	1,4	58	76	
	EI (F) 60	23	16	K/N - VSG	7 (3.3.2)	Arcon N33	2		1,1	1,4	55	76	45
	EI (F) 60	23	16	K/N - VSG	7 (3.3.2 SC)	Arcon N33	2		1,1	1,4	55	76	47
	EI (F) 60	23	16	K/N - VSG	9 (4.4.2)	Arcon N33	2		1,1	1,3	54	75	46
	EI (F) 60	23	16	K/N - VSG	9 (4.4.2 SC)	Arcon N33	2		1,1	1,3	54	75	50
	EI (F) 60	23	16	K/N - VSG	13 (6.6.2)	Arcon N33	2		1,1	1,3	52	74	47
	EI (F) 60	23	16	K/N - VSG	13 (6.6.2 SC)	Arcon N33	2		1,1	1,3	52	74	51
	EI (F) 90	37	15	K/N - VSG	7 (3.3.2)	Arcon N33	2		1,1	1,3	55	73	
	EI (F) 90	40	15	K/N - Float	4	Arcon N33	2		1,1	1,3	59	74	
	EI (F) 90	40	15	K/N - Float	6	Arcon N33	2		1,1	1,3	58	73	
Solar protection													
DGU PYRANOVA®	EI (F) 30	19	15	K/N - Float	6	ipasol neutral 50/27	2		1,1	1,4	27	47	
	EI (F) 30	19	15	K/N - ESG	6	ipasol shine 40/22	2		1,1	1,4	22	38	
	EI (F) 30	19	15	K/N - ESG	6	ipasol sky 30/17	2		1,1	1,4	17	28	
	EI (F) 30	19	15	K/N - Float	6	ipasol platin 47/29	2		1,1	1,4	29	44	
	EI (F) 30	15	15	K/N - VSG	7 (3.3.2)	ipasol platin 47/29	2		1,1	1,4	28	44	
Sound protection													
DGU PYRANOVA®	EI (F) 30	15	15	K/N - VSG	7 (3.3.2 SC)	Arcon N33	2		1,1	1,4	55	75	45
	EI (F) 30	19 SC	15	K/N - VSG	7 (3.3.2 SC)	Arcon N33	2		1,1	1,4	54	74	46
	EI (F) 30	19 SC	15	K/N - VSG	9 (4.4.2 SC)	Arcon N33	2		1,1	1,4	53	73	47
	EI (F) 30	19 SC	18	K/N - VSG	7 (3.3.2 SC)	Arcon N33	2		1,1	1,3	54	74	47
	EI (F) 60	23	16	K/N - VSG	7 (3.3.2 SC)	Arcon N33	2		1,1	1,4	55	76	47
	EI (F) 60	23	16	K/N - VSG	9 (4.4.2 SC)	Arcon N33	2		1,1	1,3	54	75	50
	EI (F) 60	23	16	K/N - VSG	13 (6.6.2 SC)	Arcon N33	2		1,1	1,3	52	74	51

K/N = soda-lime glass ; VSG = laminated safety glass ; ESG = safety glass

SCHOTT. Your partner for fire protection.

First-class products are the basis at SCHOTT – here you can find the decisive extras.

In 1887 Otto Schott invented thermal resistant borosilicate glass.
Since that time, SCHOTT has been continually expanding its head start in expertise.

Our expertise is your safety.

SCHOTT is certified in Germany in accordance with DIN EN ISO 9001:2000. Both our products and our production process are monitored regularly by an internal quality management system as well as national and international authorities. Product samples are taken at regular intervals by the authorities and tested in accordance with governing regulations. All glass panes are marked with a permanent stamp listing the name of the company, the glass type and the glass thickness. All glass types in SCHOTT's range of fire resistant glazing are CE certified.

Individualized advice and support

The many different areas of application for fire resistant glass and their combinations with other building components require in-depth technical consultation. With over 30 years of experience in the fire protection industry, SCHOTT's expert support and advice, both in-house and out in the field, guarantee our business partners safety in every phase of their building project. Additional services that we gladly provide go beyond just delivery and include support in dealing with building authorities, assistance in obtaining individual approvals as well as expert monitoring during the complete building project.

Training

SCHOTT shares its know-how. The authorisation holder is obligated to inform, train and ensure a steady exchange of information with the contracting companies regarding the conditions of the general building supervisory approval and of those surrounding manufacture of the object of approval. SCHOTT provides this service upon request and in periodic seminars. The proper installation of fire resistant glass can only be guaranteed by companies which have been accordingly schooled and registered as authorised partners for the installation of fire resistant glazing.

Logistics – You order, SCHOTT delivers

Modern and efficient logistic solutions ensure punctual deliveries – around the world and around the clock. In SCHOTT's order and logistics center, you will always find the right person to process your orders quickly. SCHOTT guarantees fast processing of quotations, shortest delivery times as well as quick and accommodating handling of complaints – from Andorra to Zagreb.

Architects can profit in every way from decades of experience in fire resistant glass: SCHOTT offers expert consultation – in house or on site. SCHOTT is at your side – when it comes to securing approval from the building authorities in individual cases. SHOTT will accompany you throughout the entire project upon request. And, of course, SCHOTT delivers on time worldwide.