



Fire-resistant glass

- Pilkington Pyrostop®
- Pilkington Pyrodur®
- Pilkington Pyroclear®



PILKINGTON
NSG Group Flat Glass Business



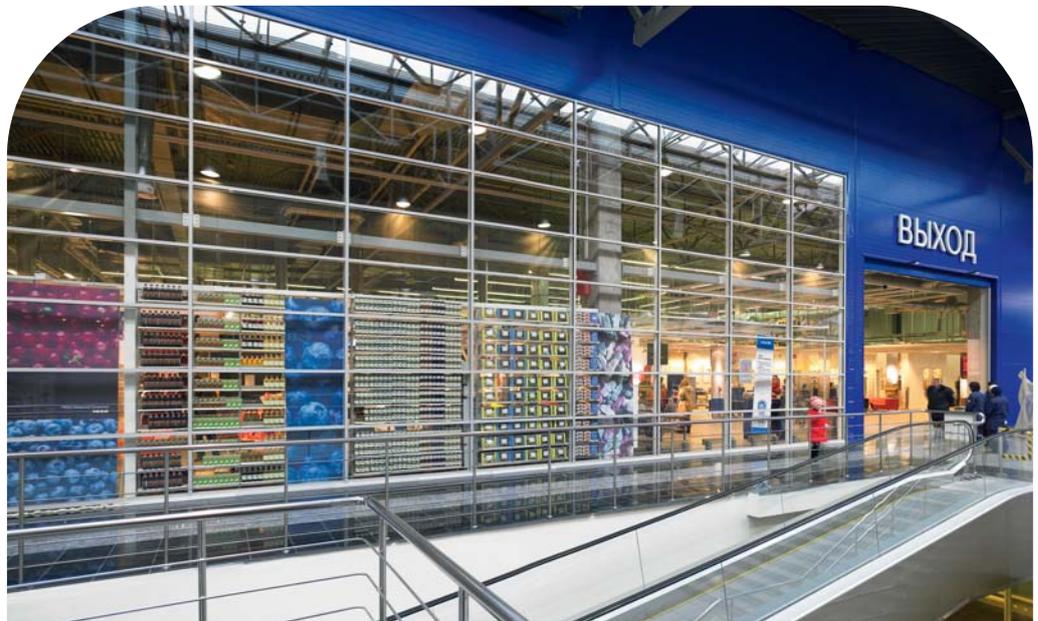
Chicago Art Institute,
Chicago (USA).

About Pilkington

We have been manufacturing and processing glass since 1826. This experience has been invaluable and has enabled us to invest in and develop our ideas into world leading products. Products like high-quality float glass, coated, toughened, laminated, fire-resistant and specialist glass, as well as energy saving Insulating Glass Units were developed by combining our unrivalled technical expertise with true innovation.

Today Pilkington as part of the NSG group supplies these products to its partners in 130 different countries – just one of the reasons why the brand Pilkington has become synonymous with glass. Pilkington fire-resistant glasses enjoy an excellent reputation on the global market and have been doing so since more than three decades.

IKEA Furniture Store,
Moscow (RUS).



Title page:
340 East Randolph,
Chicago (USA).

A clear choice with strong performance

Fire protection solutions have to be targeted to suit specific needs. Architects are looking for elegant, transparent and visually appealing designs which comply with the mandatory requirements of building authorities. For investors, building owners and facility managers the priority is peace of mind, with ease of maintenance, a high level of reliability, affordability and low life cycle costs. Installers and fabricators take it for granted that fire-resistant glass is available in a range of practical and approved sustainable solutions and is of high quality.

Pilkington's clear fire-resistant glass range fulfils these varying demands. Our research and development programmes for such complex products cater for the involvement of all who are part of the process. We encourage an open dialogue with architects, civil engineers, building owners and occupants, system companies, fabricators and installers as well as with authorities and test laboratories. The sharing of and furthering of knowledge and experience are part of Pilkington's business objective, aiming to constantly improve the quality and performance of both our products and services.

Three product lines – three strong performers

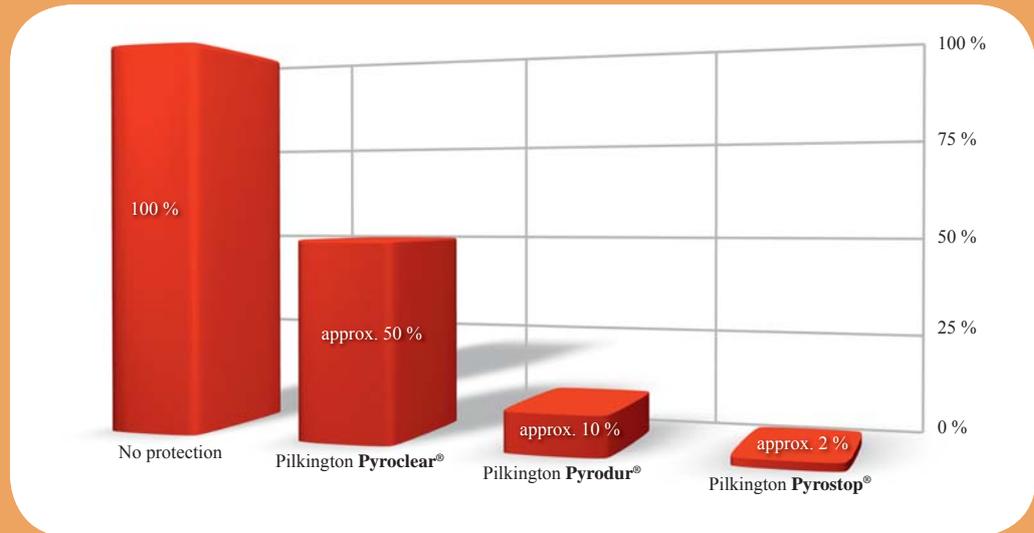
	Requirements	Classification (acc. to EN 13501-2)	Product line
	Full thermal insulation (basic integrity + thermal insulation)	EL...	Pilkington Pyrostop ®
	Enhanced integrity (basic integrity + reduced heat radiation)	EW...	Pilkington Pyrodur ®
	Basic integrity (barrier against smoke, flames and fumes)	E...	Pilkington Pyroclear ®

Benefits

- Reliable, repeatable, and reproducible performance
- Unrivalled range of tested and approved framing solutions for internal doors, screens and floors as well as external façade and roof applications
- Complete product range to meet the requirements for various international fire test standards (EN, BS, UL, ASTM, GB etc.)
- CE-marked products acc. to EN 14449, EN 12150 and EN 1279
- More than 1000 approvals in various framing systems according to international standards
- Designed to be combined with additional functional properties such as burglar resistance, impact resistance, sound insulation, low-emissivity and solar control performance
- Suitable for large projects with complex safety and protection requirements to achieve high levels of safety (high-rise buildings, sport arenas and stadiums, schools, hospitals, airports, parliament buildings and railway stations)
- Technical Advice and Support for project specific solutions for prestigious designs is available
- Practical solutions for various designs, sizes and types of buildings – for new build and refurbishment
- Subject to third party certification schemes
- Remarkable temperature stability (from -40 °C up to +50 °C)
- Achieving highest safety classes
- Global presence and availability

Level of radiant heat transfer by product line

Heat transfer after 30 minutes of exposure to a standard fire for Pilkington Fire-resistant Glasses.



Pilkington Pyrostop® The choice for full insulation performance

Pilkington **Pyrostop®** is a clear fire-resistant glass well suited for many different applications.

Pilkington **Pyrostop®** achieves full thermal insulation, by providing basic integrity performance (forming a resilient barrier to flames, hot gases and smoke) and effectively blocking heat transfer to the protected, safe side of a fire screen.

The consistently high performance of Pilkington **Pyrostop®** in fire tests and real fires is an attribute of its well researched and refined multi-layer intumescent technology. Several float glass layers are combined with special transparent fire protection interlayers. In case of fire the glass pane facing the fire cracks and the first interlayer foams up and turns opaque, blocking out the fire and absorbing its energy. This continues progressively layer by layer providing a capacity by design to withstand intense fires for extended periods of time. The glass unit remains intact, heat is effectively blocked, and the robust fire and smoke resistance performance is maintained for the entire period of exposure to fire.

Benefits

- Premium brand with international recognition
- Maximum level of protection: integrity performance with full insulation against transfer of heat for standard test times ranging from 30 to 180 minutes (acc. to EN 13501-2 class EI)
- Designed for use in escape and emergency exits, emergency doors to staircases; as well as for use in compartmentation walls, floors, and roofs
- Developed for protection from flashover through the façade for transparent applications requiring high levels of fire resistance to limit fire spread in the same building and from building to building
- Tested and approved by fire test laboratories all over the world according to various fire testing standards
- Maximum reliability in fire tests and consistent intumescence function
- Wide range of applications combining additional functional properties where required
- Glass compositions with maximised light transmittance using low iron glass where appropriate for enhanced visual clarity
- Withstands hose stream test (required by some fire test standards)
- Available through a network of Pilkington branches and licensed independent processors at competitive lead times



Rheinparkhallen, Cologne (D).



Airport Terminal B,
Dusseldorf (D).

Pilkington Pyrodur®

The choice for integrity performance with reduced radiant heat transfer

Pilkington **Pyrodur**® is a clear fire-resistant glass designed to meet the enhanced integrity performance criteria as a consistent barrier against flames, hot gases and smoke as well as reducing the transfer of radiant heat. It relies on the same generic technology as Pilkington **Pyrostop**®.

In addition to basic integrity performance, Pilkington **Pyrodur**® significantly reduces the transfer of radiant heat and may even provide a minimum level of full insulation (for standard test times of 15 minutes). Pilkington **Pyrodur**® is a robust, enhanced integrity fire-resistant glass, ideal for use in doors and glazed screens leading to escape ways where integrity performance is required as minimum level of protection by regulation.

Benefits

- Brand with international recognition
- Reliable level of protection: combining consistent basic integrity performance with reduced radiant heat transfer (acc. to EN 13501-2 class EW) for 30 to 60 minutes
- Designed for use in internal partitions, façade and smoke proof door applications which need to provide E/EW levels of fire resistance
- Tested and approved by well recognised and certified fire test laboratories worldwide
- Wide range of applications combining additional functional properties where required
- Enhances the fire resistance performance of integrity framing systems
- Well suited for use in timber doors and partitions
- Available through a network of Pilkington branches and licensed independent processors at competitive lead times



Pilkington Fire-resistant Glass is certified for conformity to the applicable harmonised European standards. Third party inspection of the production is part of a comprehensive quality management system to secure consistent top-level product quality.



Savings Bank Starkenburg,
Heppenheim (D).



Pilkington **Pyroclear**® a reliable basic integrity only fire-resistant glass (up to E 60).

Pilkington **Pyroclear**® The choice for basic integrity performance

The uniquely designed edge technology makes Pilkington **Pyroclear**® a dependable and robust performer in event of fire. It is intended for use as a smoke retardant barrier and basic integrity fire-resistant glass where fire loads are expected to be limited. Its capability to perform in fire tests with its edges covered by up to 15 mm is rather unique and makes Pilkington **Pyroclear**® a practical, convenient choice for various glazing situations.

The distinctive feature of Pilkington **Pyroclear**® is enhanced performance reliability, based on attention to detail in technology, processing quality, and knowledge of the fire risks based on more than 30 years' experience with clear fire-resistant glass. Pilkington **Pyroclear**® is the clear choice for cost effective basic integrity fire-resistant glazings.

Benefits

- Basic integrity performance for up to 60 minutes (acc. to EN 13501-2 class E)
- Safe and consistent performance whilst permitting pragmatic framing edge cover from 10 mm up to 15 mm and therefore being suitable for common fire-resistant glazing systems
- Safe and consistent performance due to a specially engineered edge system for providing a high degree of resilience against thermal stress in case of fire
- Its edge protection tape as an integral part of the product is a good indicator for any damage of the glass edge
- Available as monolithic and insulated glass units with high optical quality
- Impressive track record in fire tests and comprehensive fire test programmes
- Well suited for cost effective fire-resistant glazing based on risk based design requiring the minimum level of fire protection



Permanent product mark

Fire-resistant glass from Pilkington is marked with the name of the manufacturer, name of product, classified fire resistance class, product code and year of production.

The special Pilkington **Pyroclear**® manufacturing process requires precise edge finishing and well controlled handling achieved by using and applying dedicated processing equipment and process systems which have been engineered by the NSG Group.



Examples of applications incorporating Pilkington Fire-resistant Glass

- Large-area partitions for compartmentation walls
- Single and double leaf doors with fixed lites and surrounding glazed screens
- Internal and external façade systems
- Sliding doors
- Door and wall systems as structural glazing look-a-like
- Roof glazing
- Horizontal glazing for floors, loaded or non-loaded



Radisson Hotel, Rostock (D)



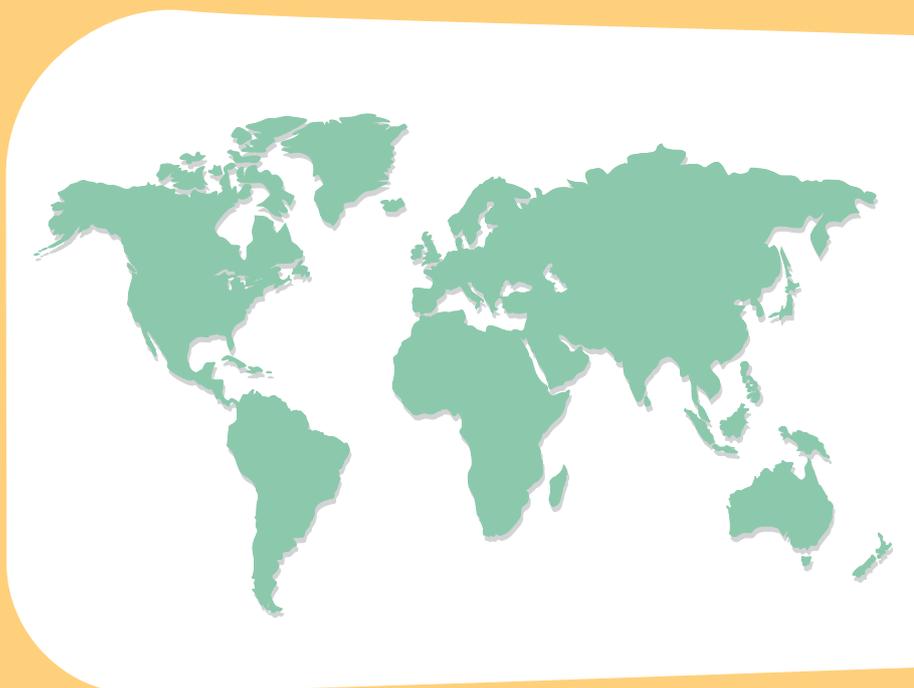
– Image left –
Sheikh Essa Library, Bahrain
(UAE).



– Image right –
WHO, Geneva (CH).

Global presence

Pilkington is part of the NSG Group which is one of world's largest manufacturers of glass and glazing products, primarily serving the building and automotive markets. The company has annual sales of about 4,7 billion € and employs nearly 28.500 people, with manufacturing operations on four continents (July 2010). The NSG Group has three business lines: Building Products, Automotive and Specialty Glass.



This publication provides only a general description of the product. Further, more detailed information may be obtained from your local Pilkington Building Products supplier. It is the responsibility of the user to ensure that the use of this product is appropriate for any particular application and that such use complies with all relevant legislation, standards, code of practice and other requirements.

To the fullest extent permitted by applicable laws, the companies of NSG Group disclaim all liability for any error in or omission from this publication and for all consequences of relying on it.

Pilkington is a trade mark of NSG Group.



CE marking confirms that a product complies with its relevant harmonised European Norm.
The CE marking label for each product, including declared values, can be found at www.pilkington.com/CE.



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