AIS | PYROBEL
FIRE-RESISTANT GLASS

KEEP THE FIRE FROM SPREADING

Importance of Fire Protection Systems

A small spark is enough to cause a huge incident. By establishing a fire prevention plan for your building, you can avoid fatalities and costly damages. Fire-prevention systems can broadly be classified into two categories: Active Fire Protection and Passive Fire Protection.

Active Fire Protection (AFP) systems require a certain motion and response to combat fire and can be either automatic or manual. These systems require periodic maintenance and audits to verify their workability and response to fire.

Passive Fire Protection (PFP) systems prevent the spread of fire by creating barriers to its passage for a limited time, enabling occupants to move to a safe environment.

FIRE PROTECTION SYSTEM			
PASSIVE FIRE PROTECTION	ACTIVE FIRE PROTECTION		
Constructional	Technical	Organisational	Public
Escape Routes	Sprinkler Systems	Ordinances of Workplaces	Fire Department
Compartmentation	Extinguishers	Instructions to Occupants	Water Supply
Behaviour of Construction Materials in Case of Fire	Flues	Fire Safety Regulations	Emergency Calls
	Hypoxic Air Suppression	Fire Safety Drills and Audits	Fire Alarms

Regulations around the World for Passive Fire Protection

Country	Europe	Germany	UK	USA	India
Standards	DIN EN 1363	DIN 4102	BS 476	UL 9	EN 1363/UL 9/ BS 476
Institute	efectis \ TNO	DIBt	Warrington	-	CBRI
Test	Impact and Fire Test			Hose Stream Test	Impact, Fire and Hose Stream Test

PFP is an essential fire safety strategy for any building. If proper planning, installation and maintenance are implemented, passive fire protection can save lives and the building itself. While PFP may not provide a complete fire-safety solution, when combined with AFP, it can make a big difference in case of an emergency.

Types of Regulated Openings

Rated Doors	Rated Windows	Rated Glazing
Access doors	Casement windows	Clear ceramics
Accordion / Folding doors	Double-hung windows	Insulated glass
Bi-parting doors	Glass Block windows	Laminated glass
Conveying system doors	Hinged windows	Light-diffusing plastic
Chute doors	Pivot windows	Light-transmitting plastic
Dutch doors	Sidelight windows	Fire-rated glazing
Floor fire doors	Stationary windows	Tempered glass
Hoist-way doors	Tilting windows	Transparent ceramics
Horizontal doors	Transom windows	Wire glass

AIS PYROBEL

AIS Pyrobel is a high-end, fire-resistant glass range, specially engineered to withstand extreme levels of heat, restrict heat transfer and prevent smoke and flames from spreading.

HOW IT WORKS

AIS Pyrobel is a multi-laminated glass assembled with clear intumescent interlayers. In case of fire, these interlayers expand at around 120°C and transform into a rigid and opaque shield.

PYROBEL: FROM AGC TO AIS

Pyrobel is a proven and tested world-class product from our partner AGC. With huge strides being made in design and safety standards of buildings in India, the need for quality fire-resistant glass products has become critical. This is why Pyrobel is now brought to you by AIS.

Features and Benefits

- Provides safety against fire, heat and smoke for extended periods
- Ensures protection against radiation and conductive heat transfer
- Double-sided fire-resistant glass - thus provides protection at both the sides
- Rated EW 30, EW 60, EW 120, EI 30, EI 60, EI 90, EI 120 and EI 180
- Safety glass according to EN 12600 (3B3, 2B2 or 1B1 according to product type)
- Approved in wooden, steel and aluminium framing systems
- Approved in frameless systems named PYROBEL VISION LINE
- Available as single internal glazing and single external glazing with a UV filter (EG type), and double-glazing unit (DGU) in combination with any other AIS glass product

Additional Benefits

- Provides excellent noise reduction of up to 49 decibels*
- Resists high loads of pressure, making it almost unbreakable
- Inspires architects and designers to create a safe and aesthetically pleasing environment

*Conditions apply

Classifications of AIS Pyrobel glass

Pyrobel is available in all resistance classes:
Integrity (E), Radiation Resistance (EW) and Heat Insulation (EI).

1. **E Class – Integrity:** They provide only integrity. These are special tempered glasses and they prevent the spread of flames to the non-fire side. They are normally used for internal applications.

2. **EW Class – Integrity & Low Radiation:** These are tempered and laminated glasses. They prevent the flames from spreading and also control the radiation on the non-fire side to a maximum of 15 kW per sq.m. They offer integrity and provide for low heat radiation. They are used for both interior as well as for exterior applcations.

3. **EI Class – Integrity & Insulation:** This type of glass offers integrity and insulation. The maximum temperature on the non-fire side does not exceed an average of 140°C.

E 'Integrity': Retains flames

E 'Integrity' and ensures flames limitation': Restricts heat transfer to no more than 15 kW/m^2

EI 'Integrity and Insulation': Blocks heat transfer

Choose your AIS Pyrobel

Building Application	Fire Rating EN 13501-2	Safety Rating on FR Glass EN 12600	Approved Sizes (1)	Product (2)
Interior Doors & Screens Single Glass	EW 30	3B3	Medium	PYROBELite 7
		2B2	Medium	PYROBELite 10
		1B1	Medium	PYROBELite 9 EG
	EW 60	2B2	Medium	PYROBEL 16
				PYROBELite 12
	EW 120	1B1	Medium	PYROBEL-T EW 120 - 16
	EI 30	2B2	Large	PYROBEL 16
		1B1	Large	PYROBEL 16 EG
	EI 60	1B1	Large	PYROBEL 25 & 25 EG
	EI 90	1B1	Large	PYROBEL 30
	EI 120	1B1	Large	PYROBEL 53 N
Interior Screens Butt-Jointed Single Glass	EI 30	2B2	Large	PYROBEL 16 Vision Line
		1B1	Large	PYROBEL 16 EG Vision Line
	EW 120	1B1	Medium	PYROBEL T EW 120 - 16
	EI 60	1B1	Large	PYROBEL 25 Vision Line
			Large	PYROBEL 25 EG Vision Line
	EI 120	1B1	Large	PYROBEL 53 N Vision Line
Outside Windows & Curtain Walls Double Glass	EW 30	1B1	Medium	PYROBELite 9 EG IGU
	EI 30	1B1	Large	PYROBEL 16 EG IGU
	EI 60	1B1	Large	PYROBEL 25 IGU
	EI 90	1B1	Large	PYROBEL 30 IGU
	EI 120	1B1	Large	PYROBEL 53 N IGU
Horizontal Floors & Ceilings Single Glass	EI 30	1B1	Medium	PYROBEL 19 H
	EI 60	1B1	Medium	PYROBEL 28 H

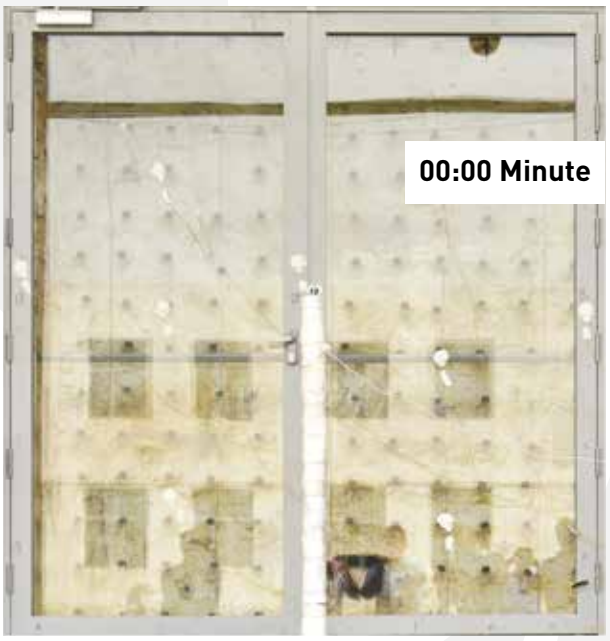
(1) For more information about the approved framing systems and sizes, please contact the sales representative

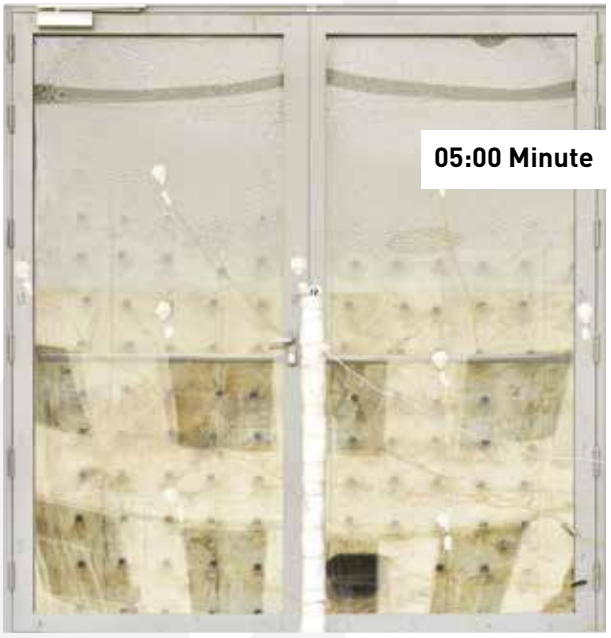
(2) PYROBELite in IGU structure can be either 6 - air - PYROBELite EG or Laminated glass 33.2 - air - PYROBELite, all combined with or without all types of coatings

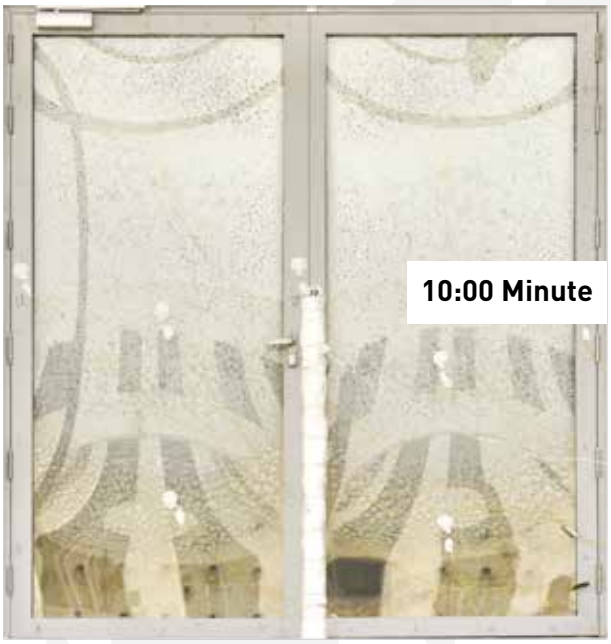
All PYROBELite EG structures can be combined with Stratobel approved Anti-bandit (EN 356) or Anti-bullet (EN 1063) glasses

Testing

The pictures shown below are taken from a test which was conducted in a controlled environment. They showcase the unparalleled fire-resistance capacity of AIS Pyrobel Glass.







Product: Pyrobel T EW 120-16
Glass integrity → 120 mins and insulation → 20 mins

Product: Pyrobel T EW 120-16
Glass integrity → 120 mins and insulation → 20 mins

Technical Specifications

Parameters	Pyrobelite 7 EW 30	Pyrobelite 12 EW 60 / EI 20	Pyrobel-T EW 120 - 16 / EI 20	Pyrobel 16 EW 60 / EI 30	Pyrobel 25 EI 60	Pyrobel 30 EI 90	Pyrobel 53N EI 120
Technology	Multilayer Clear Intumescent Interlayer	Multilayer Clear Intumescent Interlayer	Tempered Gel-filled	Multilayer Clear Intumescent Interlayer	Multilayer Clear Intumescent Interlayer	Multilayer Clear Intumescent Interlayer	Multilayer Clear Intumescent Interlayer
Glazing Type*	Single	Single	Single	Single	Single	Single	Single
Application*	Interior	Interior	Interior / Exterior	Interior	Interior	Interior	Interior
Nominal Thickness	7.9 mm	12.3 mm	16 mm	17.3 mm	26.6 mm	30.0 mm	52.7 mm
Thickness Tolerance	± 0.9 mm	± 1 mm	± 1 mm	± 1 mm	± 2 mm	± 2.5 mm	± 3 mm
Weight	17 kg/sq.m.	27 kg/sq.m.	36 kg/sq.m.	40 kg/sq.m.	60 kg/sq.m.	69 kg/sq.m.	122 kg/sq.m.
Dimension Tolerance	± 2 mm	± 2 mm	± 2 mm	± 2 mm	± 2 mm	± 2 mm	± 3 mm
Light Transmission (EN 410)	89%	86%	87%	84%	81%	83%	75%
Ug Value (EN 673)	5.7 W/sq.m. K	5.6 W/sq.m. K	5.4 W/sq.m. K	5.4 W/sq.m. K	5.2 W/sq.m. K	5.1 W/sq.m. K	4.5 W/sq.m. K
Safety Rating (BS6206) (EN 12600)	Class C 3B3	Class B 2B2	Class A 1B1	Class B 2B2	Class A 1B1	Class A 1B1	Class A 1B1
Sound Reduction Rw Index 9EN12758)	34 dB	36 dB	37 dB	39 dB	40 dB	42 dB	48 dB
Cuttable	Yes	Yes	No	Yes	Yes	Yes	Yes

*For fire resistance glass of high-performance parameters, to be used as exterior façades, please get in touch with our sales team.

Aesthetically Appealing

AIS Pyrobel Glass walls are safer alternatives to brick walls with wooden or metal fire doors. This aesthetically appealing glass solution enables a brighter and modern look, along with a spacious and airy feel.

FIG 1

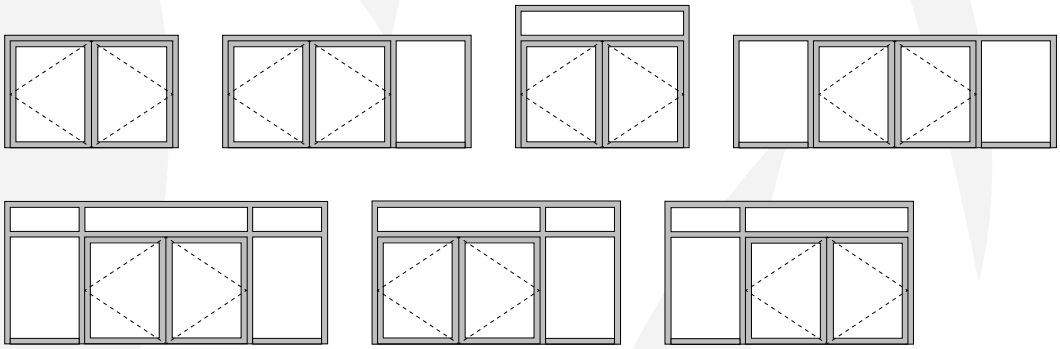
FIG 2

Notice how the use of glass in Fig 2 makes a space look so much more bright and airy.

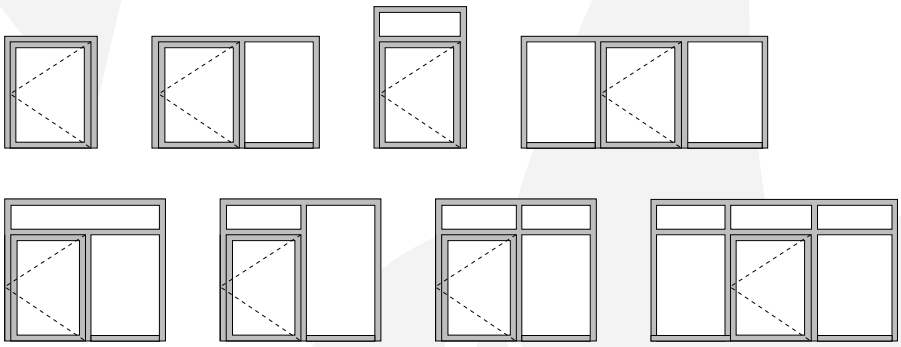
Possible Configurations

Maximum Size: As per glass type, frame system & valid test report.

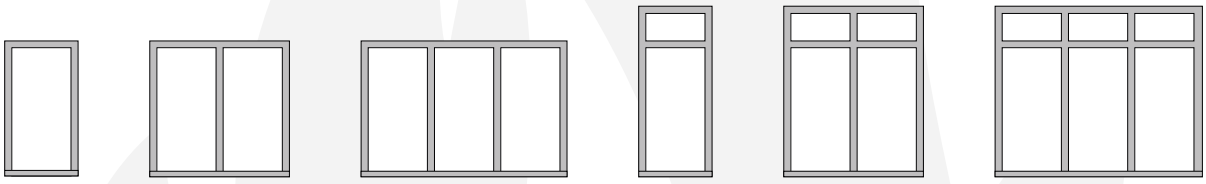
DOUBLE LEAF DOOR



SINGLE LEAF DOOR



FIXED PARTITION



ADVANTAGES

- AIS Pyrobel fire-resistant glass complies with all integrity and insulation criteria
- Clear glass provides distortion-free vision
- It does not incorporate any wire and its light transmission is comparable to clear float glass
- Safety glass that meets the requirements of BS 6206
- Excellent sound reduction properties
- Available in large sizes, up to 290 cm height
- Can be customised to incorporate other products such as solar-control, low emissivity, patterned or tinted glass
- Available in rectangular, rectilinear or curvilinear shapes
- Can be easily fitted into most fire screens and doors
- Available in sizes, ranging from 300 mm x 450 mm up to 2,900 mm height for Pyrobel-T
- Pyrobel T provides double-sided protection

Compliance

Fire resistance glass products are only part of overall fire-resistant elements. It is the responsibility of the installer to ensure that the fire-resistant element as a whole satisfies the regulations and / or to obtain the approval from the competent authorities. AIS does not accept any liability should the fire-resistant glass be installed in systems that do not comply with regulations.

A visible stamp should be placed on the glass in order to identify the product with its classification and position in the structure. AIS Pyrobel is a two-sided fire-resistant glass. For correct installation in case of UV radiation, the stamp must be readable from the inside of the building.

Storage and Handling Instructions

- On racks, Fire-Resistant Glass Products must be stored slightly inclined (6° to 10° from the vertical) and fully supported
- A soft spacer must be placed between each glazing
- Do not pile up more than 20 sheets per rack
- Must be stored in dry and ventilated conditions, at temperatures ranging between -40°C and +50°C.

Installation and Glazing Instructions

- AIS Pyrobel cannot be cut on site and the edge protection tape must not be removed nor damaged
- Before installation, AIS Pyrobel must be checked to ensure that it is not damaged, especially along the edges
- Do not allow any contact of the glazing's edges with water
- Avoid all glass-to-metal contact
- Do not exercise any restraint on the glazing
- Do not instal AIS Pyrobel in locations where the temperature might exceed +50°C
- Always refer to the fire test report details
- For external applications, or in case of direct solar radiation on the glazing, AIS Pyrobel is available as an external grade (EG), with a UV filter
- Pyrobel External Grade must be correctly oriented with its stamp readable from the UV opposite surface side

Uncompromising Quality

The quality and performance of the AIS Pyrobel range is carefully controlled at each stage of production. However, due to the nature of the special intumescent interlayers, they may exhibit or develop some minor imperfections such as small inclusions and bubbles, a slight distortion and a light haze.

These features do not affect the free vision nor shall the fire resistance of the glazing be considered defective, provided the variation of haze and light transmission does not exceed 5%.

Applications

AIS Pyrobel can be used in all applications where building regulations stipulate a specific level of fire resistance and where natural light and clear visibility are required, such as:

- Hospitals
- Schools
- Hotels, restaurants
- Stores, shopping centres, malls
- Office buildings, computer rooms
- Industrial buildings, warehouses, laboratories, airports

















Design Applications

Partitions

Fire-rated glass serves as an exceptional material of choice due to its transparency, longevity and almost zero-maintenance.

Fully Glazed Fire Doors

A glass-glazed option to regular fire-doors provides complete transparency and better aesthetics.

Façades and Windows

When used in façades, they stop the fire from spreading inside-out or outside-in.

Floors

Fire-safe floors utilise glass and other glazing materials to stop the flow of fire between floors.

Data Storage and Server Room Enclosures

Preservation of electronic data against risk of fire is critical and almost all server and data room enclosures are now designed with fire-rated glass products.

Stair Enclosures

Staircases are the fastest and safest exit routes in most constructions and it is important to protect their access points with fire-rated doors with inbuilt vision panels. These vision panels greatly assist in understanding the extent of fire and help coordinate getaways from fire-affected areas.

Lift Doors and Enclosures

Fire-rated glass doors help in identifying potential survivors on either side as the glass is transparent throughout the fire and can greatly help rescue efforts.

Asahi India Glass Ltd.

301 & 301A, 3rd Floor, Platinum Technopark
Sector 30A, Vashi, Navi Mumbai - 400 705
Tel: (022) 6656 8700
E-mail: seemore@aisglass.com
www.aisglass.com

Mr. Tushar Zope
Mobile: +91 88792 94014
E-mail: tushar.zope@aisglass.com.

Follow us:

To experience glass like never before,
download the AIS apps now!

December 2019