AIS | PYROBEL
FIRE-RESISTANT GLASS

THE ULTIMATE SOLUTION FOR FIRE PROTECTION IS HERE!

Importance of Fire Protection Systems

A small spark is enough to cause a huge incident. By establishing a fire protection plan for your building, you can avoid fatalities and costly damages. Fire protection 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 Systems

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/IS 16945/ IS 16947
Institute	Efectis/TNO	DIBt	Warrington	-	CBRI/NABL Lab
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

Protect Your Building and its Occupants with AIS Pyrobel's Specialised Glass Solutions

Ensuring the safety of your building and its occupants is paramount, and when it comes to fire safety, there's no room for compromise. AIS Pyrobel offers high-quality glass solutions that can help you prepare for unexpected fire breakouts and minimise the risk of fatalities. With years of experience in providing specialised glass solutions to builders, architects, and designers, AIS understands that every building has unique requirements. Our multifunctional glass solutions offer safe, secure, and comfortable living & working, along with enhanced aesthetics. Don't take any chances when it comes to fire safety in your building. Contact our experts at AIS today and give your building the ideal protection.

AIS | PYROBEL FIRE-RESISTANT GLASS

Roorkee Manufacturing Plant for Pyrobel-T

Regulations and Classifications

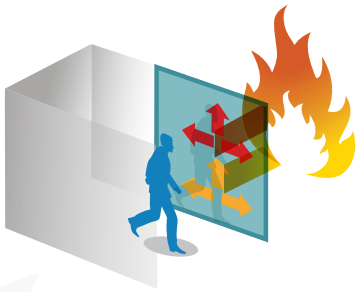
The requirements and regulations regarding fire safety in buildings and construction projects are becoming increasingly stringent. The use of fire-resistant glass is now essential in all buildings accessible to the public.

How to evaluate the fire resistance of the glass?

Resistance is quantified via classes defined by European and international standards. The following 3 classes are defined by the standard EN 13501-2:

E "Integrity"
No flames, smoke, gas.
No heat reduction

EW "Integrity and radiation limitation"
No flames, smoke, gas.
Limited heat reduction
Restricted to no more than 15 kW/Sq.m



EI "Integrity and Insulation"
No flames, smoke, gas.
No heat transfer

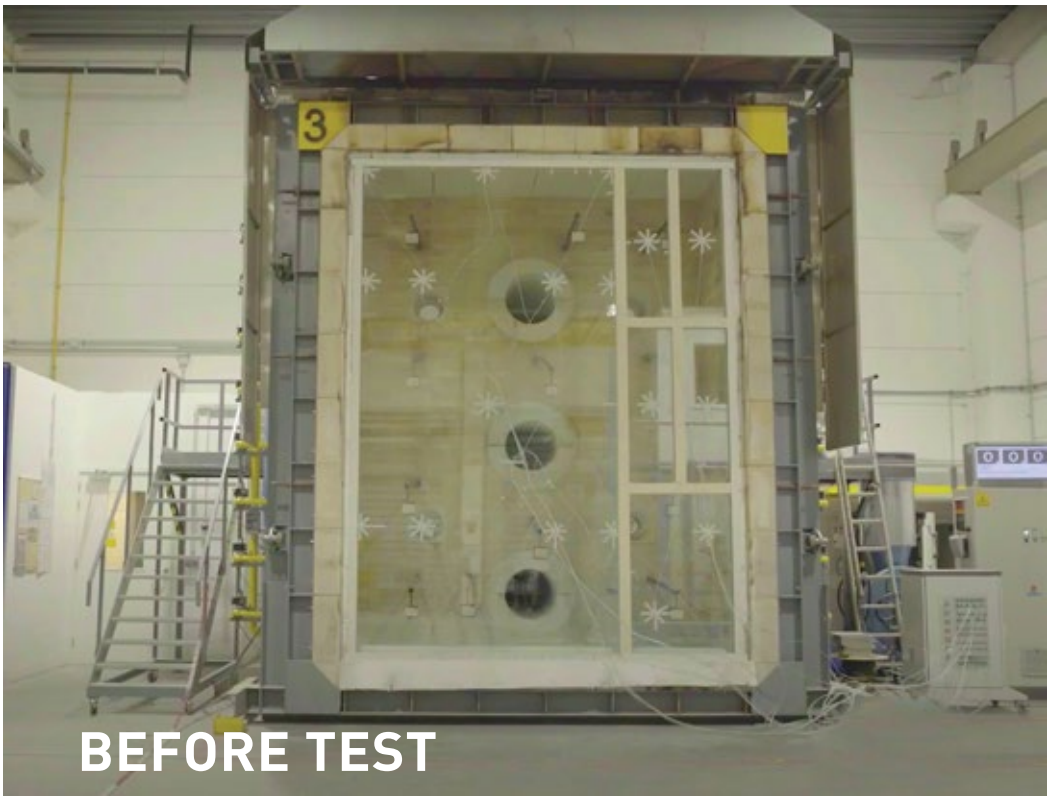
To classify and rank the glazed elements, accredited laboratories perform **fire resistance tests**.

Each glass element's fire resistance is defined by **the period (in minutes)** for which the element meets one or more criteria (E, EW, EI) at the same time.

AIS Pyrobel-T meets all the requirements, standards, and directives in force worldwide in terms of fire safety. The purpose of these standards is to ensure the safety of people in any type of building and **to enable building occupants to be evacuated safely.**

Standing the Test of Fire

AIS Pyrobel-T is extensively tested in government-approved labs with fire-resistant doors, windows, and partitions as per EN 1634-1, IS 16945, and BS 476-Part 22.



Fire-resistance Tests

NOT JUST GLASS

Fire resistance pertains to **a whole building element**, not just one of its components. Therefore, its classification relates to the whole unit being tested, consisting of the glass and the frame (the glazed element). This means that tests must be tailored to the type of element involved. Consequently, to be used as such, the performance of glass products and their environment must be documented in a test report.

TEST REPORTS

Approved laboratories conduct fire-resistance tests to classify glazed elements, with the element to be tested being placed in front of a **furnace**. For this, an element of the actual size or maximum possible size will be used. If the element **passes the test**, the results are **documented in official test reports or certificates, and the glazing solution can then be put on the market.** In certain cases or localities, additional local requirements may apply. Every aspect of the **structural work** must be carried out in accordance with the test report.

Products are tested as per the below standards and are meeting compliance requirements as per NBC – 2016:

Configurations	EN Standards	IS Standard
Doors	EN 1634-1	IS 16945
Partitions	EN 1364-1	IS 16947

Detailed instructions on installation are provided in **the test reports** for every tested glazed element. Please check with the local representative for test reports **and door manufacturer details.**

AIS Fire Resistant Glass Offering

PYROBEL(ITE)

Pyrobel(ite) is **the most tested fire-rated glass in today's market**. It can deliver **fire resistance for up to 180 minutes**. Due to its high level of flatness and the transparency of its intumescent interlayers, Pyrobel(ite) has a similar appearance to standard laminated glass. The distribution through our stockists, specialist glass processors, provides **very quick delivery times**.

VISION LINE

The Vision Line system is a fire-resistant solution for **stylish, all-glass walls without mullions**. **Pyrobel Vision Line Corner** is a version that allows glazing to be installed edge-to-edge with surfaces at angles ranging from 90° to 180°.

PYROBEL-T

Pyrobel-T is **fire-resistant glass in XXL size:** Up to 2 metres wide and 4.5 metres high. It provides superb light transmission.

PYROPANE

Pyropane glass is the ideal choice for **fixed smoke barriers** and is suitable for **exterior applications** in double glazing.

GLASS EXPERTS WHO ARE THERE FOR YOU

We offer a **comprehensive range of fire-resistant glass, tested and approved** in accordance with domestic and international standards. But our services are not limited to just manufacturing glass. Our qualified experts provide **specialist technical support**, delivering customised solutions and advice tailored to the specific regulations in force.

Our thinking goes beyond fire protection and provides a comprehensive approach that integrates all the relevant solutions of AIS.

Pyrobel-T

MADE IN INDIA

Pyrobel-T is the ideal XXL fire-resistant glass for airports, shopping centres, sports complexes, and other public buildings. The glass has a very high light transmission and is available in sizes up to 2 metres by 4.5 metres. Every single tempered glass pane constituting the Pyrobel-T undergoes a Heat Soak Test. Your safety is our priority!

Advantages

Large Size
The fire-resistant Pyrobel-T glass can be delivered in very large sizes.

Superb Transparency
Pyrobel-T has an exceptional light transmission.

Fire-resistant
In addition to its excellent fire resistance performance, Pyrobel-T provides resistance to impacts, water and UV rays.

100% Heat Soak Tested
Nickel sulphide inclusions (NiS) cause many spontaneous breakages of tempered glass. The Heat Soak Test (HST) excludes panes likely to suffer breakages. **100%** of the tempered glass panes constituting Pyrobel-T are passing the Heat Soak Test.

Properties

- Can be produced in all fire resistance classes:
  EW from 20 to 120 minutes, EI from 15 to 60 minutes
- Tested and approved for timber, steel, and aluminium framing systems
- Extensively tested in doors and partitions
- Safety glass adheres to **EN 12600**, classifying impact resistance and mode of breakage (2B2 or 1B1, depending on the product type)
- Can be combined with all AIS thermal insulation and solar protection coatings
- Bi-directional fire resistance
- UV, water, and impact-resistant
- Available in XXL format (4.5 m high)
- Pyrobel-T is suitable for applications with in-service temperatures between -10°C and +50°C

Applications Across Industries

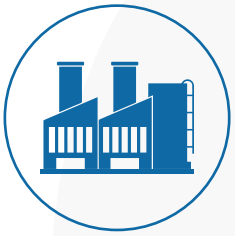
AIS Pyrobel can be used in all applications where building regulations stipulate a specific level of fire resistance and where natural light and clear visibility are required, such as:

Hospitals

Schools

Hotels, restaurants

Stores, malls, shopping centres



Industrial buildings, warehouses, laboratories

Office buildings

Airports

Metros

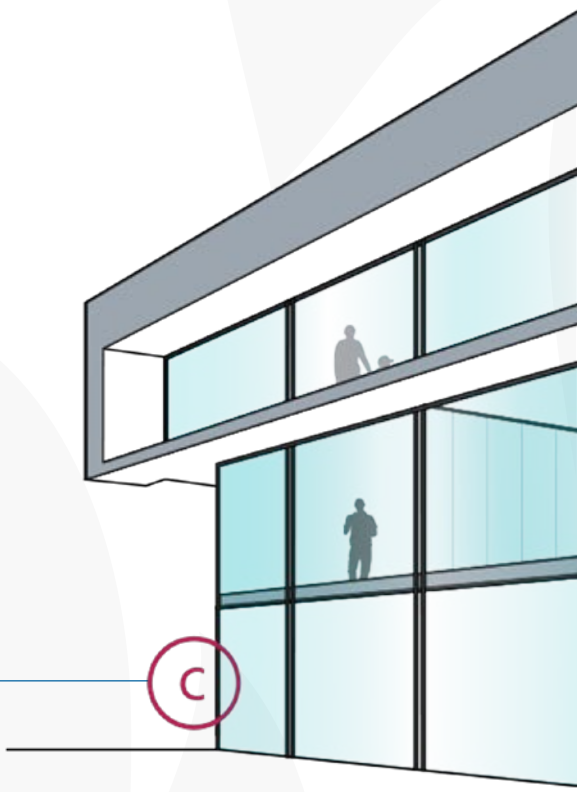
Design Applications

A. Fire-resistant all-glass partitions

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

Data Storage and Server Room Enclosures
Preservation of electronic data against the risk of fire is critical, and almost all server and data room enclosures are now designed with fire-rated glass products.

Staircase/Lift Lobby 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.



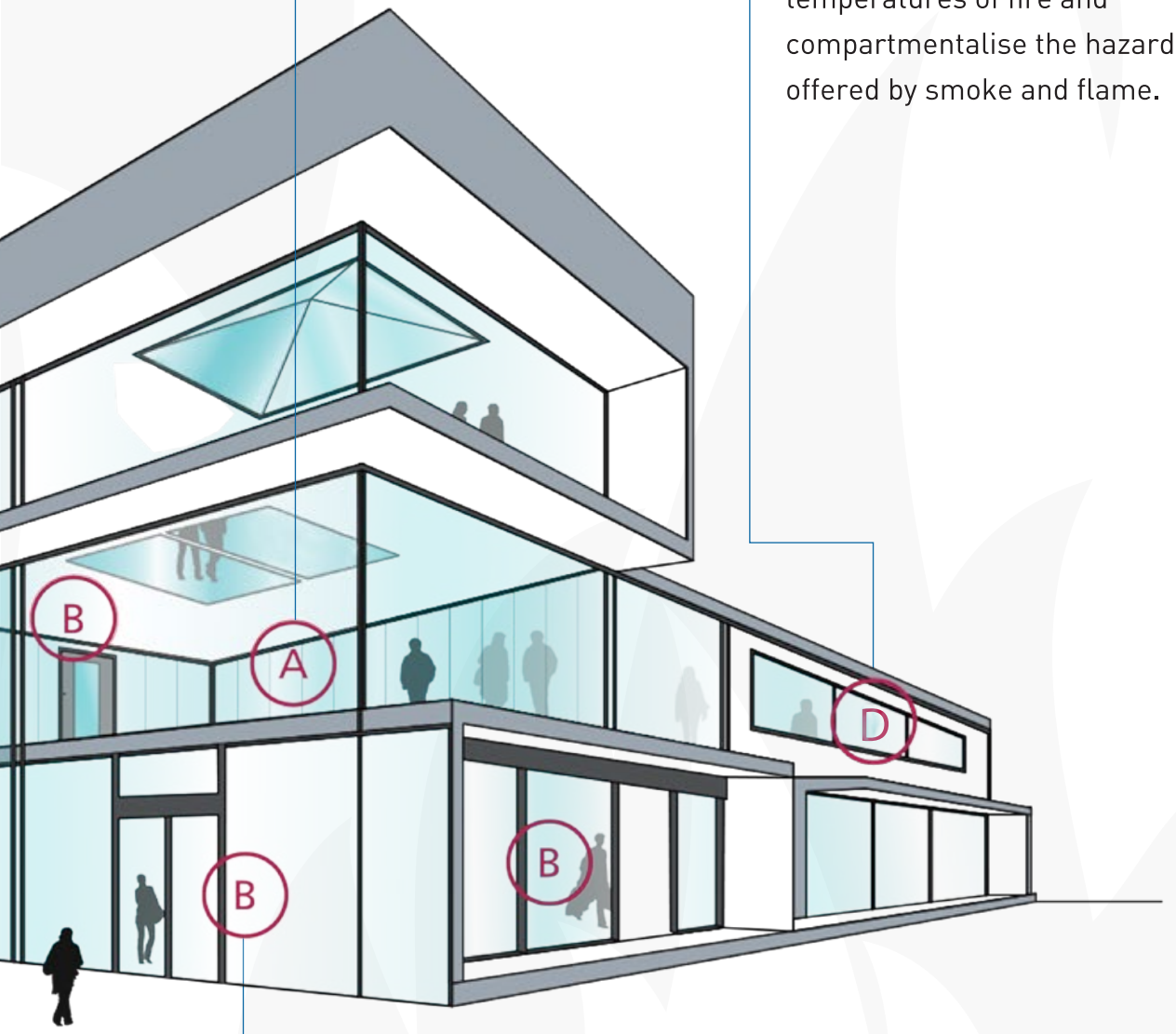
C. Fire-resistant curtain walls – facades, floors

Curtain Walls and Facades
It stops the fire from spreading to adjacent floor/buildings/refuge areas. Can be used for both interior and exterior applications.

Skylights
Fire-resistant skylight systems allow natural light to pass through without compromising fire safety and also act as a barrier against radiant heat.

D. Fire-resistant windows

Fire-resistant Windows
Specifically used to resist the temperatures of fire and compartmentalise the hazards offered by smoke and flame.



B. Fire-resistant glazed doors

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

Installation and Glazing Instructions

- AIS Pyrobel-T cannot be cut on site
- 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 install AIS Pyrobel-T in locations where the temperature might exceed +50°C
- Always refer to the fire test report details

Uncompromising Quality

The quality and performance of the AIS Pyrobel range are 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 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%.

Compliance

Fire-resistant glass products are only part of the 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 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 by its classification and position in the structure. AIS Pyrobel-T is a two-sided fire-resistant glass.

India's leading integrated glass and window solutions company, Asahi India Glass Ltd. (AIS), delivers top-of-the-line products and solutions through three Strategic Business Units (SBUs), namely Automotive Glass, Architectural Glass, and Consumer Glass. We use our glass product portfolio, which is the biggest in the country, to meet functional needs in an aesthetic and contemporary manner. We offer a wide portfolio of energy-efficient, high-performance, fire-resistant glass and window solutions in uPVC and aluminum. With products that provide next-generation solutions, AIS brings new ideas to life, thus enabling an age of 'green buildings' and the dawn of a truly sustainable future.

Asahi India Glass Ltd.

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