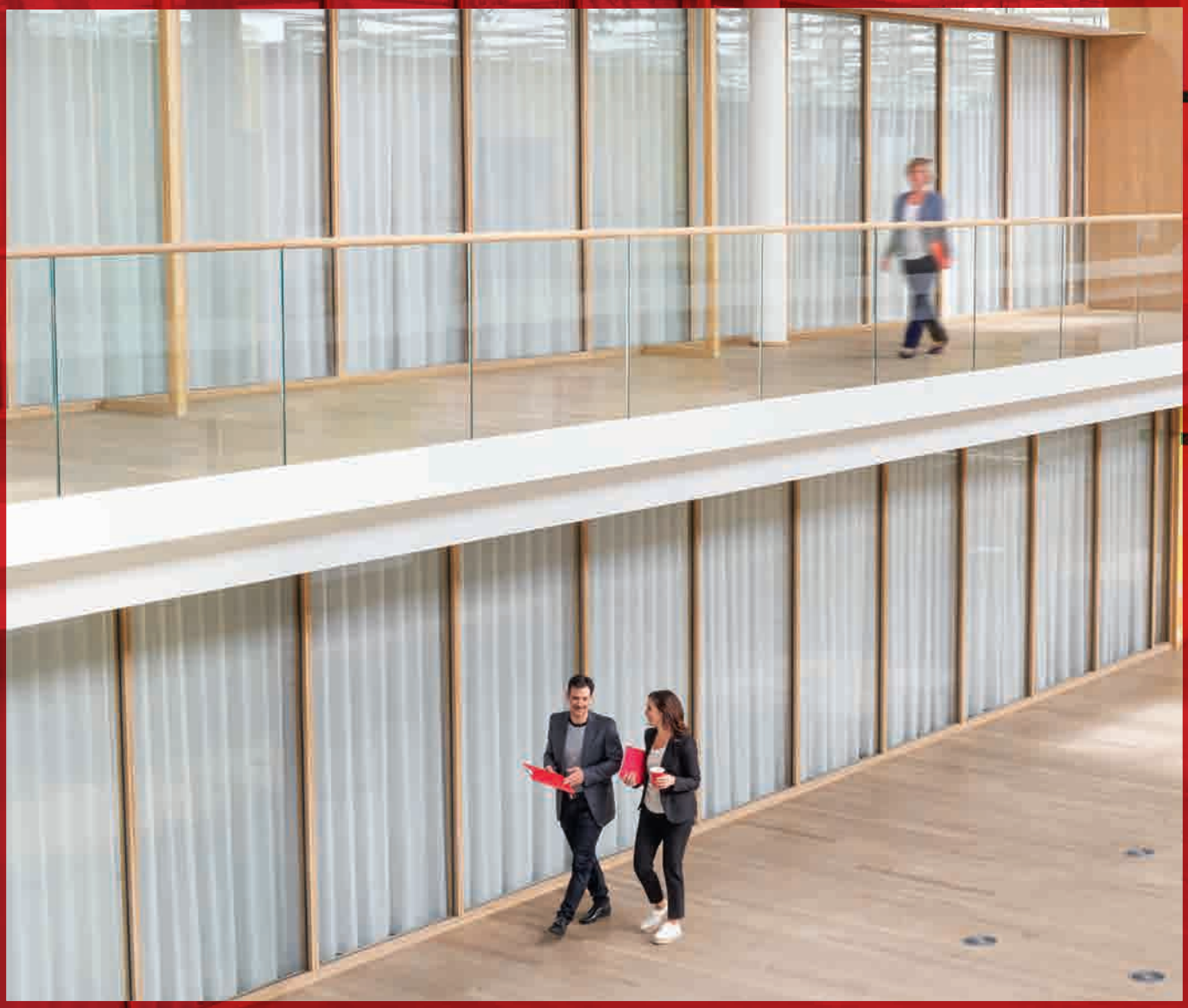
PYROBEL

AGC

Fire-resistant glass
FOCUSING ON YOUR SAFETY



Your Dreams, Our Challenge

AGC Glass Europe presents...



BELGIUM LOUVAIN-LA-NEUVE - AGC GLASS BUILDING - ©PROJECT: PHILIPPE SAMYN AND PARTNERS, ARCHITECTS & ENGINEERS: BEAI
ARTISTIC INTEGRATION: G. MEURANT - PHOTOGRAPHER: MARIE-FRANÇOISE PLISSART

...fire-resistant glass for safe lives and places

PYROBEL



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PYROBEL



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Who we are

AGC, THE WORLD'S LEADING POWER IN FLAT GLASS

AGC Glass Europe is the European glass branch of AGC, the world leader in flat glass, and produces, processes and distributes flat glass for the building and automotive industries, as well as the solar and high-tech sectors.

The European division of the AGC Group, which has its headquarters and research centre in Belgium, numbers more than **100 industrial sites in Europe**, while **the Group as a whole has 200 subsidiaries in over 30 countries worldwide.**

FIRE-RESISTANT GLASS

Our Fire-Resistant Glass Department has nearly **250 highly experienced members of staff** and we work with agents and distributors all over the world. Pyrobel glass products are manufactured at **three industrial sites**: Seneffe in Belgium, and Oloví and Sokolov in the Czech Republic.

We also collaborate closely with researchers at the **AGC Technovation Center** to design **innovative** products with unrivalled performance levels.

MISSION AND VISION

Pyrobel makes living and working environments safer with **the widest range of fire-resistant glass on the market.** We supply **reliable and sustainable** fire-resistant glazing solutions renowned for their outstanding quality. We support our customers with **technical expertise, flexible service and short lead times.**

Pyrobel captures AGC's Look Beyond vision: we aspire to become **your partner of choice** in building a brighter and safer world.



THE NETHERLANDS VENLO - CITY HALL - ARCHITECTS: KRAAIJVANGER - PHOTOGRAPHER: ©STIJNSTIJL FOTOGRAFIE

Why choose us?



SHORT LEAD TIMES

Since Pyrobel glass can be cut to size by our local distributors all over the world, they can supply you with what you need **quickly and efficiently**.

RELIABILITY

For 40 years, we have been supplying **sustainable** fire-resistant glazing solutions renowned for their outstanding quality. Pyrobel(ite) products have a **10-year guarantee**. Our priority is your long-term safety and security.

ENVIRONMENT

Protecting the environment is one of our core values. **Reducing the environmental impact** of our products and processes is a priority. Pyrobel(ite) is **Cradle to Cradle Certified™ Silver.**

PROVIDING SOLUTIONS

We **support our customers with our high-level expertise** and produce **the widest range of fire-resistant glass on the market**. We offer our customers a fire-resistance testing service.

BELGIUM CHARLEROI - AGC TECHNOVATION CENTER - ARCHITECTS: ASSAR

AGC's Pyrobel range

PYROBEL(ITE)

Pyrobel(ite) is **the most tested fire-rated glass in today's market.** It can deliver **fire-resistance 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 the 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 **the fire-resistant glass in XXL size**: up to 2 metres wide and 4.5 metres high! It provides a superb light transmission.

PYROPANE

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

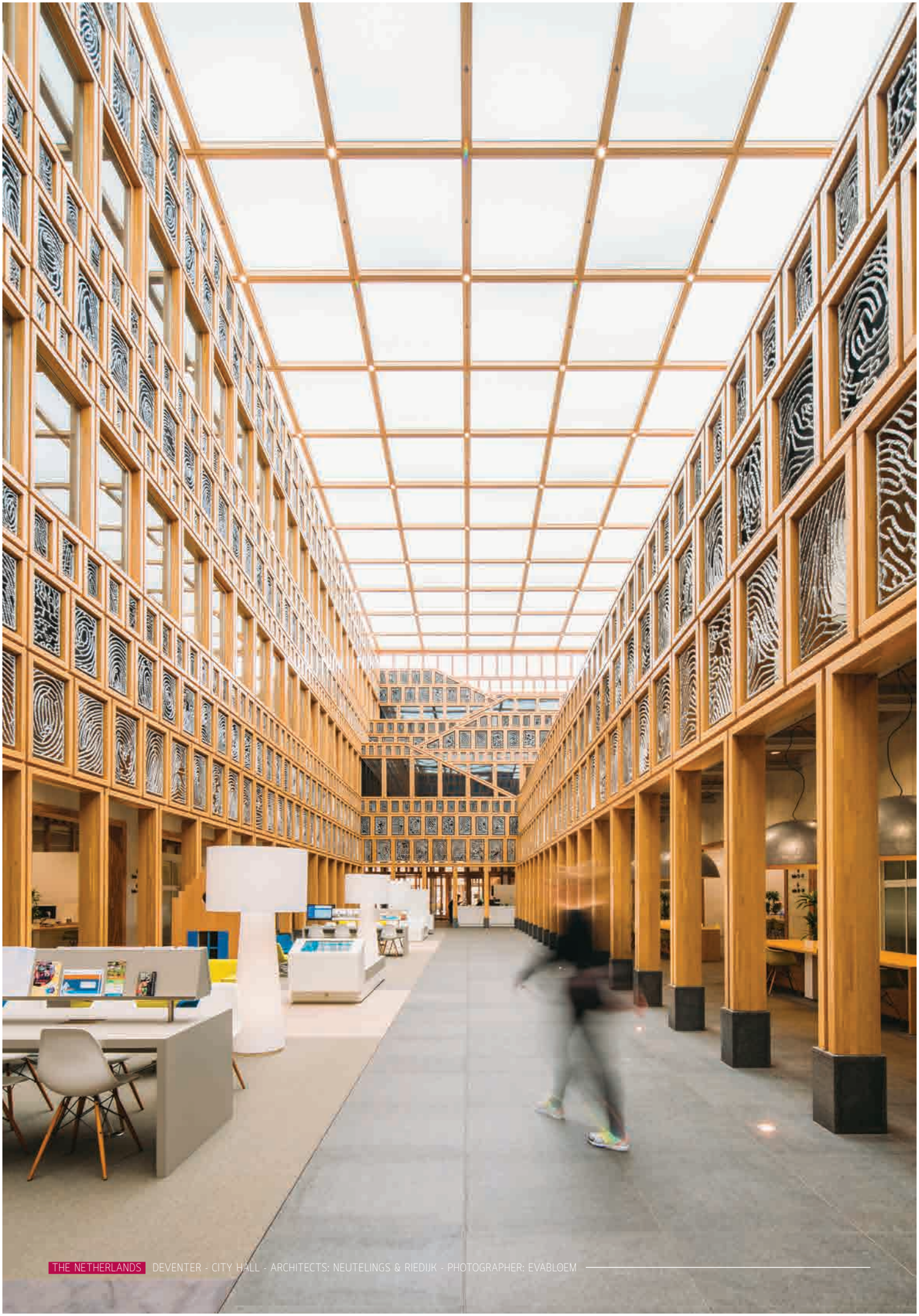
GLASS EXPERTS WHO ARE THERE FOR YOU

We offer a **comprehensive range of fire-resistant glass, tested and approved** in accordance with European and international standards. But our services are not limited to just manufacturing glass. Our qualified experts provide **specialist technical support**, delivering customized 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 AGC.

CLOSE AT HAND

Visit our website which features a **Product Selector** tool to help you find the right solution for any project based on key criteria such as desired product performance, duration, type/brand of frame etc.: **www.agc-pyrobel.com**



THE NETHERLANDS DEVENTER - CITY HALL - ARCHITECTS: NEUTELINGS & RIEDIJK - PHOTOGRAPHER: EVABLOEM



THE NETHERLANDS THE HAGUE - GROTE MARKT SUBWAY STATION - ARCHITECTS KOOLHAAS & HILZ - PHOTOGRAPHY AGC GLASS EUROPE

Pyrobel(ite)

Pyrobel and Pyrobelite fire-resistant glazing are **laminated glass with transparent intumescent interlayers capable of delivering fire protection for 30 to 180 minutes**. They comply with Integrity and Low Radiation **(EW)** criteria as well as Integrity and Insulation **(EI)** criteria.

ADVANTAGES

THE SHORTEST DELIVERY TIMES

Since Pyrobel(ite) **can be cut** by our network of distributors, they can supply you with what you need **quickly and efficiently**.

CRADLE TO CRADLE CERTIFIED

Pyrobel(ite) is **Cradle to Cradle Certified™ Silver**.

ACOUSTIC INSULATION

Pyrobel(ite) has excellent **acoustic insulation properties**.

QUALITY

With 40 years of experience, Pyrobel delivers proven long-term quality. Pyrobel(ite) glass has an excellent optical quality supported by a **10-year warranty**.

PROPERTIES

- Rated **EW30**, **EW60**, **EI15**, **EI30**, **EI45**, **EI60**, **EI90**, **EI120** and **EI180**
- **Tested and approved** for timber, steel and aluminium framing systems
- Extensively tested in **doors**, **partitions** and **curtain walls**
- Pyrobel can provide fire-resistant solutions for **EI30** and **EI60** in glazed floors and EW30 and E60 in roof systems
- **Tailored cut-sizes** are possible
- Approved for use in **Pyrobel Vision Line**, our frameless edge to edge glazing system **without mullions**
- Available as **single internal glazing**, **glazing with a UV filter** (EG) and **double or triple glazing units** (IGU) in combination with other certified glass products
- Safety glass compliant with **EN 12600** classifying impact resistance and mode of breakage (3B3, 2B2 or 1B1 according to product type)
- **Bi-directional** fire resistance
- Can be laminated with **burglar-resistant AGC glass**
- Pyrobel(ite) is suitable for applications with in service temperatures between **-40°C** and **+50°C**

Available in Clearvision (extra clear glass)

Vision Line

Pyrobel Vision Line is our fire-resistant edge to edge glazing. AGC leverages cutting-edge technological developments to develop solutions combining ever clearer glazing with maximum fire protection. Pyrobel Vision Line delivers a fire-resistant, **unbroken wall of glass** that ensures a **broad field of vision**, making it the perfect choice for modern fully glazed partitions.

ADVANTAGES

AESTHETICS

The **modern and stylish** Pyrobel Vision Line system meets the needs of designers and architects looking for **glazed solutions without mullions**, also available in large dimensions.

COMFORT

An **unrivalled light transmission** and an **optimal acoustic insulation** for maximal comfort.

SAFETY

Pyrobel Vision Line is made of **safety glass** according to EN 12600.
The glass is fire-resistant on **both sides**.

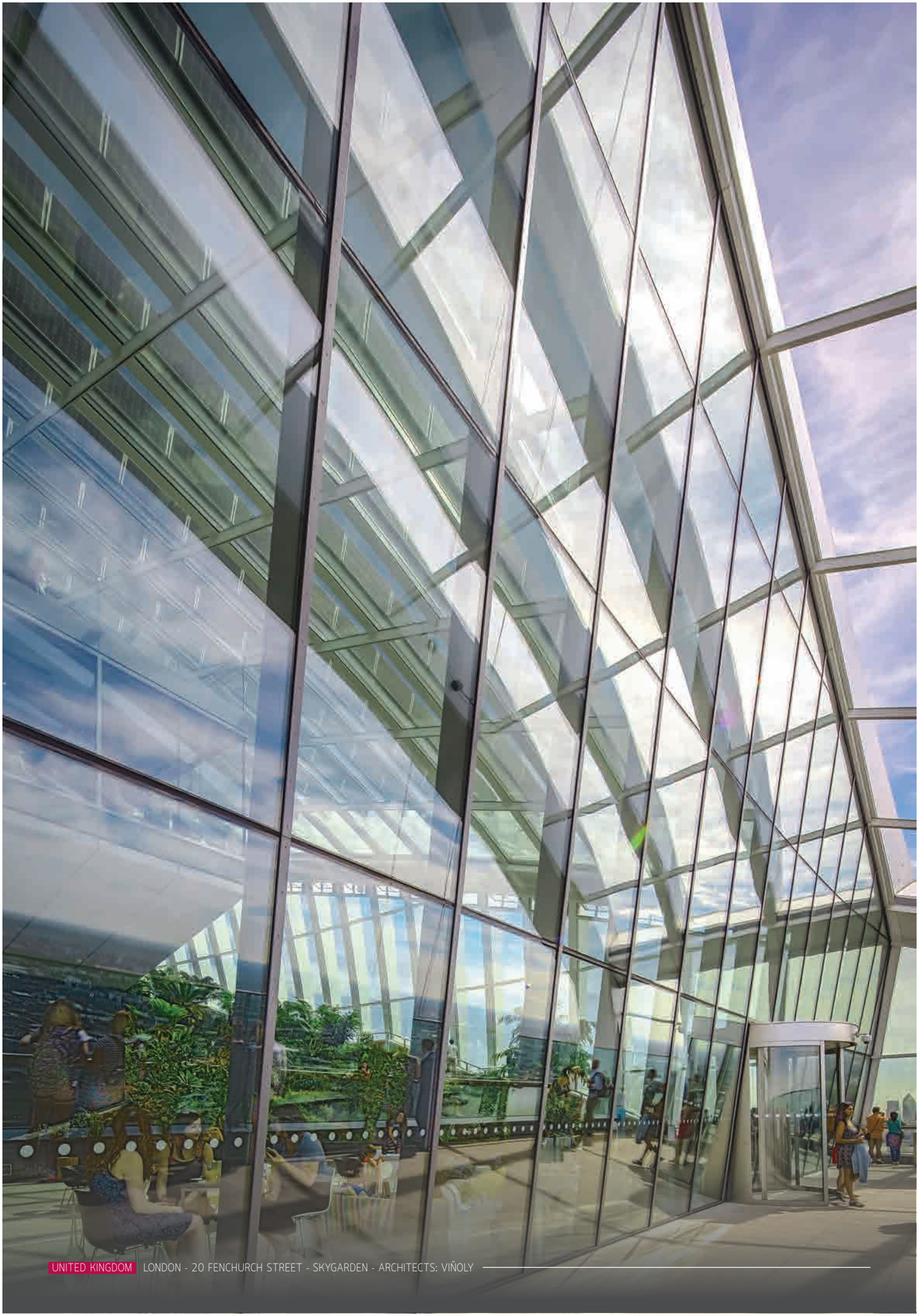
PROPERTIES

- Tested for **indoor applications** in classes **EI30**, **EI60**, **EI90** and **EI120** (in accordance with **EN 13501-2**) with steel, aluminium and timber frames
- Completely transparent glass partition **without mullions**
- **Glass corners** tested without frames (Vision Line Corner)
- **Compatible** with sandblasting as well as decorative and opal films
- Fire-resistant from **both sides**
- Safety glass in accordance with EN 12600 classifying **impact resistance** and mode of breakage
- **Excellent acoustic performance**
- **Compatible** with various types of frames and fire doors
- Can be provided with a **UV filter**

Available in Clearvision (extra clear glass)



THE NETHERLANDS MAASTRICHT - TAPIJN UNIVERSITY - LIAG ARCHITECTEN EN BOUWADVISEURS - © RONALD TILLEMAN PHOTOGRAPHY - QBIQ WALL SYSTEMS



UNITED KINGDOM LONDON - 20 FENCHURCH STREET - SKYGARDEN - ARCHITECTS: VIÑOLY

Pyrobel-T

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 x 4.5 metres**.

ADVANTAGES

XXL SIZE
The fire-resistant Pyrobel-T glass can be delivered in **very large sizes**.

SUPERB TRANSPARENCY
Pyrobel-T glasses have an **exceptional light transmission**.

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

HEAT SOAK TEST AVAILABLE ON REQUEST
Many spontaneous breakages of tempered glass are caused by nickel sulphide inclusions (NiS). The Heat Soak Test (HST) **excludes panes likely to suffer breakages.** This test is available on request.

PROPERTIES

- **Extraordinary transparency** (LT = 87%)
- Technology available in **XXL format** (4.5 metres high)
- Can be produced in **all fire resistance classes**:
  - **EW**: from 20 to 120 minutes
  - **EI**: from 15 to 60 minutes
- **Certified as 1B1** in accordance with **EN 12600** classifying impact resistance and mode of breakage
- **UV, water and impact-resistant**
- Can be **combined** with all AGC **thermal insulation and solar protection coatings**
- **Pyrobel-T** is suitable for applications with in service **temperatures** between **-10°C and +50°C**

Available in Clearvision (extra clear glass)

Pyropane

Pyropane toughened glazing is **impervious to UV radiation** and has a **high level of thermal shock resistance.** This thin glass, which remains **transparent in the event of a fire**, is available in fire-resistance classes **E** and **EW**.

ADVANTAGES

FACADES: SOLAR AND THERMAL PROTECTION

In **EW30** or **EW60** double glazing, Pyropane offers as **yet unrivalled performance** for fire-protection glass in terms of thermal coefficient Ug and solar factor g. Pyropane has been tested in **doors**, **partitions** and **curtain walls**.

SAFETY

If broken, **the risk of injury is significantly lower** because the glass breaks into small blunt pieces. Pyropane is a safety glass rated **1C1** according to **EN 12600**.

TRANSPARENCY

Pyropane glazing provides **perfect vision**: it **remains clear under all circumstances**, is neither wired nor fibre-reinforced and has a **high light transmission rating**

PROPERTIES

- → Tested for classes **E30**, **EW20**, **EW30** and **EW60**
- → Tested in **horizontal applications**
- → Suitable for **outdoor use in double glazing**
- → Suitable for **indoor applications**, especially partitions and doors
- → Rated **DH30** according to **EN 12101-1**: ideal for **smoke barriers operating at high temperatures**

Available in Clearvision (extra clear glass)

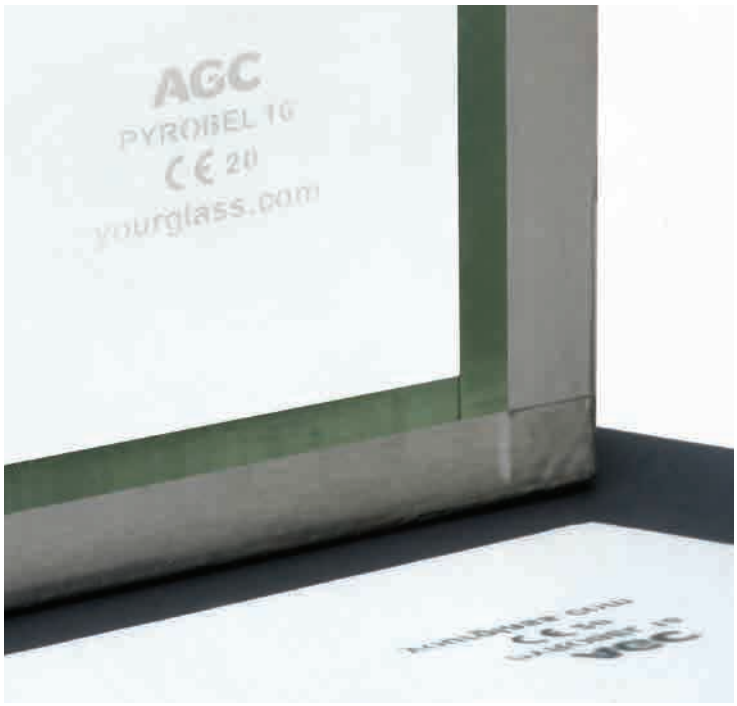


BELGIUM ANTWERP - PALACE OF JUSTICE - ARCHITECTS: RICHARD ROGERS PARTNERSHIP

CE marking and Declaration of Performance

MARKING

AGC's fire-resistant glazing and the products processed by its network of stockists all carry **CE marking**. The CE marking must be indelibly, legibly and visibly affixed **to the product itself**. It ensures **traceability** and identifies the product and the processor.



DECLARATION OF PERFORMANCE

Since 1 July 2013, **all construction products with a CE marking must be accompanied by a Declaration of Performance (CE Marking – DoP)**. This document makes it possible to use the same criteria **to compare the performance** of various glass products with one another.

DoPs for the Pyrobel range of fire-protection glass can be viewed in the Tools section of the website **agc-yourglass.com**

Regulations and Classification

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 transfer, restricted to no more than 15kW/m^2.



EI - Integrity and Insulation

No flames, smoke, gas. No heat transfer.
Limited temperature:
Average T: max. 140°C / Punctual T: max. 180°C

- → 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.
- → European standard **EN 12101-1** provides for the classification for **smoke and heat control**. Using this as a basis, ***DH*** indicates a barrier's ability to retain smoke in a specific room volume.

Pyrobel glazing 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.**

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 with 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.



Find our test reports thanks to the online **Product Selector Tool** on our website **agc-pyrobel.com!**


AGC

Storage, Processing and Installation

GENERAL PRINCIPLES

→ Pyrobel(ite) glazing is delivered ready for installation, along with an **adhesive protective tape** which is an integral part of the product.

→ **Detailed instructions** on installation are **provided in the test reports** for every tested glazed element.

→ The glass **must be installed exactly as set out in the relevant test report**, e.g. type of structure, direction of the glass pane and maximum glass dimensions, use of a neutral silicone, side and edge clearance, and mechanical edge cover.









PROCESSING

→ Fire-resistant **Pyrobel** Glazing is **custom-delivered** by **selected processors** who are the only authorized companies to process the **Pyrobel** cut to sizes to the specifications of the final customers and according to test reports.

TRANSPORT AND STORAGE

→ The glass must be transported and stored in a **dry, well-ventilated environment** at the temperatures recommended by AGC in the relevant product description.

→ Pyrobel(ite) glazing must be **protected from sunlight and UV radiation** and always **placed and transported in an upright position**.

→ If transported on stillages or frames, **the glass must be kept in optimal condition and tilted at a 6-10° angle** to avoid tipping over.

→ For large sheets of glass, AGC advises using straps or suction lifting gear. **Pivoting on an angle is not permitted**.

INSTALLATION

→ Silicone and/or edge protection tape on Pyrobel(ite) glazing must not be removed or damaged.

→ **Before installation**, check that the glazing is not scratched or damaged, particularly at the edge protection strip (if present). Damaged glass must not be installed.

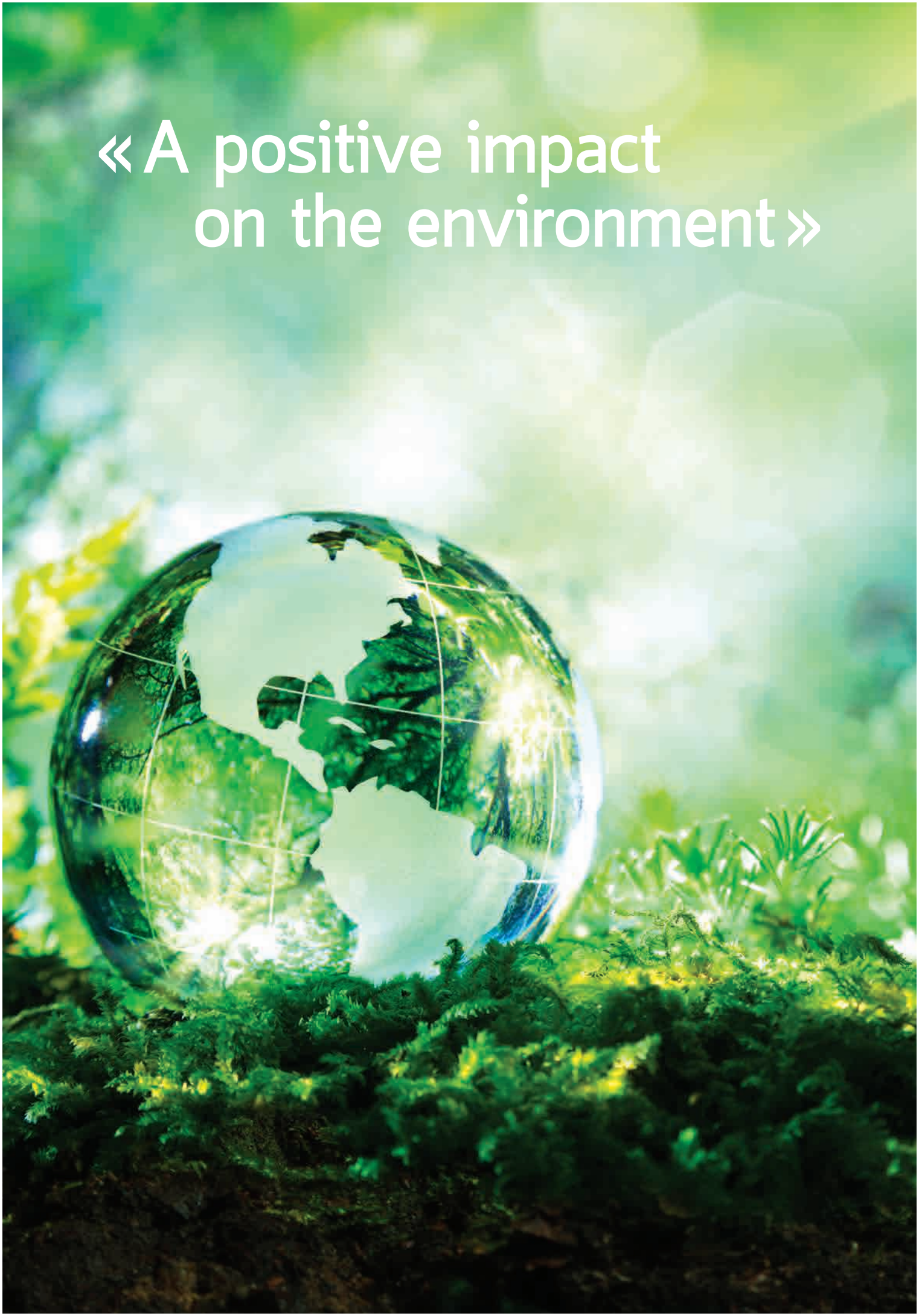
→ Keep the edges of the glass away from water **before and after installation.** Also ensure that the glass does not come into contact with metal and that it is not subjected to additional pressure.

→ Fire-resistant glazing **must not be installed in environments where the glass is likely to face temperatures above 50°C and below -10°C for Pyrobel-T and above 50°C and below - 40°C for Pyrobel(ite).**

→ If glazing is going to be **exposed to UV**, **Pyrobel(ite) EG must be used.**



Detailed instructions on installation are provided in **the test reports** for every tested glazed element. Find them with our online Product Selector Tool.


« A positive impact
on the environment »

Environment

Protecting the environment is a priority for Pyrobel. At **AGC** we are always seeking solutions **to reduce the environmental impact of our products** and processes. One of our main goals is to reduce our ecological footprint.

CRADLE TO CRADLE™ SILVER CERTIFICATION

Pyrobel(ite) fire-resistant glazing has **Cradle to Cradle Certified™ Silver certification**, which **guarantees its sustainability** in terms of material reutilisation, use of renewable energy, water management, carbon management and social responsibility. **Pyrobel has achieved Gold certification in four of the five categories.** Cradle to Cradle Certified™ is a certification mark licensed by the Cradle to Cradle Products Innovation Institute.

EPD, RoHS AND REACH

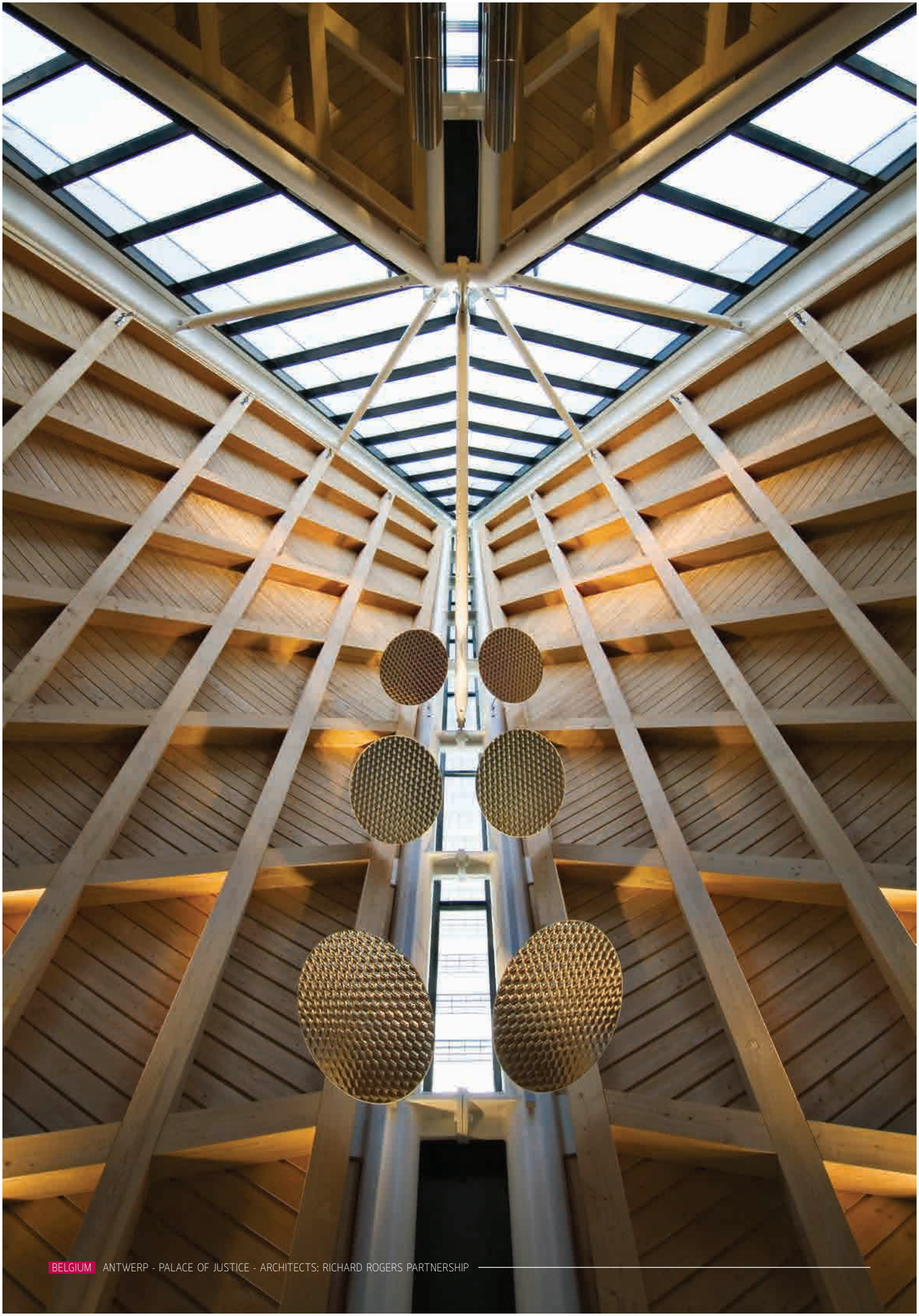
The German institute ift Rosenheim have checked and **approved the EPDs** for Pyrobel(ite). This Environmental Product Declaration enables the standardised reporting and **comparison of the environmental impacts** of the products according to life-cycle analysis (LCA) findings. Systems such as **LEED** and **BREEAM*** use these EPDs to calculate buildings' sustainability.

Pyrobel(ite), Pyrobel-T and Pyropane meet European **RoHS** and **REACH** guidelines which limit the use of hazardous substances.



For more information about AGC's environmental performance and objectives, please refer to **our environmental report** on www.agc-glass.eu.

* The LEED® certification, Leadership in Energy and Environmental Design, is an ecological certification for buildings initiated in 2000 by the US Green Building Council®. BRE Environmental Assessment Method (BREEAM) is the method for assessing the environmental behavior of buildings developed by the British building research organization Building Research Establishment (BRE).



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www.agc-pyrobel.com

AGC

AGC GLASS EUROPE, A EUROPEAN LEADER IN FLAT GLASS

Based in Louvain-la-Neuve (Belgium), AGC Glass Europe produces, processes and markets flat glass for the construction industry (external glazing and interior decoration), car manufacture and other industrial sectors (transport, solar power and high-tech). It is the European branch of AGC, a world leader in flat glass. It has over 100 sites throughout Europe, from Spain to Russia, and employs around 15,500 employees.

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