



DESIGNING SAFETY
DEFINING ELEGANCE

PRESENTING

DEFENDER

RAILING SOLUTIONS



**THE FUTURE OF GLASS.
SINCE 1665.**



Saint-Gobain - Going beyond building spaces, for making the world a better home.

Saint-Gobain, a world leader in the habitat and construction markets, designs, manufactures and distributes high-performance, innovative building materials across the globe. Saint-Gobain's materials and solutions are designed for the well-being of each of us and the future of all.

They provide comfort, high performance and safety, meeting the challenges of sustainable construction, effective resource management and climate change.

⋮



OUR HERITAGE



One of the top 100 global innovators over the last 10 years



Commitment: carbon neutrality by 2050



World or European leader in most of our businesses



Over
167,000
employees representing more than 110 nationalities



Around
800
manufacturing facilities worldwide



More than
3,500
sales outlets

OUR ORGANIZATION



Southern Europe, Middle-East, Africa



Northern Europe



America



Asia-Pacific

OUR WORLD-CLASS RESEARCH AND INNOVATION

RECOGNIZED INNOVATION CAPABILITIES



8 Saint-Gobain
Research (SGR)
cross-business R&D
centers



3,400
marketing
people



1 out of 4 products
sold today by Saint-Gobain
did not exist 5 years ago



Over 100
development
centers



Over
3,600
researchers



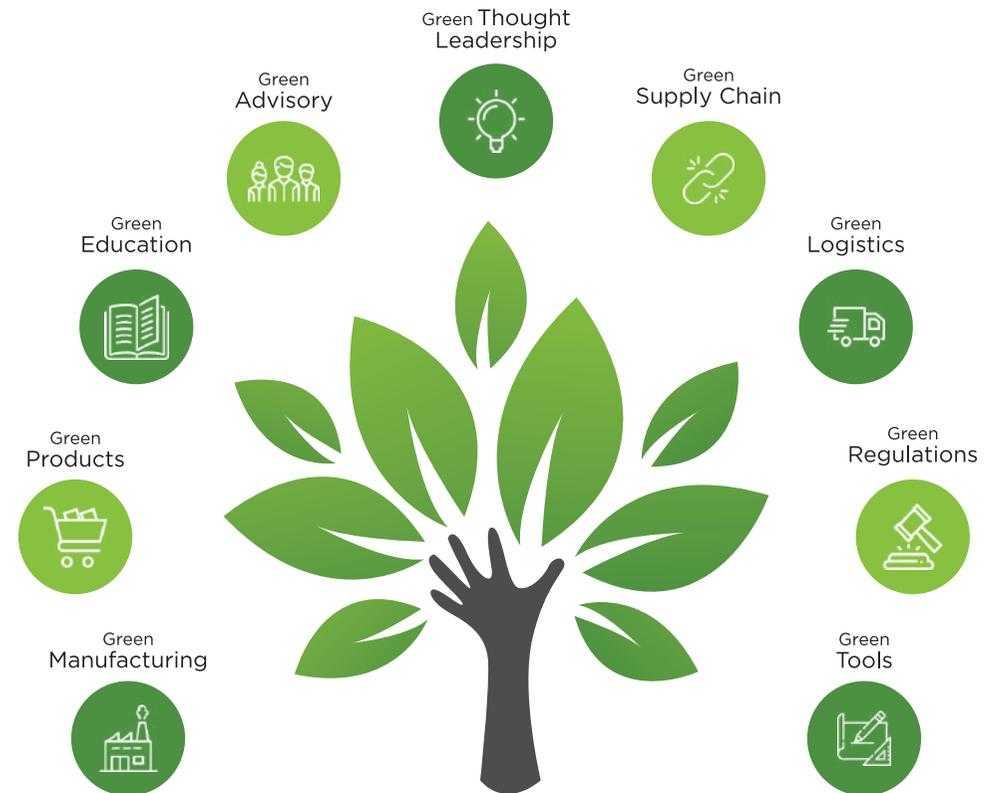
Over 400
patents filed
each year



SUSTAINABILITY

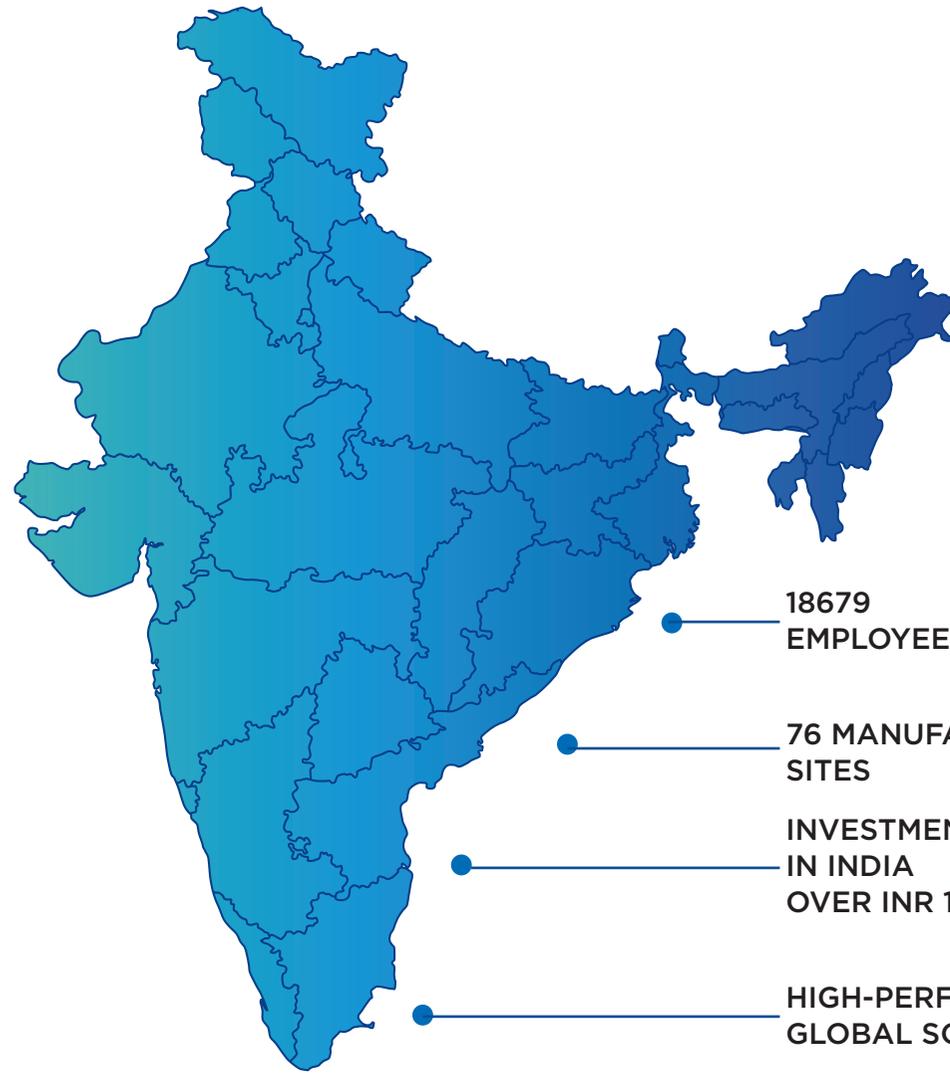
2050 NET ZERO CARBON

At Saint-Gobain, we are dedicated to minimizing our environmental footprint and strive for sustainability. Our commitments include a 20% reduction in CO2 emissions, a 50% decrease in non-recovered waste, an 80% reduction in industrial water emissions by 2025, and ultimately achieving net-zero emissions by 2050 in line with the 1.5°C scenarios. In alignment with our eco-friendly approach, our glass hardware solutions are designed to combine aesthetic appeal with our environmental objectives.



SAINT-GOBAIN
SMART GREEN

LEADING
THE
BUILDING
MATERIALS
SEGMENT
IN INDIA





PRESENTING

DEFENDER

RAILING SOLUTIONS

Our wide range of Defender Railing solutions is all-inclusive, encompassing every application of glass. Be it railings, glass balustrades or balcony, we have it all.



SLEEKEST.
STRONGEST.
SAFEST.
SG DEFENDER
- COLLECTION
FOR EVERY
NEED.

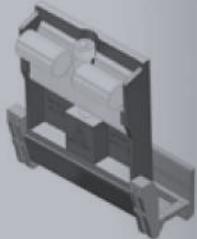


informa
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↑
ZONA A
2 ufficio tecnico
direzione
sala riunioni

ENSURING
COMPLIANCE
AND SAFETY
THROUGH
RIGOROUS
TESTING OF
OUR RAILINGS.



PATENTED SYSTEM



The internal **high-performance wedge clamp** allows to firmly fix the glass adapting to different glass thicknesses



Continuous structural gasket to maximize the support surface in contact with the glass



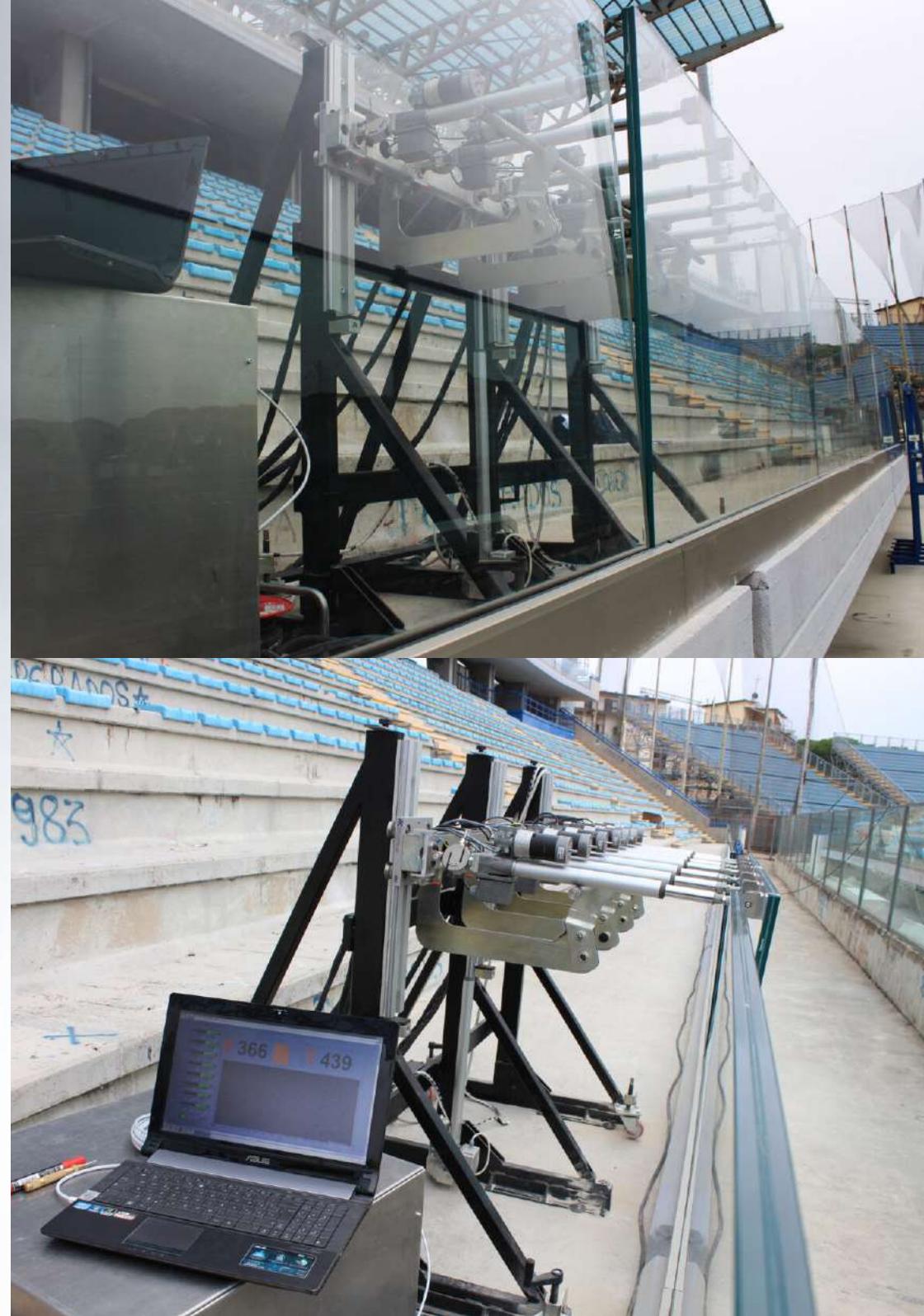
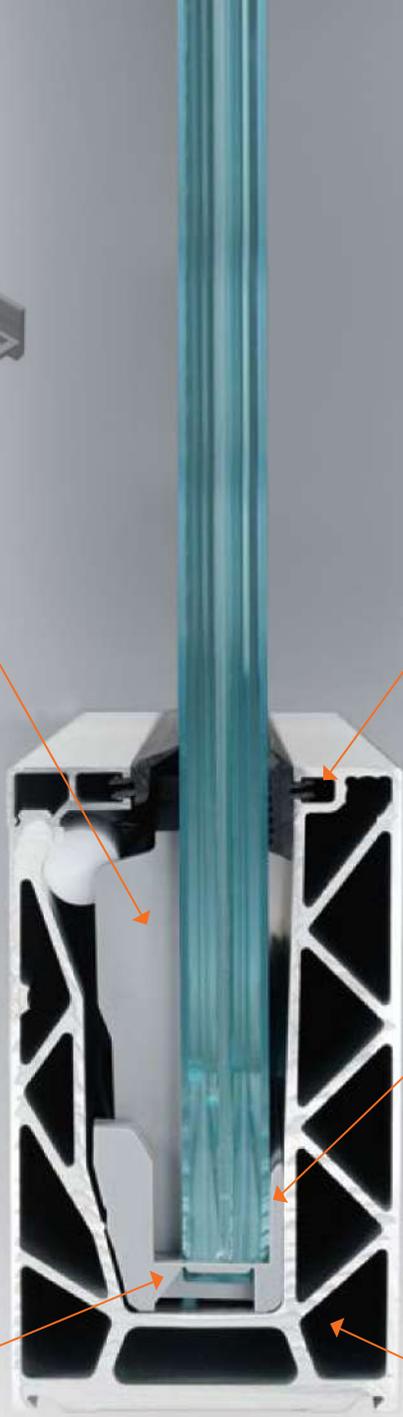
Support base to protect the glass edge for a **quick** and safe installation



Support base with possibility of housing the **LED IP66**



Alveolar structure for greater **stiffness** and **strength**



COMPLIANCE TO GLOBAL TESTING STANDARDS



**NATIONAL BUILDING CODE 2016 - VOL 1
PART 6 - STRUCTURAL DESIGN**
Section 8 - Glass & Glazing
Annex H Glass Railings



AMERICAN STANDARD TESTING METHODS

ASTM E935 - 21: Standard Test Methods for Performance of Permanent Metal Railing Systems & Rails for Buildings
ASTM E2353 - 21: Standard Test Methods for Performance of Glazing in Permanent Railing Systems, Guards and Balustrades
ASTM - E2358 - 17: Standard Specification for Performance of Glazing in Permanent Railing Systems, Guards and Balustrades.

EUROPEAN REGULATIONS (valid for all EC countries)

CPR 305 - Regulation on product construction
EN 12150 - Heat-tempered sodium calcium silicate safety glass
EN 12543 - Laminated glass and laminated safety glass
EN 12600 - Pendulum test, impact test and classification for flat glass
EN 13200 - Observation areas for spectators
EN 14179 - Heat-tempered safety glass subjected to the "heat soak test"
EN 16612 - Calculation methods for the resistance of glass panes to lateral loads
EN 16613 - Determination of the mechanical properties of the insert



AUSTRALIA

AS 1288:2021 - Glass in buildings - Selection



ITALY

NTC 2018 - Technical Construction Regulations (Ministerial Decree 17 January 2018)
UNI 7697 - Safety criteria for glazing applications
UNI 10809 - Railings, balustrades or prefabricated parapets, dimensions, performance and tests
UNI 11678 - Test methods for buffer elements made of glass with a fall prevention function



FRANCE

NF P 06-001 - Working loads for buildings
NF P 01-012 - Dimensions of parapets
NF P 01-013 - Resistance tests on parapets
Cahier 3034 du CSTB - Test procedure for glass parapets anchored at the base



GERMANY

DIN 1990 & DIN 1990/NA - Basic notions of structural engineering and the national enclosure
DIN 1991-1 - Actions on buildings
DIN 18008 - Glass in building - Design and construction rules



SWITZERLAND

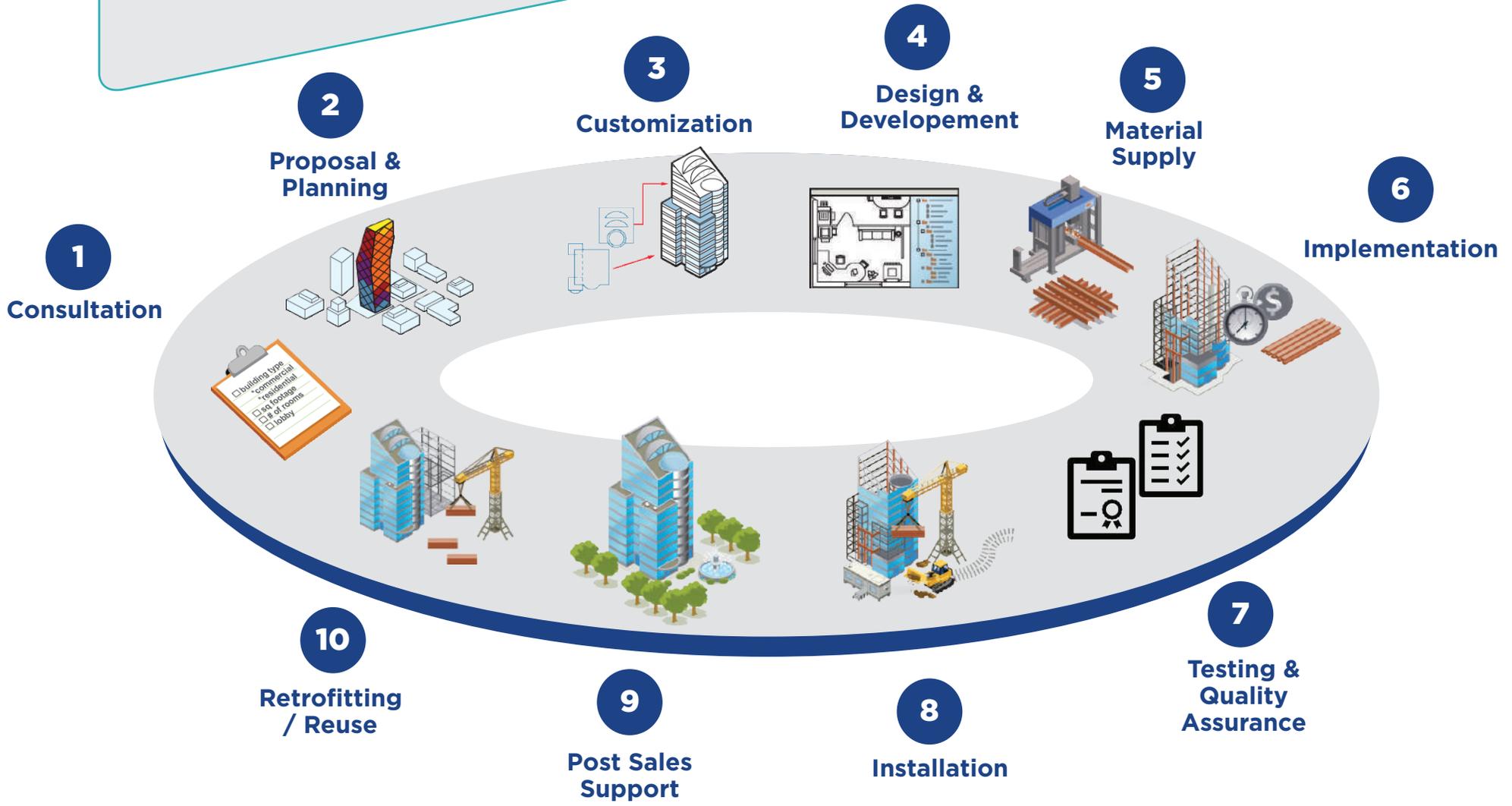
SIA 261 - Actions on structures
SIA 358 - Railings and balustrades
SIGAB 004 - Requirements for glass components in balustrades



UNITED KINGDOM

BS 6180 - Barriers in and around buildings
Approved Document K - Protection against falls, collisions and impact

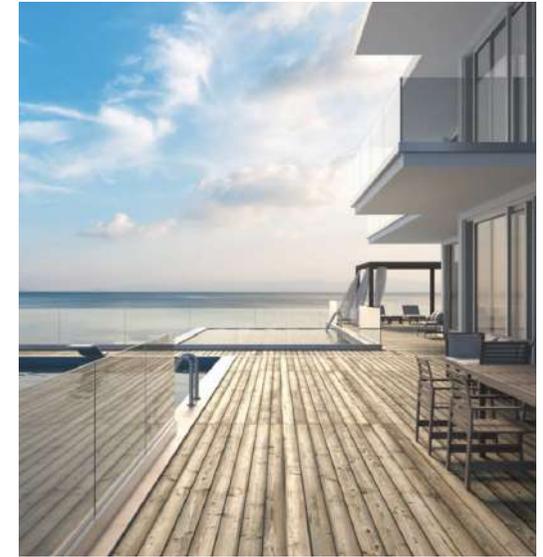
FROM CONCEPT TO COMPLETION: YOUR END-TO-END SOLUTIONS PARTNER



BESPOKE
SOLUTIONS
FOR EVERY
NEED



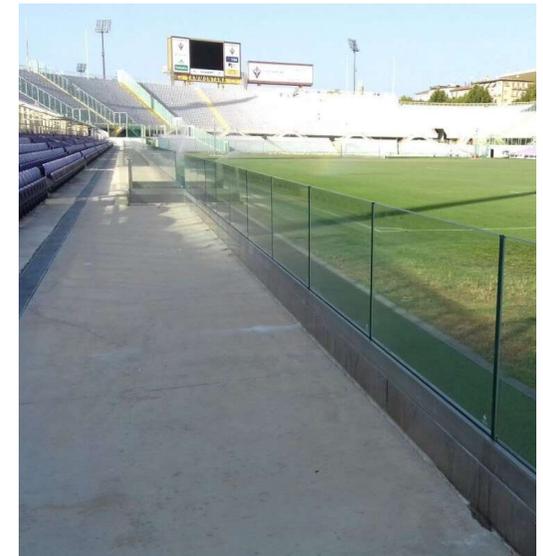
SG DEFENDER
PICO



SG DEFENDER
88



SG DEFENDER
1012



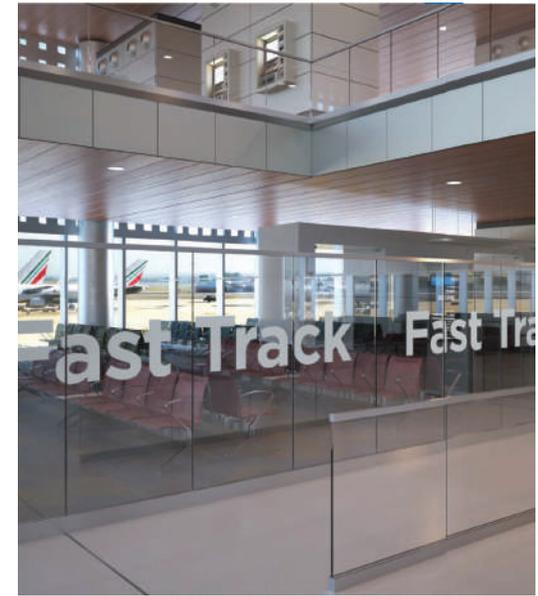
SG DEFENDER
MR



SG DEFENDER
MINI BALUSTRADES



SG DEFENDER
SPIGOTS



SG DEFENDER
CONCEALED RAILING



SG DEFENDER
POINT FIXINGS



SG DEFENDER
JULIET BALCONY



SG DEFENDER
PENSILINA & LUMIA

informazioni



ZONA A

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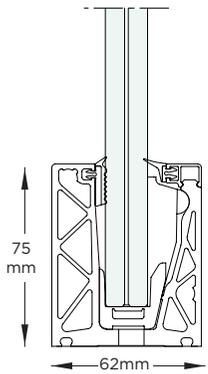
direzione

sala riunioni

SG
DEFENDER
PICO

Presenting **PICO** Range of Defender Solutions - customized range of Glass Railing solutions, that can accommodate glass thickness upto 17.52 mm.

PATENTED



Glass thickness: 6+6, 15 & 8+8 mm

Profile size: 62 x 75 mm

Wind load capacity: Upto 1.5 kPa

Live load capacity: Upto 0.75 kN/m



Floor Anchoring



On Raised Wall



On Floor

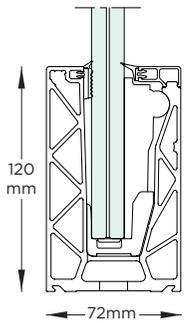




SG
DEFENDER
88

Presenting Defender **88**
- customized range of
Glass Railing solutions,
that can accommodate
glass thickness upto 18.89 mm.

PATENTED



Glass thickness: min-12 mm upto 18.89 mm thick

Glass height: 1.25 mtr

Profile size: 120 X 72 mm

Wind load capacity: Upto 2.5 kPa

Live load capacity: Upto 2.8kN/m



Floor Anchoring



Recessed
Floor Anchoring



Side Anchoring



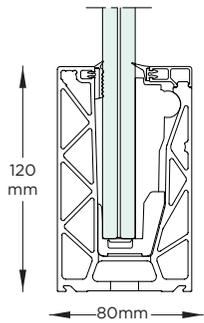
NEW



**SG
DEFENDER
1012**

Presenting Defender **1012**
- customized range of
Glass Railing solutions, that
can accommodate
glass thickness upto 25.52 mm.

PATENTED



Glass thickness: upto 25.52 mm

Glass height: 1.5 meter

Profile size: 120 X 80 mm

Wind load capacity: Upto 3 kPa

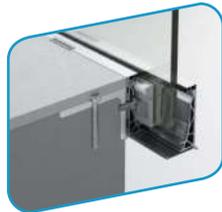
Live load capacity: Upto 3 kN/m



Floor Anchoring



Recessed
Floor Anchoring



Side Anchoring



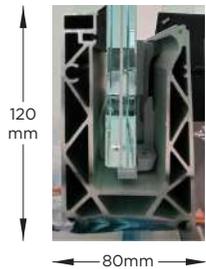
NEW



**SG
DEFENDER
MR**

Presenting Defender **MR**
- customized range of
Glass Railing solutions, that
can accommodate
glass thickness up to 25.52 mm.

PATENTED



Glass thickness: upto 25.52 mm

Glass height: 1.5 meter

Profile size: 120 X 80 mm

Wind load capacity: Upto 4.5 kPa

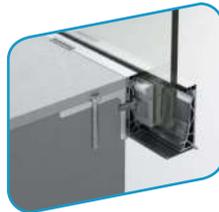
Live load capacity: Upto 5 kN/m



Floor Anchoring



Recessed
Floor Anchoring



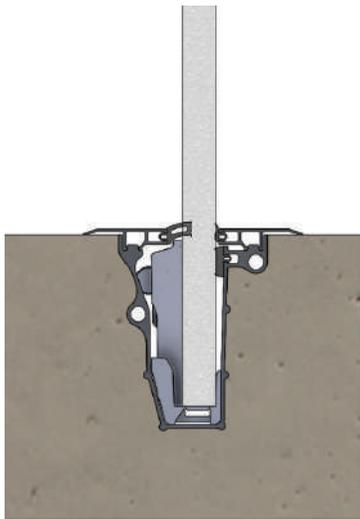
Side Anchoring



NEW

**SG
DEFENDER
CONCEALED
RAILINGS**

Presenting Defender
concealed railing
- customized range of
Glass Railing solutions, that
can accommodate glass
thickness upto 25.52 mm.



Glass: 13.52 mm upto 25.52 mm
Drain system included
Wind load capacity : upto 4 kPa
Live load capacity : 4 kN/m
Height Upto 1.2 Meters
Concrete: M35 grade (MIN)



OPTIONAL
WATER
DRAINAGE
PROVISIONS



SG DEFENDER PICO



SG DEFENDER 88

*Based on Request

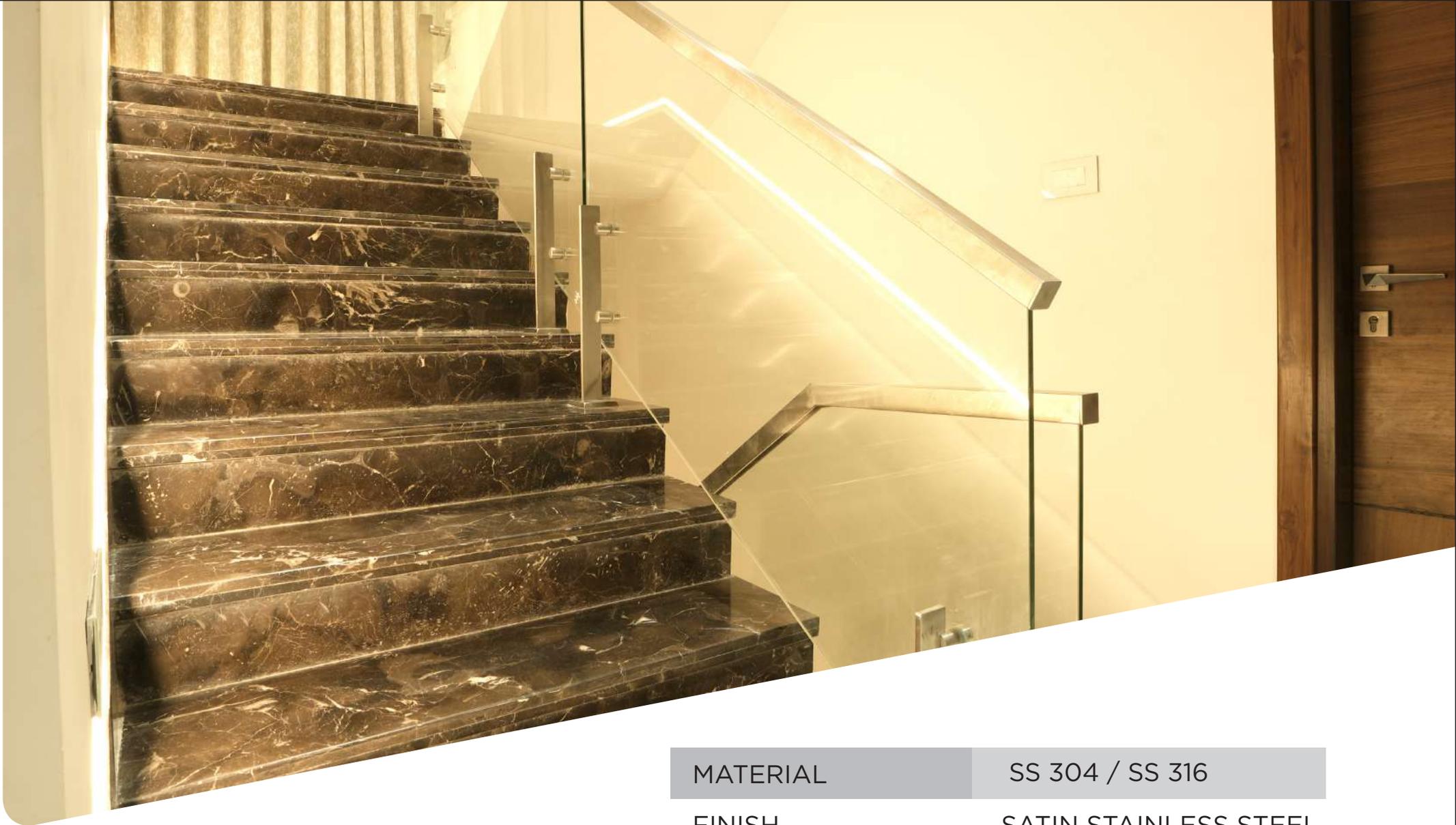


BESPOKE
FINISHES

NEW



**SG
DEFENDER
MINI
BALUSTRADE**



MATERIAL	SS 304 / SS 316
FINISH	SATIN STAINLESS STEEL
GLASS THICKNESS	12 TO 17.52 MM
SIZE	450 x 50 x 10 mm
TYPE	MINI BALUSTRADE
APPLICATIONS	EXTERIOR & INTERIOR



SG
DEFENDER
SPIGOTS

Presenting **Spigot** Range of Defender Solutions - customized range of Glass Railing solutions, that can accommodate glass thickness upto 13.52 mm



SPECIFICATIONS

ROUND/SQUARE

GRADE: SS 304/ SS 316

HEIGHT: 158 mm

DIAMETER/ SIZE: 50 mm/ 50 mm x 50 mm

SUITABLE FOR 12 - 13.52 mm GLASS

FINISH: SATIN STAINLESS STEEL





**SG
DEFENDER
POINT
FIXINGS**

Presenting **Point Fixings** Range
of Defender solutions -
customized range of
Glass Railing Solutions,
that can accommodate
Glass thickness of 17.52 mm



SPECIFICATIONS

Grade: SS 304/ SS 316

Length: 30 mm/ 50 mm

Diameter: 38, & 50MM

Suitable for 12 - 17.52 mm glass

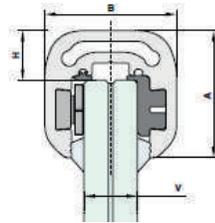
Finish: Satin Stainless Steel



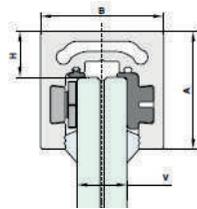
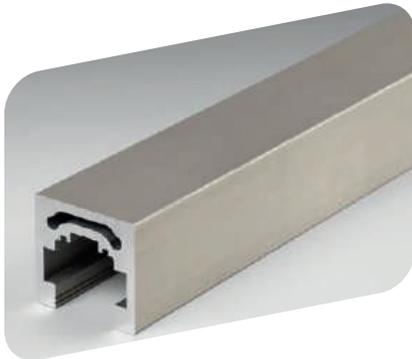


SG
DEFENDER
TOP RAIL

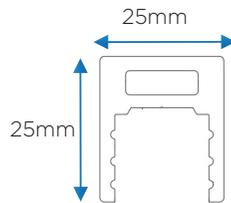
SG DEFENDER TOP RAIL



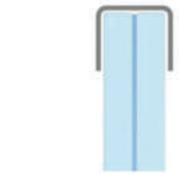
ALUMINIUM STRUCTURAL TOP RAIL



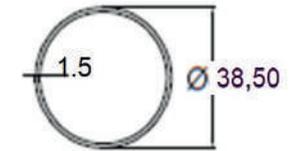
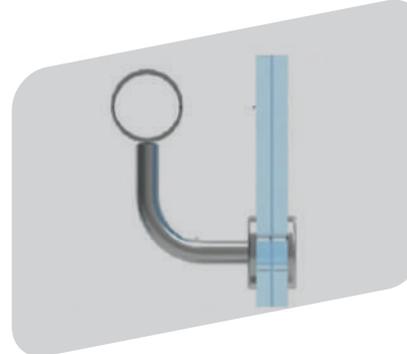
SQUARE SLOTTED SS TOP RAIL



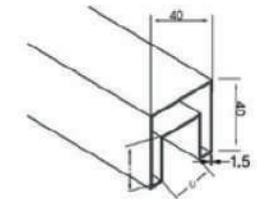
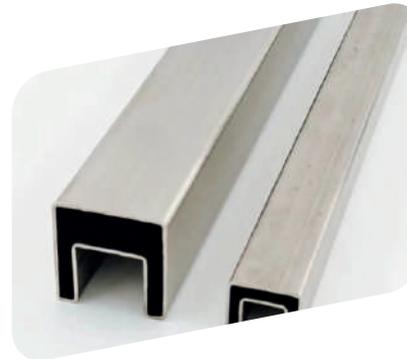
ALUMINIUM U CAPPING



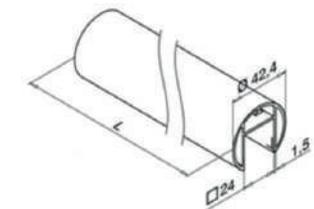
ALUMINIUM/SS C CAPPING



OFFSET TOP RAIL



SQUARE SS NOTCH TOP RAIL



ROUND SS NOTCH TOP RAIL



SG
DEFENDER
JULIET
BALCONY

SG
DEFENDER
JULIET
BALCONY

MAXIMUM SAFETY - MINIMAL DESIGN

BRINGS MORE LIGHT AND UNINTERRUPTED VIEW

SUITABLE FOR 12, 13.52 & 17.52MM GLASS THICKNESS

SUITABLE TO BE FIXED ON ALUMINIUM FRAMES/WALL

OPTIONAL USE OF HANDRAIL

QUICK AND EASY INSTALLATION

MAXIMUM SPAN OF 2 METERS

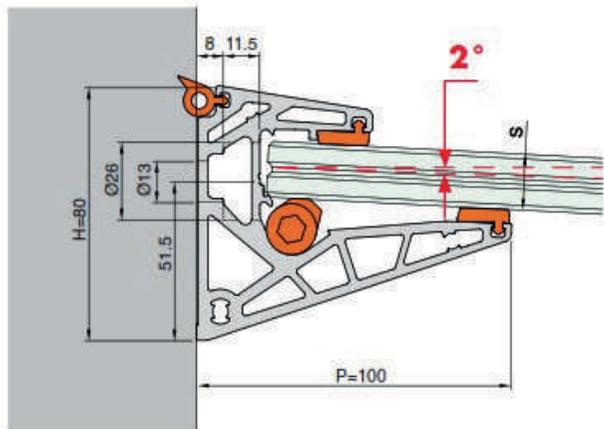


NEW



**SG
DEFENDER
PENSILINA**

SG DEFENDER PENSILINA



3-Meter length max
1.2 Meter wide
Glass: 8+8+1.52 SGP
Load capacity: 3.8 kN/m²
Wind load: 0.93 kPa



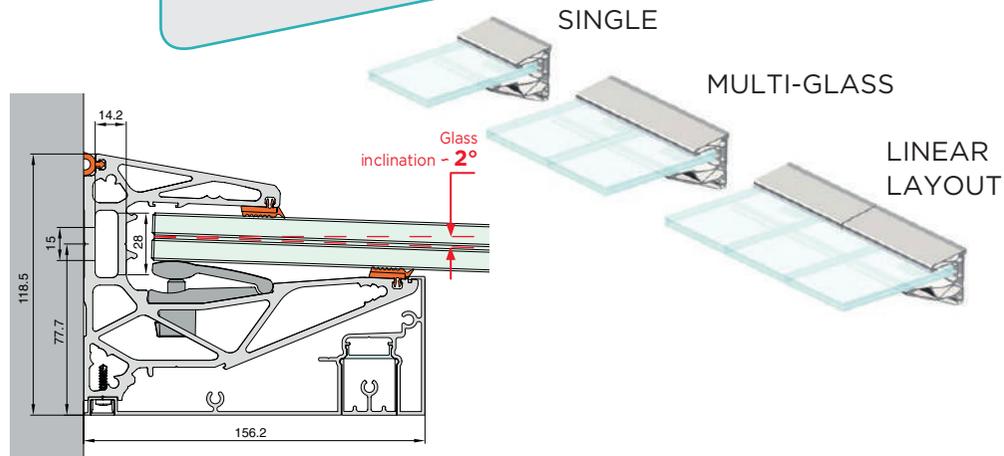
NEW



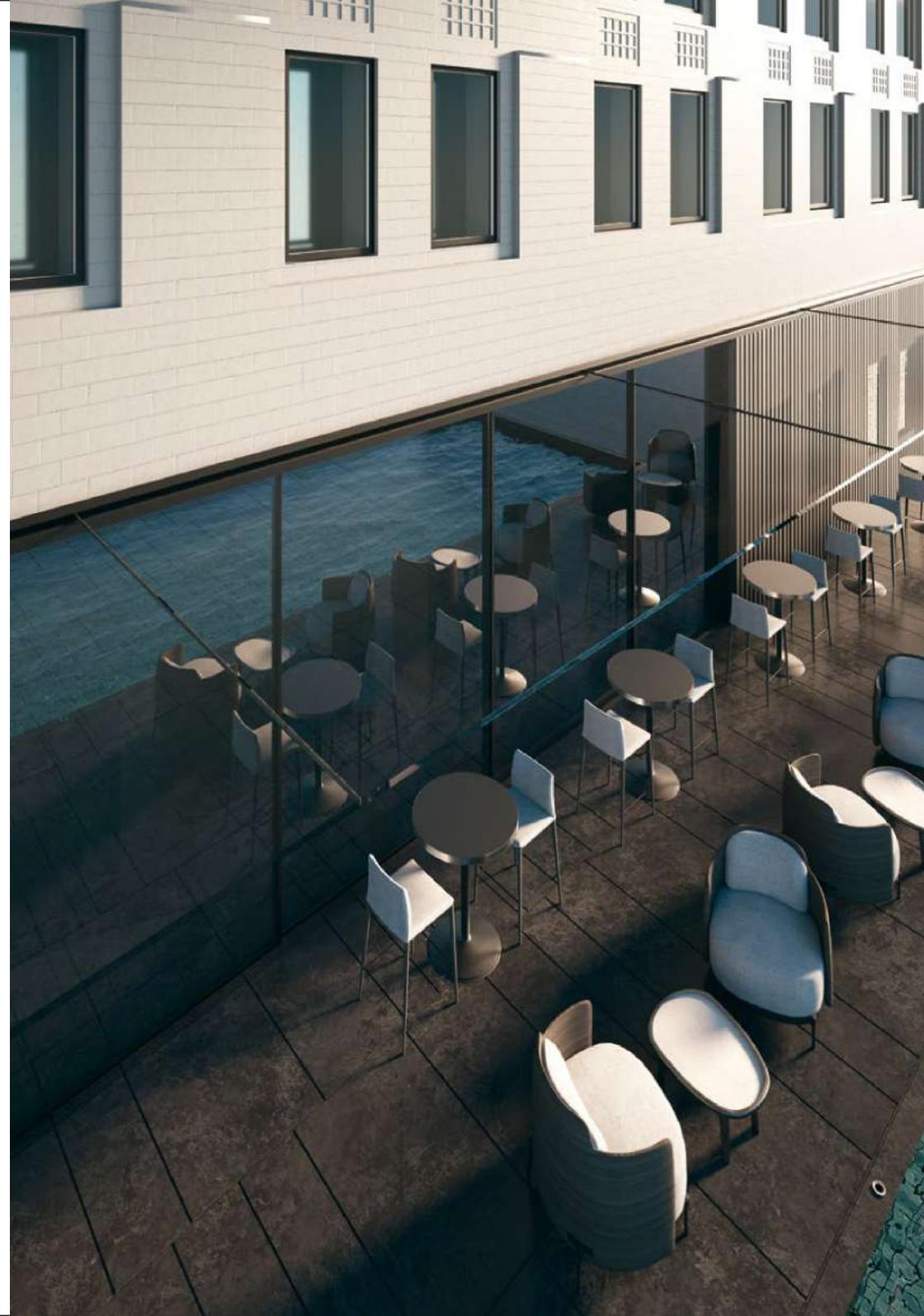
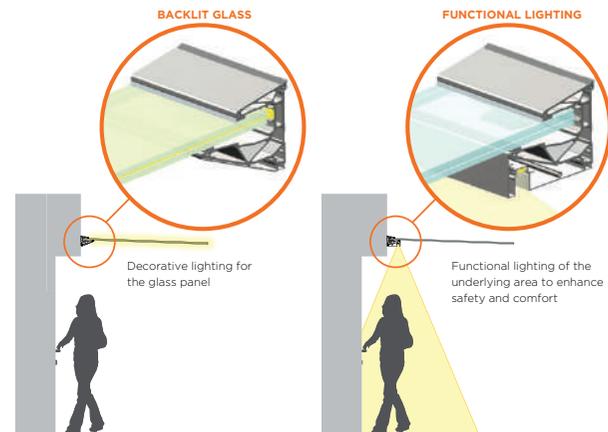
RESTAURANT & BISTROT

SG
DEFENDER
LUMIA

SG DEFENDER LUMIA



Max 6-meter length
Max 1.5 meter wide
Glass: 17.52/21.52 mm SGP
Safety performance
System designed for vertical overload
of 400 kg/m² and tested with over 1000 kg/m²






SAINT-GOBAIN

GLAZING
OPTIONS

TOUGHENED GLASS:

Resilient under pressure, it plays a pivotal role in ensuring our railings effectively withstand external forces and impacts.

LAMINATED GLASS:

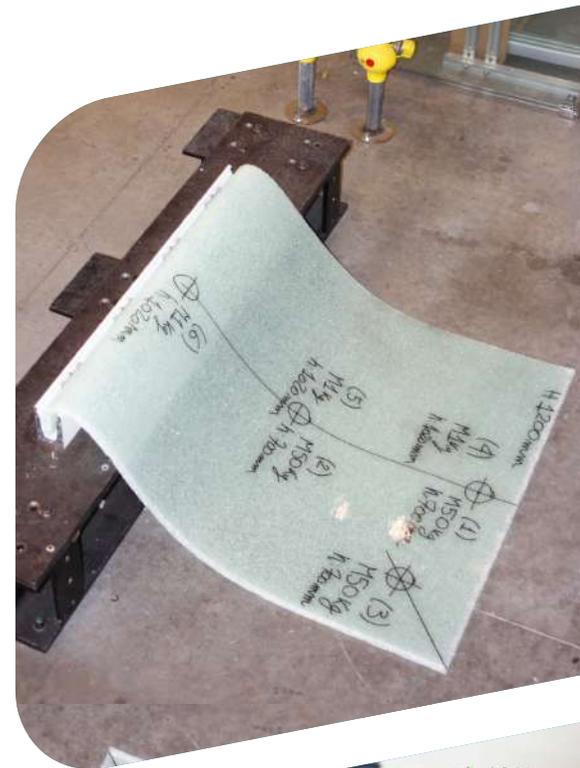
By bonding two glass plies with interlayers, we create a lasting connection. These interlayers reinforce and maintain the glass's structural integrity, ensuring a robust and consistent layer even in the event of breakage.

EXTRA STIFF LAMINATED GLASS:

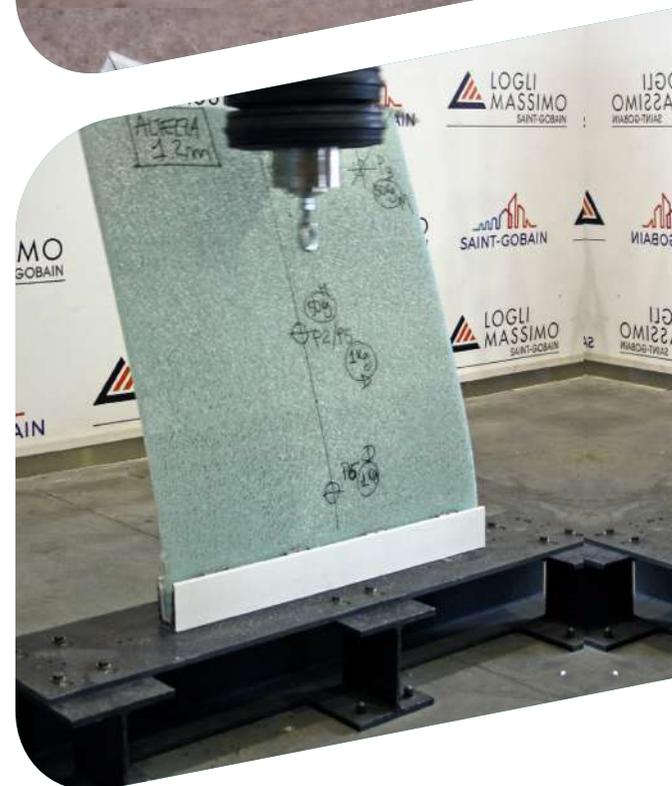
Incorporating a Polyvinyl Butyral (PVB) interlayer, this laminated glass enhances safety for our railings

SENTRY LAMINATED GLASS:

When it comes to applications demanding the utmost safety and performance, our Laminated Glass with Sentry Glass Plus steps up. It significantly enhances the strength and durability of the glass, making it an exceptional choice for projects where safety and longevity are paramount



After breakage with A TRADITIONAL INSERT



After breakage with A RIGID INSERT



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Limited - Glass Business**

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