



AI-generated architectural illustration. Not a documented product or installation.

Glass

For windows & doors / Also for balustrades

COLLECTION 02

SPIER-IN / COLLECTION

More than transparency.

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01A

Single laminated. 3+3.

Vetro laminato singolo / gamma commerciale 6 mm

One laminated pane made from two 3 mm glass sheets bonded by a 0.38 mm PVB interlayer. This is a single laminate, without a sealed insulating cavity.

COMPOSITION / 33.1

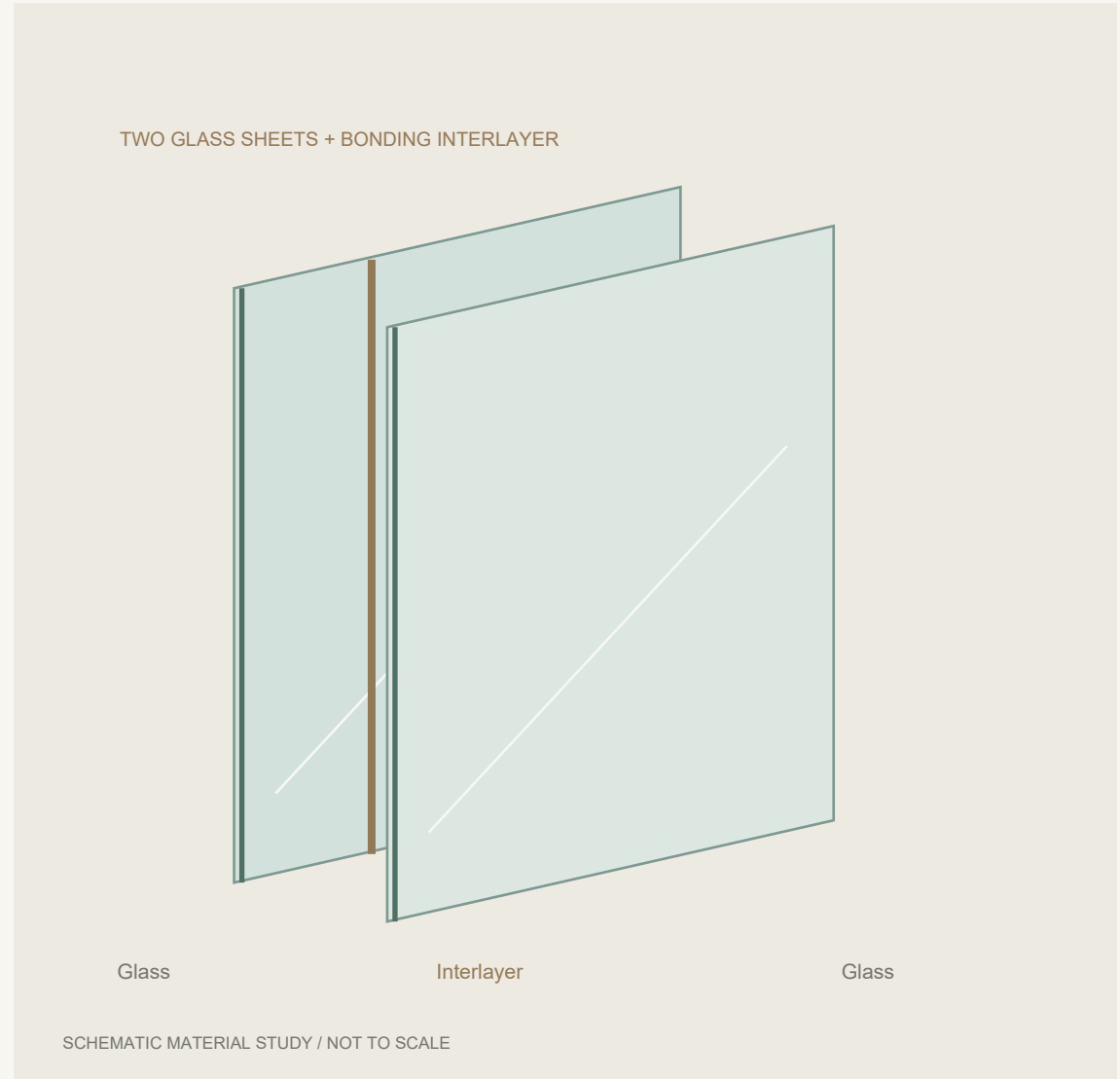
3 mm glass + 0.38 mm PVB + 3 mm glass.

NOMINAL TOTAL THICKNESS

6.38 mm. The commercial 6 mm label refers to the two glass sheets; the interlayer adds thickness.

SELECTION

Clear glass and compatible finishes are selected for the project. Safety performance depends on the tested product.



Single laminated. 4+4.

VETRO LAMINATO SINGOLO / GAMMA COMMERCIALE 8 MM

Two 4 mm glass sheets with the specified PVB build-up. The interlayer is included in the nominal total thickness shown below.

CODE	GLASS + PVB + GLASS	PVB THICKNESS	NOMINAL TOTAL
44.1	4 mm + 0.38 mm + 4 mm	0.38 mm	8.38 mm
44.2	4 mm + 0.76 mm + 4 mm	0.76 mm	8.76 mm
44.3	4 mm + 1.14 mm + 4 mm	1.14 mm	9.14 mm
44.4	4 mm + 1.52 mm + 4 mm	1.52 mm	9.52 mm

The suffix represents the PVB build-up in conventional 0.38 mm equivalents. A thicker interlayer is not automatically an acoustic, structural or hurricane-rated grade.

Specify both interlayer family and thickness. Availability, tolerances and certified classification are confirmed for the selected laminated product.

Not all PVB is the same.

INTERCALARI / COMFORT ACUSTICO E PROTEZIONE

Acoustic PVB

PVB ACUSTICO

Specially formulated acoustic grades damp sound-induced vibration. Selected multilayer products use a softer viscoelastic core; other acoustic technologies are also available.

APPLICATION & SELECTION

Consider for facades near airports, roads and urban noise. Compare the tested acoustic performance of the complete glazing.

Protection-oriented PVB

PVB PER SICUREZZA AD ALTE PRESTAZIONI

Special grades and build-ups are selected for impact, forced-entry, blast or severe-weather requirements. Extra thickness alone does not define a protection level.

APPLICATION & SELECTION

Glass treatment, adhesion, interlayer formulation and framing must match the tested assembly. A rigid structural grade is not automatically a blast or hurricane solution.

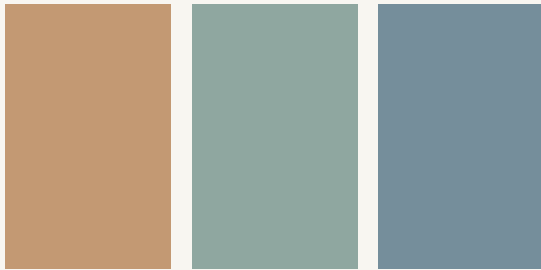
Acoustic, protection and structural functions are product-specific and may overlap in validated compositions.

Colour. Privacy. Structure.

INTERCALARI DECORATIVI E STRUTTURALI

Coloured / tinted PVB

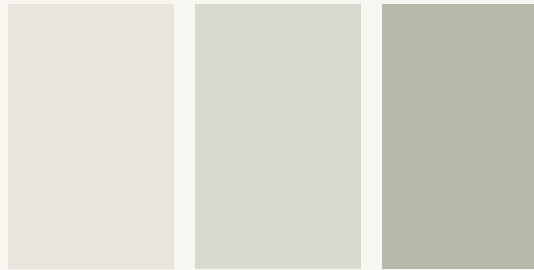
PVB COLORATO O TINTO



Transparent or translucent colour options for partitions, stairs and architectural features. Combine layers only where the laminator confirms compatibility.

White / opaque PVB

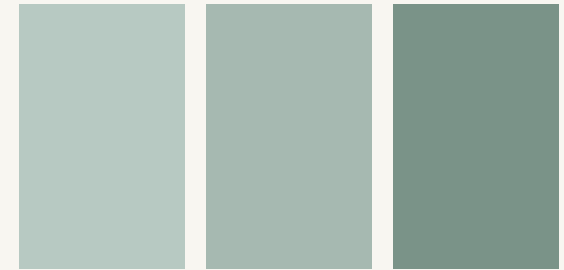
PVB BIANCO O OPACO



White, translucent and opaque grades support privacy, diffusion and selected backlit or spandrel applications. Confirm light transmission and the required opacity.

Structural PVB

PVB STRUTTURALE RIGIDO



Higher-stiffness PVB can contribute to composite action in engineered laminates. Design must consider load duration, temperature and post-breakage behaviour.

Ionoplast interlayers, such as SentryGlas, are a separate polymer family. They must not be described as PVB. Colours shown are illustrative, not supplier samples.

Hurricane-resistant glazing.

VETRATURE PER SISTEMI RESISTENTI A VENTO E DETRITI

Documented reference build-up from Kuraray's Hurricane Glazing portfolio. A complete glazing system is selected for the project wind pressure, dimensions and impact requirement.

6 mm HS + 2.28 mm interlayer + 6 mm HS

HS = heat-strengthened glass / vetro indurito. Nominal laminate total: 14.28 mm.

PVB REFERENCE

The manufacturer identifies Trosifol Clear / XT UltraClear PVB at 2.28 mm within the illustrated hurricane-glazing selection.

IONOPLAST ALTERNATIVE

SentryGlas is a separate interlayer option. The required grade and thickness depend on the documented system and design conditions.

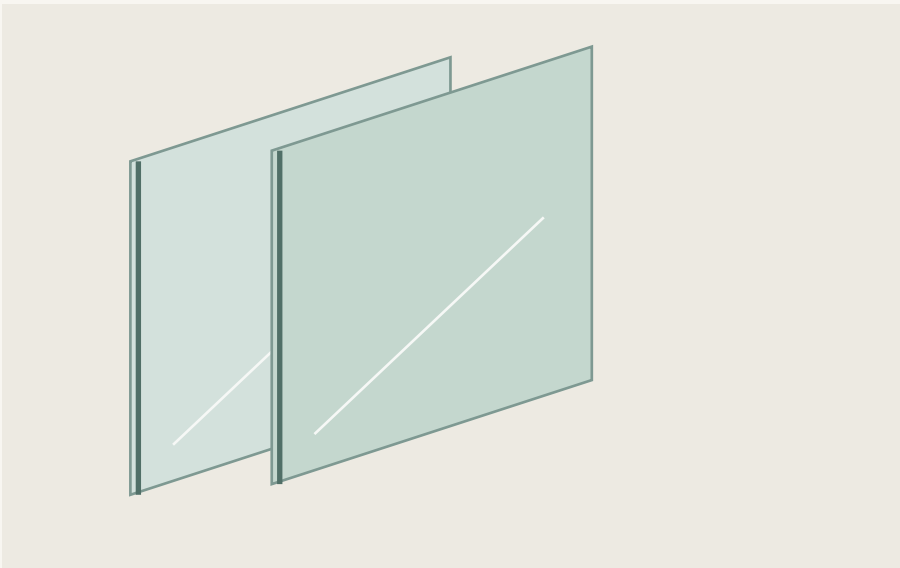
This reference is not a universal anti-hurricane recipe or a SPIER-IN approval. Use the tested glass, frame, sealants, anchorage and installation details; verify the required impact and cyclic-pressure testing for the target market.

SOURCE: KURARAY / HURRICANE GLAZING - TECHNICAL REFERENCE

Two panes. Or three.

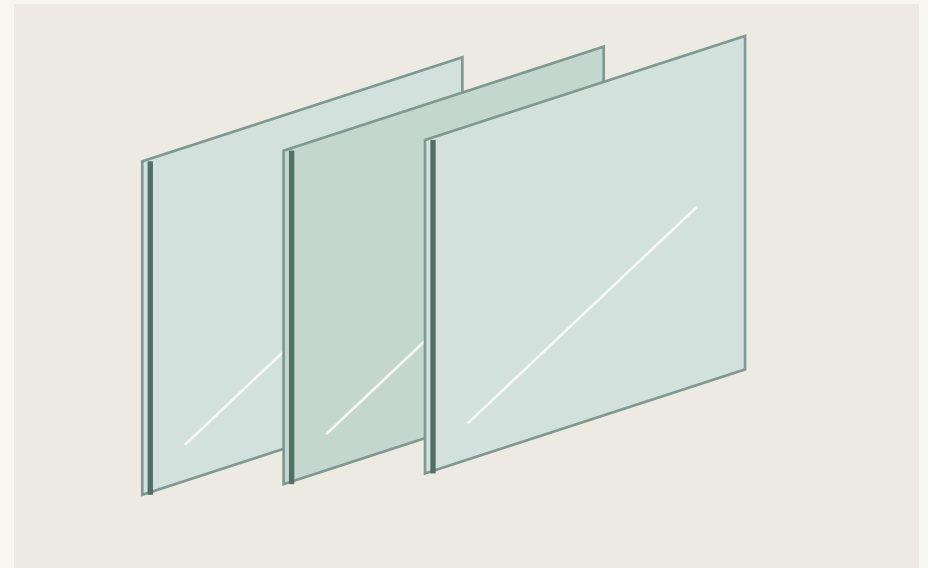
VETROCAMERA DOPPIO E TRIPLO

Double glazing



Two glazed panes separated by one sealed cavity, filled with dry air or a specified insulating gas.

Triple glazing



Three glazed panes separated by two sealed cavities. Suitable coatings and gas fills can provide lower U_g than comparable double glazing.

Each pane may itself be laminated. Spacers and perimeter seals define the cavities; total weight and thickness must suit the frame.

Choose each glass layer.

LASTRE E TRATTAMENTI COMPATIBILI CON IL VETROCAMERA

Laminated

Stratificato

Bonded sheets with an interlayer that helps retain fragments after breakage; select the required safety or acoustic grade.

Toughened

Temprato

Thermal treatment increases mechanical strength and resistance to thermal stress. Breakage behaviour differs from laminated glass.

Low-E coated

Basso emissivo

A low-emissivity coating reduces radiative heat transfer. Coating type and position are specified for the unit.

Solar-control / selective

Selettivo

Coatings balance daylight transmission with solar heat gain. Assess light transmission, solar factor and appearance.

Acid-etched

Acidato

A satin, light-diffusing finish for selected privacy and decorative applications; compatibility and treated-face position are checked.

Screen-printed

Serigrafato

Printed patterns provide architectural character and selected shading or privacy effects, according to coverage and composition.

Functions can be combined only where processing, coating and interlayer compatibility are confirmed.

One unit. Several functions.

VETROCAMERA ACUSTICO / DI SICUREZZA / CON VENEZIANA

Acoustic

ISOLAMENTO ACUSTICO

Different pane thicknesses and acoustic laminated glass can be combined to address project noise requirements.

Compare tested acoustic ratings for the selected composition and complete window. Triple glazing is not automatically the best acoustic choice.

Safety

SICUREZZA IN USO

Safety glass is selected according to location, use and the risks associated with the opening.

For Italian projects, UNI 7697 guides the selection of glass and required safety performance. Do not treat it as a blanket product certification.

Integral blinds

VENEZIANA INTERNA

A compatible Venetian blind is sealed inside the glazing cavity, with manual or motorised controls.

Confirm cavity width, glass build-up, blind dimensions, power requirements and supported control functions.

Thermal, solar-control, acoustic and safety functions are selected together for the actual application.

03

Solar control. Reflection.

Vetri selettivi e riflettenti / tipo Stopsol

Solar-control glass is selected to manage incoming sunlight and the appearance of the facade. Reflective options can create a distinct exterior character.

REFLECTIVE RANGE

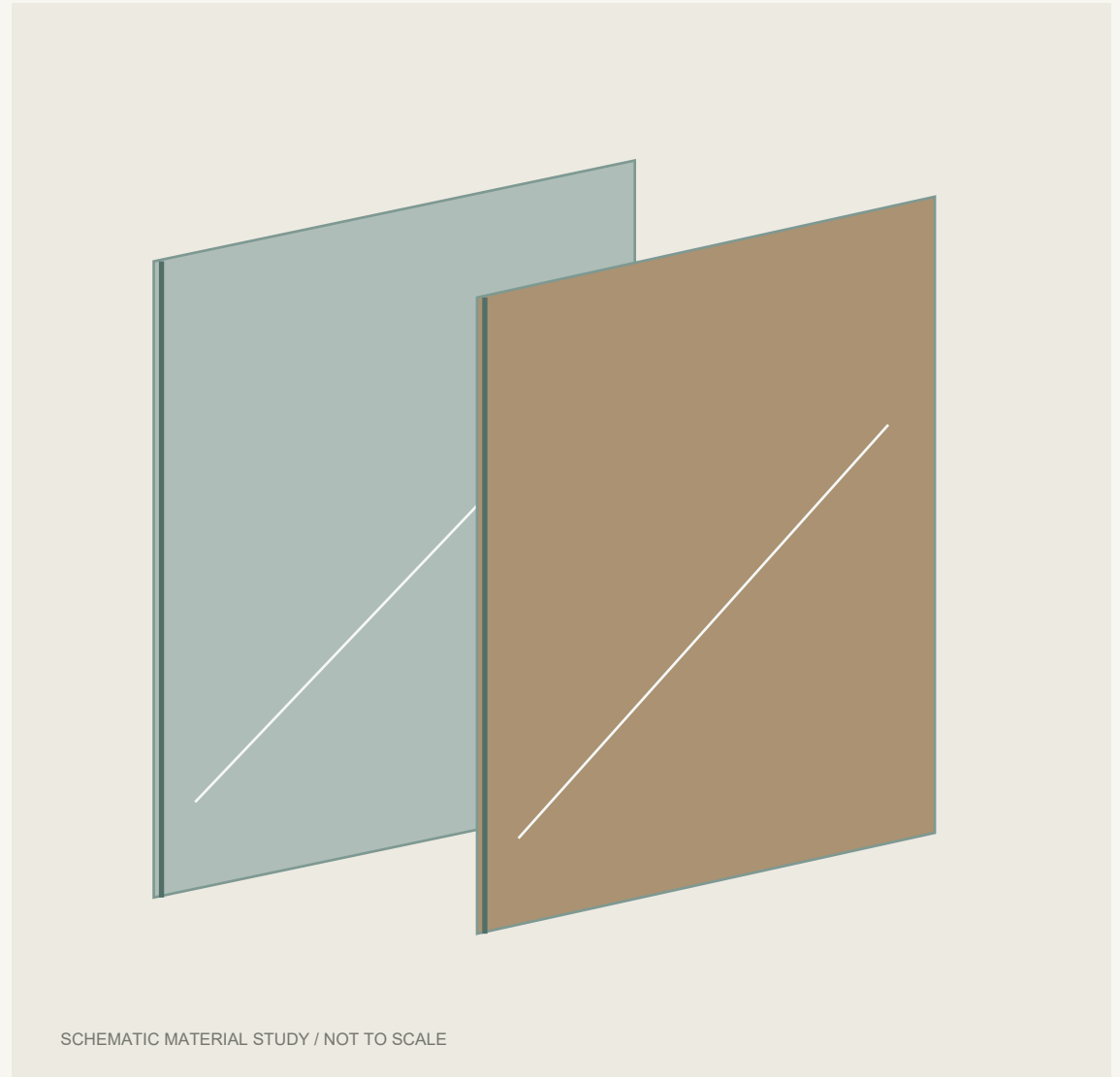
Stopsol-type reflective glass can be considered where confirmed by the supplier.

SELECTION

Compare daylight transmission, solar factor and external reflection for the chosen composition.

APPEARANCE

Reflections vary with lighting. Reflective glass does not guarantee privacy at night.



SCHEMATIC MATERIAL STUDY / NOT TO SCALE

04

The right cavity fill.

Aria / gas argon / gas krypton

Dry air, argon and krypton are cavity-fill options. Select the fill together with cavity width, coatings and the declared performance of the complete insulating glass unit.

AIR

The sealed cavity contains dry air. Suitability depends on the thermal and solar-control targets, not climate alone.

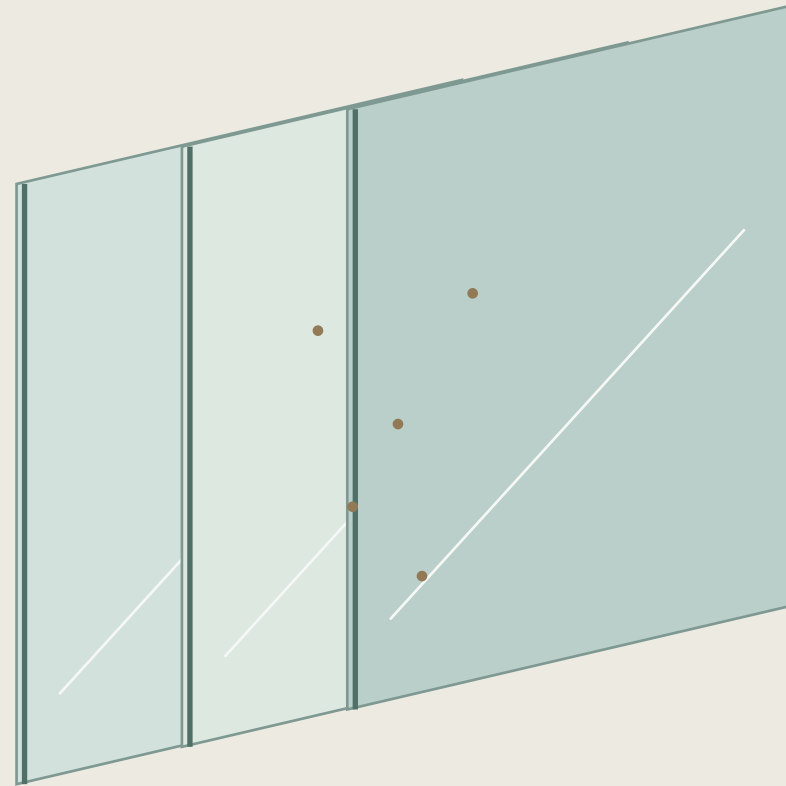
ARGON

Lower thermal conductivity than air can improve insulation. There is no fixed percentage gain for every composition.

KRYPTON

Useful for selected narrower cavities. Confirm declared U_g , filling concentration, compatibility and cost.

INSULATING GAS IN THE CAVITY



SCHEMATIC MATERIAL STUDY / NOT TO SCALE

05

Safety first.

Vetro antiinfortunistico

Safety glazing is selected to reduce injury risk in the intended location. Laminated and toughened safety products have different breakage behaviour.

LAMINATED SAFETY GLASS

The interlayer helps retain broken glass. Required classification depends on the product and location.

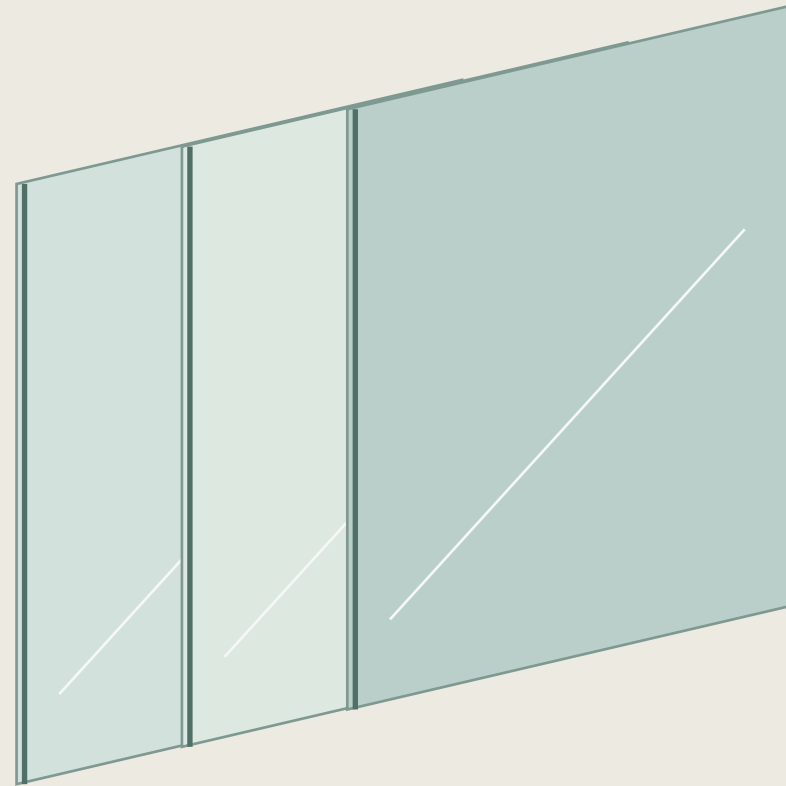
TOUGHENED SAFETY GLASS

A different safety glass category with a characteristic fragmentation behaviour.

DOCUMENTATION

Check the declared impact classification, including EN 12600 where applicable, and installation requirements.

PROTECTION IS A COMPLETE COMPOSITION



SCHEMATIC MATERIAL STUDY / NOT TO SCALE

06

Protection by design.

Vetro antivandalico e antiintrusione

Vandal-resistant and intrusion-resistant glazing require defined, tested glass compositions. Thickness alone does not establish the level of resistance.

VANDAL RESISTANCE

Select the required resistance to impact and attack for the location.

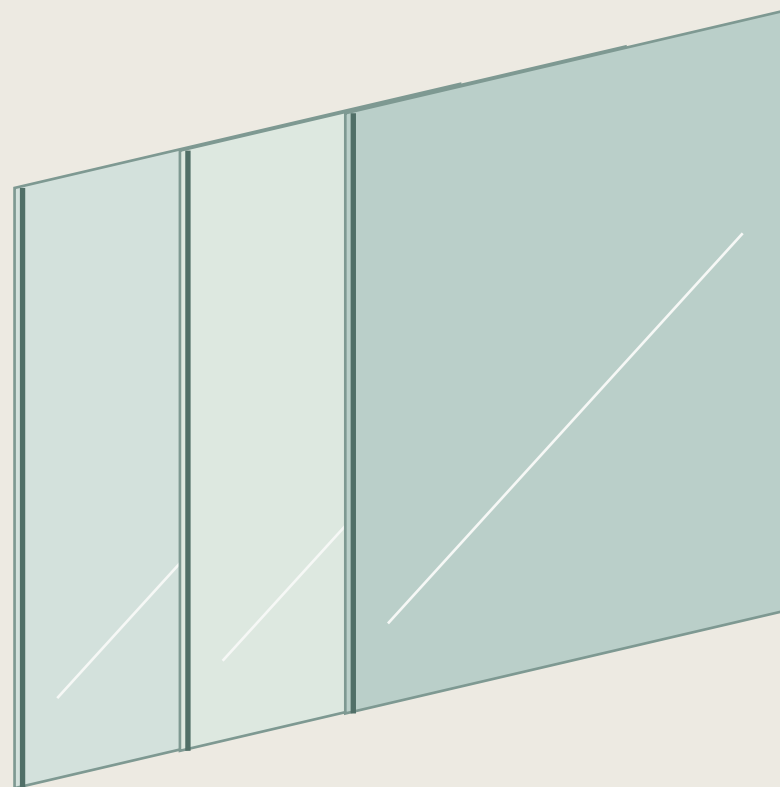
INTRUSION RESISTANCE

Glazing and the surrounding frame, hardware and fixing must form a suitable security system.

CLASSIFICATION

Specify the required EN 356 glass class where applicable. A glass class does not certify the complete window.

PROTECTION IS A COMPLETE COMPOSITION



SCHEMATIC MATERIAL STUDY / NOT TO SCALE

07

Privacy between panes.

Vetro camera con veneziana interna

A Venetian blind can be enclosed inside a compatible insulating glass unit, placing light control between the panes.

MANUAL OPERATION

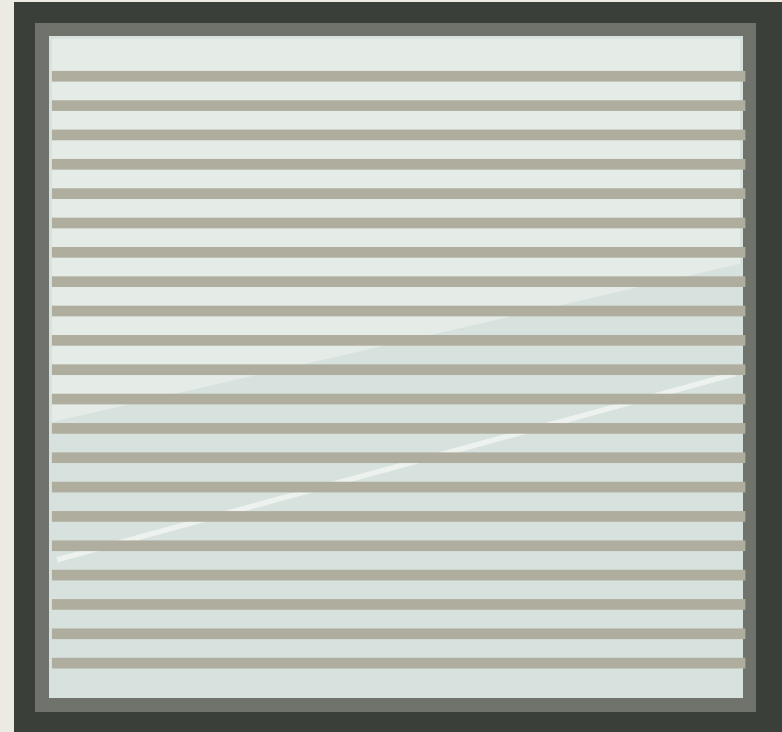
Magnetic or other compatible manual controls, depending on the blind system.

MOTORISED OPERATION

Electric or battery-powered options where available; control integration is system-specific.

DESIGN DETAILS

Confirm cavity width, slat finish, tilt and raising functions, dimensions and access for service.



SCHEMATIC MATERIAL STUDY / NOT TO SCALE

08

Privacy at a touch.

Vetro o pellicola privacy a comando elettrico

Liquid-crystal privacy technology switches between a clear and a translucent appearance. The translucent state provides visual screening while still passing light.

LAMINATED SOLUTION

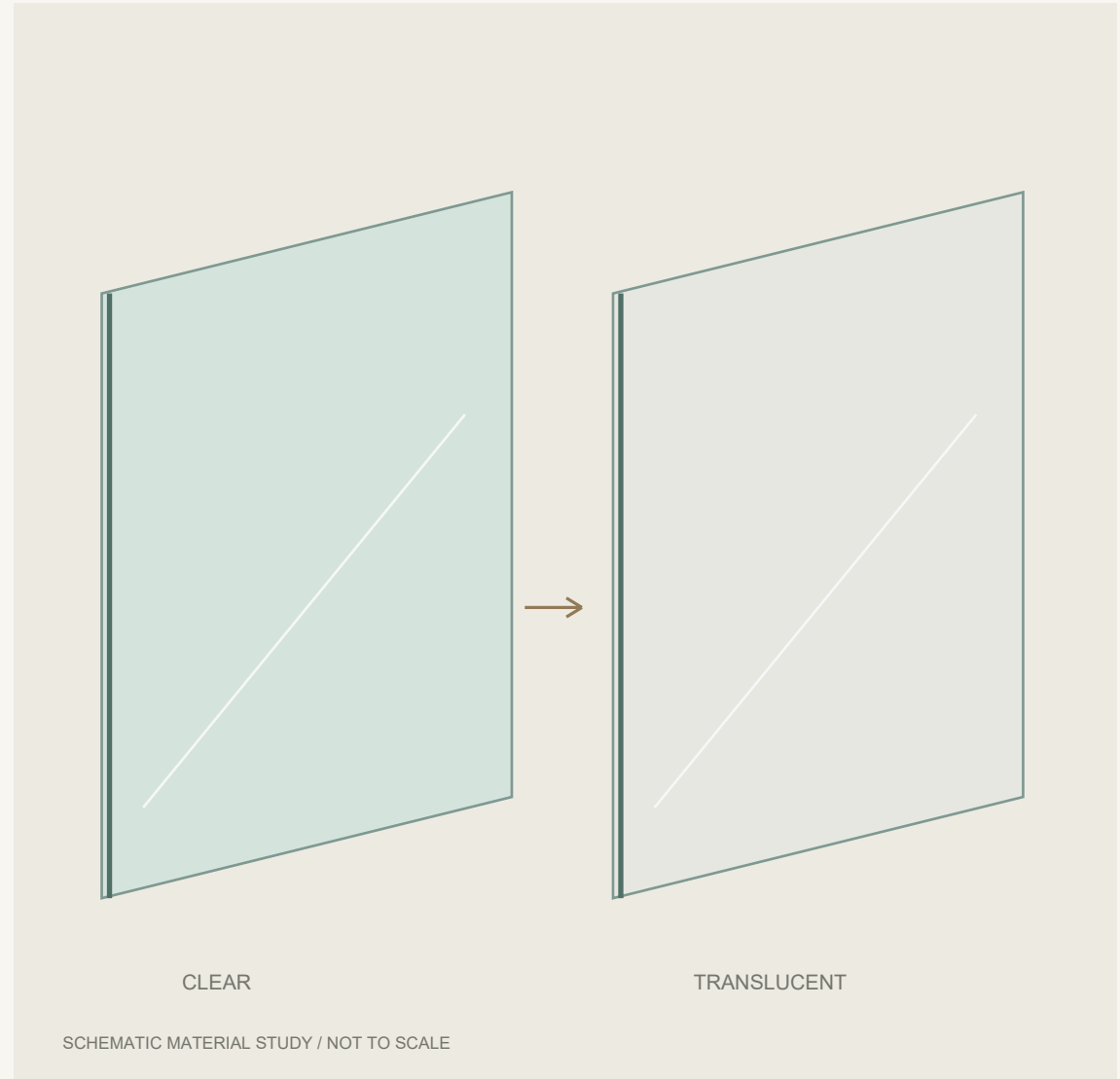
A switchable film can be protected within a compatible laminated glass composition.

APPLIED FILM

Retrofit film is a distinct option. Confirm surface suitability, edge protection and electrical integration.

PRIVACY, NOT BLACKOUT

A frosted privacy state is not the same as dark tinting or full light exclusion.



09

Light, electrically tuned.

Vetro oscurabile elettricamente

Electrically tintable technologies change the glazing tint to manage light and glare. They differ from privacy films that switch to a translucent appearance.

TECHNOLOGY

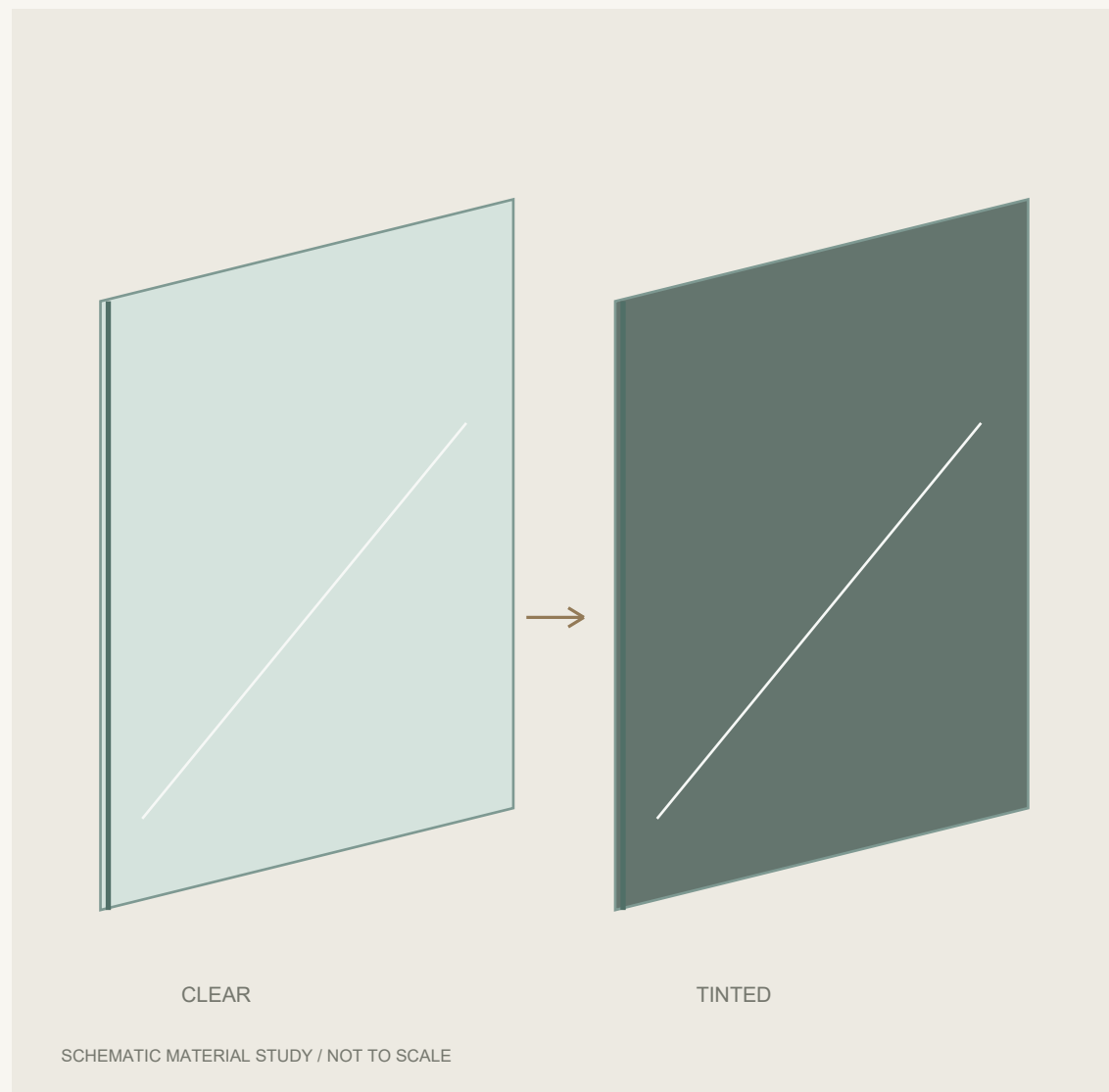
Electrochromic or other electrically tintable solutions require product identification.

VISUAL EFFECT

The glazing becomes darker while the view can remain visible, depending on the technology.

PROJECT OPTION

Confirm supplier availability, tint states, switching time, controls and insulating-glass compatibility.



Read the composition.

Illustrative build-ups for discussion with the glazing supplier. Coatings, pane treatment and performance must be defined separately.

4 / 16 Ar / 44.2

Double glazing with laminated inner pane

4 mm glass / 16 mm argon-filled cavity / laminated glass made of 4 + 4 mm sheets and 0.76 mm PVB.

6 / 16 Ar / 33.2

Double glazing with alternative pane thickness

6 mm glass / 16 mm argon-filled cavity / laminated glass made of 3 + 3 mm sheets and 0.76 mm PVB.

4 / 14 Ar / 4 / 14 Ar / 44.2

Triple glazing with laminated inner pane

Three panes separated by two argon-filled cavities. The full build-up must suit the frame and the project requirements.

Ar = argon. Examples are not stock codes, performance declarations or certified security specifications.

Read the cavity. Check the fit.

COMPOSIZIONI E INTERCAPEDINI / ESEMPI ILLUSTRATIVI

BUILD-UP	GLASS / CAVITY / GLASS	NOMINAL TOTAL
4 / 9 / 4	4 mm glass / 9 mm cavity / 4 mm glass	17 mm
4 / 12 / 4	4 mm glass / 12 mm cavity / 4 mm glass	20 mm
4 / 16 / 4	4 mm glass / 16 mm cavity / 4 mm glass	24 mm
4 / 18 / 4	4 mm glass / 18 mm cavity / 4 mm glass	26 mm
4 / 22 / 4	4 mm glass / 22 mm cavity / 4 mm glass	30 mm

These examples explain the notation; they do not identify the most common product or the best performance. Wider cavities do not automatically improve thermal or acoustic insulation.

Choose cavity width for the gas, coatings, pane thickness and any integral blind. Confirm frame capacity, spacer design and measured or calculated performance.

Your glass. Your priorities.

PRIORITY	OPTIONS TO EXPLORE	CONFIRM FOR THE PROJECT
Thermal comfort	Low-E / double or triple glazing / gas	Declared Ug / cavity / edge spacer
Sun & glare	Selective / reflective / tintable glass	Solar factor / daylight / orientation
Acoustic comfort	Suitable laminated / asymmetric units	Tested acoustic rating of composition
Injury protection	Laminated or toughened safety glass	Impact class / position / installation
Vandal & intrusion risk	Tested security glazing	Glass class / frame / hardware
Privacy & shading	Integral blinds / switchable technology	Control / power / appearance / upkeep

Final glass compositions, certified performance and availability are supplied for the selected product. Product categories in this proof do not constitute a certified specification.

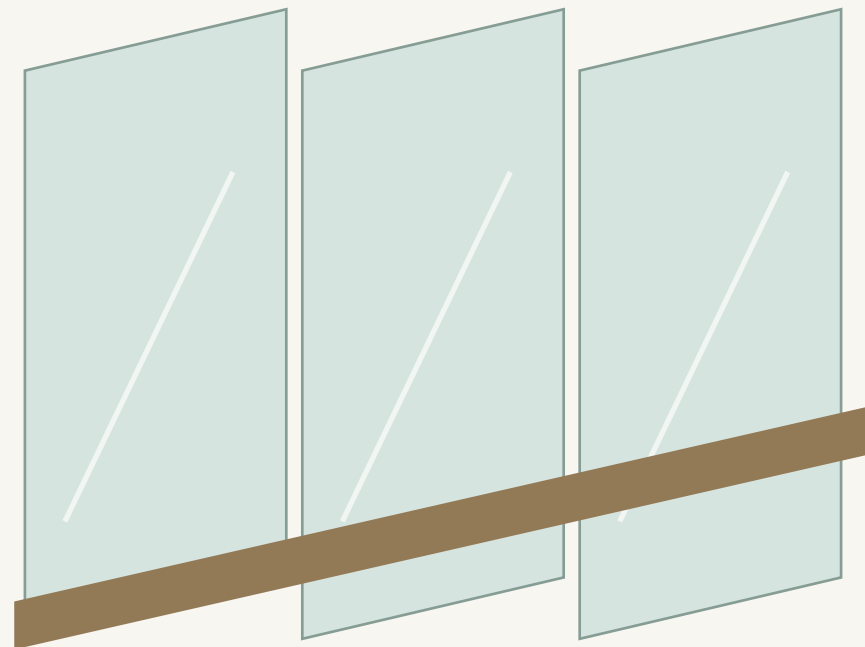
Beyond windows and doors.

ANCHE VETRI PER PARAPETTI

We can also supply glass for balustrades: tailored panels for balconies, terraces, stairs, landings and mezzanines, indoors and outdoors.

Flat or curved. Clear or private. Prepared for compatible clamps, point fixings, aluminium base channels or framed systems.

Special applications include Juliet balconies, pool barriers and wind screens. Each application has its own design and performance requirements.



BALCONIES / STAIRS / TERRACES

Architectural illustration / not to scale

Made to follow the architecture.

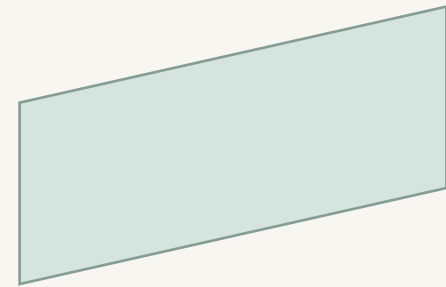
RETTANGOLARI / TRAPEZOIDALI / SAGOMATI / CURVI



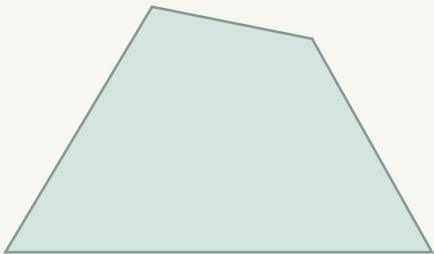
Rectangular / square



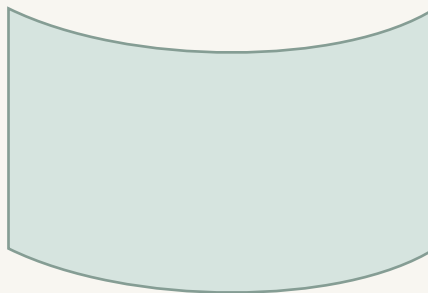
Trapezoidal



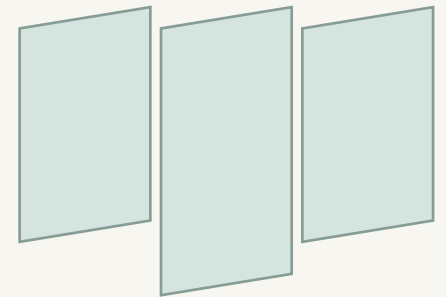
Sloping / stair panels



Triangular / polygonal



Curved glass



Faceted curved layouts

Custom outlines, rounded corners and cut-outs on request. Curved panels require a confirmed radius, arc and processing capability; faceted layouts use flat panels. All shapes depend on fabrication and system approval.

A fixing for every design.

PINZE / PUNTUALI / PROFILI A TERRA / TELAI IN ALLUMINIO

01

Top-mounted base channel

Continuous aluminium profile fixed above the structural floor.

02

Side-mounted base channel

Profile attached to the slab edge or structural fascia.

03

Recessed base channel

A compatible channel concealed within a designed floor recess.

04

Base clamps / spigots

Discrete supports holding the glass at its lower edge.

05

Point fixings / stand-offs

Bolted fittings through prepared glass holes, commonly side-mounted.

06

Posts with glass clamps

Aluminium or stainless-steel posts with suitable glass adapters.

07

Perimeter aluminium frame

Glass retained within compatible top, bottom and side profiles.

08

Partial frame / side channels

Two-edge or three-edge retention where the approved system allows.

09

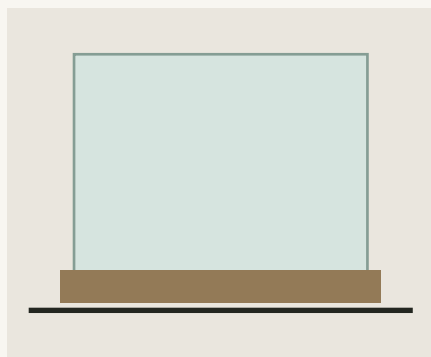
Juliet balcony fixings

Side profiles, brackets or point-fixing systems for full-height openings.

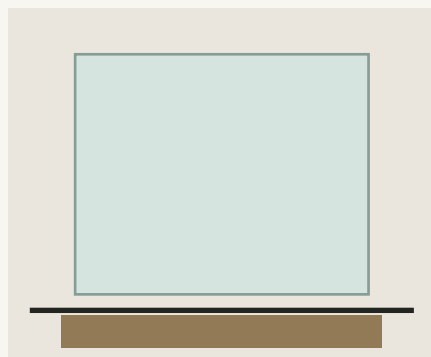
These are fixing families, not interchangeable components. The selected system determines compatible glass, supports and anchoring.

See the difference.

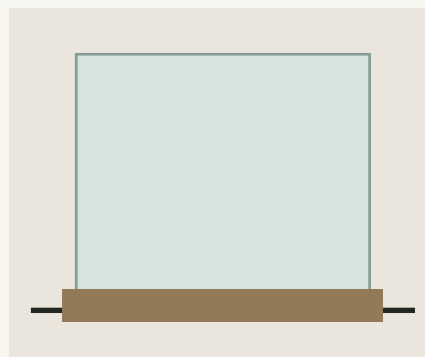
SCHEMI DI FISSAGGIO / ILLUSTRAZIONI NON IN SCALA



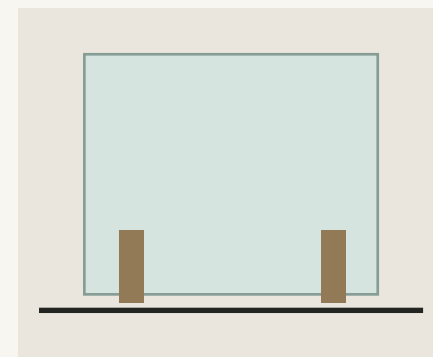
Base channel



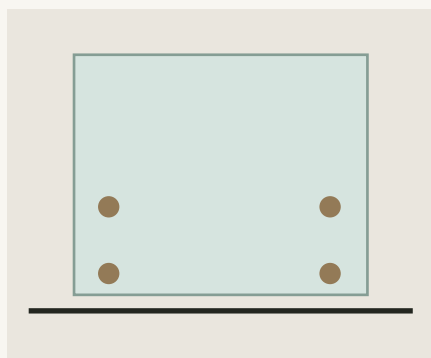
Side channel



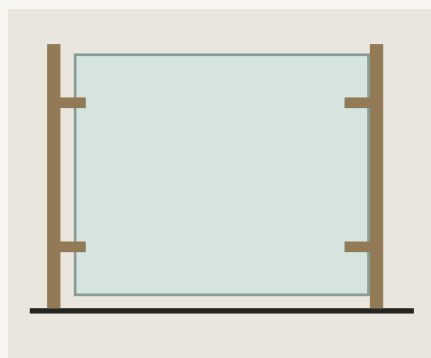
Recessed channel



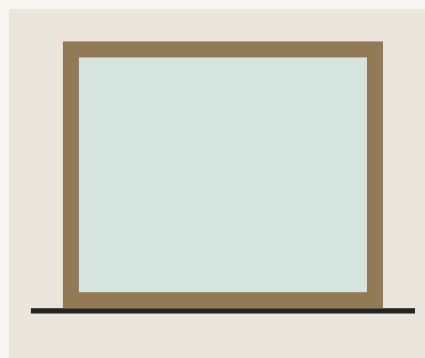
Base clamps



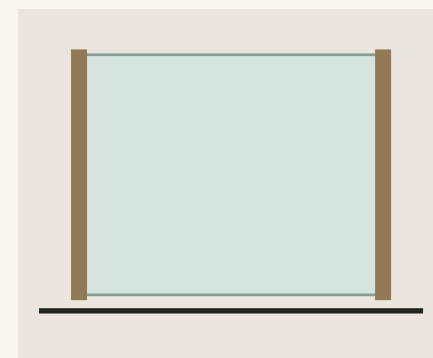
Point fixings



Posts & clamps



Perimeter frame



Side profiles

Schematic elevations explain the fixing families; they are not installation drawings or approved specifications.

Transparency. Colour. Privacy.

COMPOSIZIONI / FINITURE / LAVORAZIONI

Safety composition

Laminated safety glass; toughened or heat-strengthened laminated build-ups where specified. PVB, structural PVB or ionoplast interlayers according to the selected system.

Appearance

Clear, extra-clear / low-iron, body-tinted, coloured interlayers, translucent or opaque interlayers, satin or acid-etched finishes, ceramic screen printing and compatible digital decoration.

Preparation

Polished edges, eased or rounded corners, holes, notches and cut-outs to approved drawings. Processing sequence and tolerances must be confirmed before production.

Profiles & accessories

Anodised or powder-coated aluminium, suitable stainless-steel fittings, top cap rails, handrails, cover trims and integrated LED options with compatible systems.

Continuous design

Straight runs, corners, stairs and curved layouts. With or without a top rail only where the complete system permits. Curved glass needs matching supports and detailing.

Thickness is selected for geometry, loads, support and post-breakage behaviour. The 3+3 and 4+4 glazing examples earlier in this catalogue are not universal balustrade specifications.

From the idea to the right glass.

VETRO PER PARAPETTI / FORNITURA SU PROGETTO

01 / Tell us the application

Balcony, terrace, stairs, mezzanine, Juliet balcony or pool barrier; indoor or outdoor location.

02 / Define the geometry

Panel dimensions and height, slopes, radius and arc for curved glass, corners, holes and finished edges.

03 / Identify the fixing system

Manufacturer and model, support arrangement, approved glass build-up, substrate and anchoring requirements.

04 / Choose the appearance

Clear or extra-clear, tint, privacy, decoration and any compatible rail or lighting detail.

The complete balustrade - glass, interlayer, fixings, anchors and supporting structure - must meet the project requirements. Curved and custom panels are confirmed individually. Hardware supply and installation scope are agreed in the quotation.

TECHNICAL RESEARCH / MANUFACTURER REFERENCES

AGC / Balustrade glass

ONLEVEL / Fixing families

Faraone / Balustrade systems

Saint-Gobain / Curved glass

Let's make your project real.

Share dimensions, drawings and the functions that matter to you. We will coordinate the selected glazing composition, performance and integration.

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Illustrations are conceptual. Models, dimensions, finishes, performance and supply scope are confirmed for each project. This design proof is pending supplier validation.

