F1 COMPOSITES

GLASS-FIBER-REINFORCED POLYURETHANE

Composite Windows & Doors

Pultruded composite frames for residential windows, facade glazing and entrance systems. Eleven product families, with glazing configurations and performance data in one guide.



11	08	03	PU
PRODUCT FAMILIES	WINDOW SYSTEMS	DOOR SYSTEMS	COMPOSITE MATRIX

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01 · MATERIAL & CONSTRUCTION

A composite frame.
A complete window system.

Glass reinforcement and a thermoset polyurethane matrix form pultruded profiles. Chamber geometry, glazing, seals and hardware work together in the finished assembly.



Profile cross-section detail.
Construction varies by system.

INDICATIVE MATERIAL DATA

Thermal conductivity

0.34 W/(m·K)

Density

2.10 g/cm³

Flexural strength

1400 MPa

Linear thermal expansion

$0.5\text{–}0.8 \times 10^{-5}\ K^{-1}$

Published material values for reference. Test methods and specimen conditions are not specified; confirm values for the selected profile.

Material conductivity

Describes heat flow through the material in W/(m·K). The value above is a material property.

Whole-window U-value

Includes frame, glazing and glass-edge construction. Its unit is W/(m²·K).

GLASS REINFORCEMENT + PU MATRIX

The profile, insulating glazing, perimeter seals and operating hardware form a complete assembly. Select and assess these components together.

02 · PRODUCT SELECTION

Find your system

Compare opening formats, then review the glazing and declared performance on the dedicated product page. Series numbers are product identifiers.

SERIES	SYSTEM	DESIGN FOCUS	PAGE
65	Casement Window	Everyday residential use	04
72	Casement Window	Cold-climate insulation	05
83	Flush Window	Flush frame and sash	06
85	Casement Window	Low-energy envelopes	07
95	Casement Window	Larger glazed openings	08
103	Tilt-and-Turn Window	Tilt-and-turn operation	09
103	Micro-Vent Window	Broad views and ventilation	10
114	Curtain-Wall Window	Integrated facade appearance	11
ENTRY	Insulated Entrance Door	Insulated main entrance	12
132	Lift-and-Slide Door	Wide sliding openings	13
145	Side-Pressure Door	Gasket compression closure	14

Before selecting a series

Define opening size and operation, target U-value, glazing build-up, finish and destination requirements. Confirm the exact configuration before ordering.

Glazing & data notes · 15

Notation, paired U-values and interpretation of performance classes.

Project enquiry · 16

A short checklist for preparing your opening schedule and enquiry.

CASEMENT SYSTEMS

65 Casement Window

A chambered composite window system for everyday residential use, combining thermal insulation with a practical opening format.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Chambered polyurethane composite frame
- Configurations for new-build and replacement windows
- Two listed Low-e glazing configurations

APPLICATIONS

Conventional housing, residential renovation and multi-storey homes.

Class 8	Class 5	Class 7	>40 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-WINDOW U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 9A/Ar + 5 + 9A/Ar + 5	1.6 / 1.5
5Low-e + 9A/Ar + 5Low-e + 9A/Ar + 5	1.35 / 1.3

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

CASEMENT SYSTEMS

72 Casement Window

A multi-chamber system for homes with demanding winter insulation requirements. The range includes A, B and C variants.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Multi-chamber profile construction
- Three listed glazing configurations
- A / B / C variants; details on request

APPLICATIONS

Cold-climate housing and residential projects with demanding winter insulation requirements.

Class 8	Class 5	Class 8	>40 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-WINDOW U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5 + 12A/Ar + 5 + 12A/Ar + 5	1.5 / 1.4
5Low-e + 12A/Ar + 5 + 12A/Ar + 5	1.4 / 1.3
5Low-e + 12A/Ar + 5Low-e + 12A/Ar + 5	1.3 / 1.2

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

FLUSH FRAME & SASH

83 Flush Window

Flush frame-and-sash styling creates clean sightlines for contemporary residential facades and interiors.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Flush frame-and-sash appearance
- Choice of surface finishes
- Warm-edge glazing configuration listed

APPLICATIONS

Modern homes, large apartments and residential projects with a clean-lined facade.

Class 8	Class 6	Class 8	>40 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-WINDOW U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 15A/Ar + 5 + 15A/Ar + 5	1.4 / 1.3
5Low-e + 15A/Ar + 5Low-e + 15A/Ar + 5	1.2 / 1.1
5Low-e + 16A/Ar (warm edge) + 5Low-e + 16A/Ar (warm edge) + 5	1.0 / 0.9

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

LOW-ENERGY WINDOW SYSTEMS

85 Casement Window

A multiple-seal window system with low reported whole-window U-values for buildings with demanding thermal targets.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Multiple perimeter seals
- Three listed glazing configurations
- Warm-edge option for lower heat transfer

APPLICATIONS

Low-energy housing and projects targeting reduced envelope heat loss.

Class 9	Class 6	Class 8	>42 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-WINDOW U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 16A/Ar + 5 + 16A/Ar + 5	1.3 / 1.2
5Low-e + 16A/Ar + 5Low-e + 16A/Ar + 5	1.15 / 1.05
5Low-e + 16A/Ar (warm edge) + 5Low-e + 16A/Ar (warm edge) + 5	0.9 / 0.8

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

LOW-ENERGY WINDOW SYSTEMS

95 Casement Window

Enlarged profile sections support the design of larger glazed openings and facades with broad views.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Enlarged profile sections
- Double Low-e glazing configurations
- Warm-edge configuration listed

APPLICATIONS

Large apartments, villas and panoramic residential facades with low-energy design targets.

Class 9	Class 6	Class 8	>42 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-WINDOW U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 16A/Ar + 5Low-e + 16A/Ar + 5	1.1 / 1.0
5Low-e + 16A/Ar (warm edge) + 5Low-e + 16A/Ar (warm edge) + 5	0.85 / 0.75

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

INWARD-OPENING CASEMENT

103 Tilt-and-Turn Window

Inward-opening tilt-and-turn operation combines controlled ventilation with full opening for access and cleaning.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Inward-opening tilt-and-turn hardware
- Multi-point locking
- Continuous perimeter compression seals

APPLICATIONS

Bedrooms, studies and living spaces in houses and large apartments.

Class 9	Class 6	Class 8	>42 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-WINDOW U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 18A/Ar (warm edge) + 5Low-e + 18A/Ar (warm edge) + 5	0.8 / 0.7

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

LARGE-OPENING WINDOW SYSTEMS

103 Micro-Vent Window

A window format for larger residential openings, combining a broad glazed view with dedicated opening sections.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Large-opening design format
- Multiple seals for thermal and acoustic comfort
- Ventilation hardware to be confirmed by configuration

APPLICATIONS

Large apartments, sky-garden housing and courtyard-facing residential openings.

Class 9	Class 6	Class 8	>42 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-WINDOW U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 18A/Ar (warm edge) + 5Low-e + 18A/Ar (warm edge) + 5	0.8 / 0.7

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

FACADE WINDOW SYSTEMS

114 Curtain-Wall Window

A curtain-wall-style window system with visible vertical framing and concealed horizontal framing for an integrated facade appearance.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Visible vertical / concealed horizontal framing
- Wide glazed composition
- Warm-edge glazing configuration listed

APPLICATIONS

Detached villas, townhouses and private residences with coordinated facade glazing.

Class 9	Class 6	Class 8	>42 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-WINDOW U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 18A/Ar (warm edge) + 5Low-e + 18A/Ar (warm edge) + 5	0.9 / 0.8

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

ENTRANCE SYSTEMS

Insulated Entrance Door

An insulated entrance system with a polyurethane door core and multiple perimeter seals for residential entrances.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Polyurethane insulated door core
- Multiple perimeter seals
- Hardware and finish by project specification

APPLICATIONS

Villas, large homes and main entrances to low-energy buildings.

Class 9	Class 6	Class 8	>42 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

ASSEMBLY · WHOLE-DOOR U-VALUE

ASSEMBLY	U · W/(m²·K)
Insulated entrance-door assembly	0.8

No glazing build-up is specified for this entrance-door assembly.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

SLIDING DOOR SYSTEMS

132 Lift-and-Slide Door

A lift-and-slide system for wide openings. The closing mechanism compresses the seals while sliding operation saves interior space.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Lift-and-slide operating mechanism
- Compression sealing when closed
- Wide-opening residential format

APPLICATIONS

Courtyards, panoramic balconies and garden entrances.

Class 9	Class 5	Class 7	>40 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-DOOR U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 9A/Ar + 5Low-e + 9A/Ar + 5	1.4 / 1.3

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

SLIDING DOOR SYSTEMS

145 Side-Pressure Door

A side-pressure closing mechanism compresses the gaskets around large glazed openings, combining wide views with a sealed closure.



Illustrative configuration. Finish and layout are selected by project.

SYSTEM FEATURES

- Side-pressure gasket compression
- Large glazed opening format
- Glazing and operating layout by project

APPLICATIONS

Balcony renovations, sky-garden homes and large panoramic residential openings.

Class 9	Class 5	Class 7	>40 dB
WIND RESISTANCE	WATERTIGHTNESS	AIRTIGHTNESS	AIRBORNE SOUND INSULATION

GLAZING CONFIGURATIONS · WHOLE-DOOR U-VALUE

GLAZING BUILD-UP	U · W/(m²·K)
5Low-e + 9A/Ar + 5Low-e + 9A/Ar + 5	1.3 / 1.2

Paired U-values retain the listed notation; individual conditions require confirmation. See page 15.

Catalogue-stated performance. Test standards, specimen sizes and acoustic rating methods are not specified. Confirm project-specific evidence and the final configuration.

03 · GLAZING & PERFORMANCE NOTES

Read the configuration

Use the glazing build-up and performance table together. A series identifier alone does not define the performance of a finished window or door.

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5Low-e + 16A/Ar + 5Low-e + 16A/Ar + 5
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Example notation retained from the product tables. Confirm layer order and spacing in the final glazing schedule.

01 / GLAZING

Layer notation

Low-e marks a low-emissivity coated glass layer. A/Ar notation is retained as supplied. Confirm cavity fill, glass thicknesses, coating surfaces and safety-glass requirements.

02 / GLASS EDGE

Warm-edge options

Warm edge identifies the spacer option listed for that configuration. Confirm spacer specification and compatibility with the selected insulating glass unit.

03 / THERMAL DATA

Paired U-values

Values such as 0.8 / 0.7 reproduce the listed pair. The two conditions are not defined in the reference data. They are not presented as a range or assigned to a gas fill.

04 / PERFORMANCE

Classes and acoustics

Wind, water and air classes reproduce the catalogue classifications. No international class conversion is implied. Sound values retain the stated > symbol without an Rw, STC or OITC designation.

CONFIRM THE COMPLETE ASSEMBLY

Request the test or calculation basis for the chosen size, opening mode, glazing and hardware. Confirm wind-load suitability, water and air performance, thermal targets and project-specific acoustic requirements.

04 · PROJECT ENQUIRY

Start with your opening schedule.

Send the drawings and performance targets for your project to F1 Composites.



Project & destination	Country, city, building type and intended application.
Opening schedule	Width, height, quantity, opening mode and handing.
Performance targets	Whole-window / door U-value, wind, water, air and acoustics.
Configuration	Glazing, spacer, hardware, finish and installation interface.
Delivery scope	Required items, project programme and documentation needs.

Product images illustrate configurations. Architectural scenes are illustrative. Confirm final dimensions, finishes, hardware and performance in the agreed project specification.

F1 COMPOSITES

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