

Glazing Specification

Project

Green Devolved Projects

**FET College (Teach an Léinn), E45RX24, and;
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Document Issue Log

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1.0 GENERAL

1.1 Scope of Work

The supply and installation of external double glazed, non fire rated units to shape and sizes as indicated on window and door schedules. To layout and configuration as shown.

1.2 Drawing Reference

This specification to be read in conjunction with all relevant drawings.

1.3 Shop Drawings

1. Submit to Architect for review Shop Drawings and Product Data. Full size details of head, transom and cill construction, and Curtain Walling drainage, to be submitted with tender.
2. Until submittal is reviewed, work involving relevant product may not proceed.
3. Submit one print and one reproducible sepia copy for review. If corrections are required, one marked up print will be returned until the drawing is approved or approved as noted. The last submission (one print and one sepia) shall incorporate all the required changes.
4. Shop drawings to be forwarded to: Spentide Ltd, 80 Main Street, Midleton, Co. Cork and by email to john@spentide.ie

1.4 Maintenance Instructions

Written maintenance instructions on glazing to be given to client, to include the following, as a minimum:

- Recommended procedures and materials for cleaning and maintenance of framing and glazing.
- Specification on silicones
- Method statement for reglazing.
- Method statement for fault tracing.
- All relevant test certification i.e., water test, etc.
- All relevant guarantees and warranties.

1.5 Samples

Submit samples of all glazing materials to Architect. Set up sample on building for approval prior to final erection.

1.6 Codes and Standards Reference

Glazing shall be provided in compliance with latest building regulations and the follow non exhaustive list of standards, where later versions of the standards referred to exist, the manufacturer / supplier / installer shall meet the latest version of the standard.

BS 6262-7:2017	Glazing for buildings- Part 7: Code of practice for the provision of information
BS 6262-6:2005	Glazing for Buildings - Part 6: Code Of Practice For Special Applications

BS 6262-2:2005	Glazing For Buildings - Part 2: Code Of Practice For Energy, Light And Sound
BS 6262-3:2005	Glazing For Buildings - Part 3: Code Of Practice For Fire, Security And Wind Loading
BS 6262:1982	Code Of Practice For Glazing For Buildings
I.S. EN 16034:2014	Pedestrian Doorsets, Industrial, Commercial, Garage Doors And Openable Windows - Product Standard, Performance Characteristics - Fire Resisting And/Or Smoke Control Characteristics
I.S. EN 12179:2000	Curtain Walling - Resistance To Wind Load - Test Method
I.S. EN 1628:2021	Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance under static loading
I.S. EN 13830:2015+A1:2020 &AC:2022	Curtain walling - Product standard
I.S. EN 14019:2016	Curtain Walling - Impact Resistance - Performance Requirements
I.S. EN ISO 12631:2017	Thermal Performance Of Curtain Walling - Calculation Of Thermal Transmittance
I.S. EN 12210:2016	Windows And Doors - Resistance To Wind Load – Classification
BS 5606:2022	Accuracy and tolerance in design and construction. Guide
BS EN ISO 11600:2003	Building construction - Jointing products - Classification and requirements for sealants (+A1:2011) (incorporating corrigendum July 2006)
BS 4255-1:1986	Rubber used in preformed gaskets for weather exclusion from buildings. Specification for non-cellular gaskets
BS 6375-1:2015+A1 2016	Performance of windows and doors. Classification for weathertightness and guidance on selection and specification
BS 6375-2:2009	Performance Of Windows And Doors - Part 2: Classification For Operation And Strength Characteristics And Guidance On Selection And Specification
BS 6375-3:2009+A1:2013	Performance of windows and doors Classification for additional performance characteristics and guidance on selection and specification
IS EN 13830:2015	Curtain walling - product standard (+A1:2020)
BS EN 12152:2002	Curtain walling. Air permeability. Performance requirements and classification
EN 12153 : 2000	Curtain Walling - Air Permeability - Test Method
I.S. EN 13050:2011	Curtain Walling - Watertightness - Laboratory Test Under Dynamic Condition Of Air Pressure And Water Spray
I.S. EN 13051:2001	Curtain Walling – Watertightness - Site Test
I.S. EN 12154:2000	Curtain Walling - Watertightness - Performance Requirements And Classification
I.S. EN 12155:2000	Curtain Walling - Watertightness - Laboratory Test Under Static Pressure
BS 4873:2016	Aluminium alloy windows and doorsets Specification.
BS EN 14351-2:2018	Windows and doors. Product standard, performance characteristics. Internal pedestrian doorsets.
I.S. EN 12211:2016	Windows And Doors - Resistance To Wind Load - Test Method
BS 8200	Design of non-loadbearing external vertical enclosures of buildings.
I.S. EN 12758:2019	Glass in building - Glazing and airborne sound insulation - Product descriptions, determination of properties and extension rules

ISO 28278-1:2011	Glass in building — Glass products for structural sealant glazing — Part 1: Supported and unsupported monolithic and multiple glazing
BS EN 673:2011	Glass in building. Determination of thermal transmittance (U value). Calculation method.
I.S. EN ISO 12543-1:2021	Glass in building - Laminated glass and laminated safety glass - Part 1: Vocabulary and description of component parts
I.S. EN ISO 12543-2:2021	Glass in building - Laminated glass and laminated safety glass - Part 2: Laminated safety glass
I.S. EN ISO 12543-3:2021	Glass in building - Laminated glass and laminated safety glass - Part 3: Laminated glass
I.S. EN ISO 12543-4:2021	Glass in building - Laminated glass and laminated safety glass - Part 4: Test methods for durability
I.S. EN ISO 12543-5:2021	Glass in building - Laminated glass and laminated safety glass - Part 5: Dimensions and edge finishing
I.S. EN ISO 12543-6:2021	Glass in building - Laminated glass and laminated safety glass - Part 6: Appearance
I.S. EN 12150-1:2015+A1:2019	Glass in building - Thermally toughened soda lime silicate safety glass - Part 1: Definition and description
I.S. EN 12150-2:2004	Glass In Building - Thermally Toughened Soda Lime Silicate Safety Glass - Part 2: Evaluation Of Conformity/Product Standard
I.S. EN 15998:2020	Glass in building - Safety in case of fire, fire resistance - Glass testing methodology for the purpose of classification
I.S. EN 1279-1:2018	Glass in Building - Insulating glass units -Part 1: Generalities, system description, rules for substitution, tolerances and visual quality
I.S. EN 1279-2:2018	Glass in building - Insulating glass units Part 2: Long term test method and requirements for moisture penetration
I.S. EN 1279-3:2018	Glass in building - Insulating glass units - Part 3: Long term test method and requirements for gas leakage rate and for gas concentration tolerances
I.S. EN 1279-4:2018	Glass in Building - Insulating Glass Units - Part 4: Methods of test for the physical attributes of edge seal components and inserts
BS EN 1279-5:2018	Glass in building - insulating glass units. Product standard
I.S. EN 1279-6:2018	Glass in building - Insulating glass units -Part 6: Factory production control and periodic tests
I.S. EN 14449:2005	Glass In Building - Laminated Glass And Laminated Safety Glass - Evaluation Of Conformity/Product Standard.
I.S. EN 14179-1:2016	Glass In Building - Heat Soaked Thermally Toughened Soda Lime Silicate Safety Glass - Part 1: Definition And Description
I.S. EN 14179-2:2005	Glass In Building - Heat Soaked Thermally Toughened Soda Lime Silicate Safety Glass - Part 2: Evaluation Of Conformity/Product Standard
I.S. EN 15682-1:2013	Glass In Building - Heat Soaked Thermally Toughened Alkaline Earth Silicate Safety Glass - Part 1: Definition And Description
I.S. EN 15682-2:2013	Glass In Building - Heat Soaked Thermally Toughened Alkaline Earth Silicate Safety Glass - Part 2: Evaluation Of Conformity/Product Standard
I.S. EN 15683-1:2013	Glass In Building - Thermally Toughened Soda Lime Silicate Channel Shaped Safety Glass - Part 1: Definition And Description

I.S. EN 15683-2:2013	Glass In Building - Thermally Toughened Soda Lime Silicate Channel Shaped Safety Glass - Part 2: Evaluation Of Conformity/Product Standard
I.S. EN 13024-1:2011	Glass In Building - Thermally Toughened Borosilicate Safety Glass - Part 1: Definition And Description
I.S. EN 13024-2:2004	Glass In Building - Thermally Toughened Borosilicate Safety Glass - Part 2: Evaluation Of Conformity/Product Standard
I.S. EN 12600:2002	Glass In Building - Pendulum Test - Impact Test Method And Classification For Flat Glass

All specific manufacturer's written instructions, directions and recommendation shall be adhered to.

NOTE:

Where later editions of the Publications listed above are published, latest editions should be used.

1.7 Guarantees

Glazing manufacturer shall be responsible for ensuring that his/her work will not only meet the requirements of this specification of Material and Performance but that in conjunction with the framing manufacturer / installer / the entire completed installation will be structurally stable, thermally broken when used in the external envelope, entirely watertight and will meet air infiltration requirements. Provide a written guarantee against leakage and malfunction under normal usage for a period of 30 years from the date of Final Certificate of Completion.

Construction Products to be CE marked in accordance with Irish Building Regulations and EU requirements.

2.0 MATERIALS

2.1 Glass Colour

To be selected by Architect

2.2 External Double Glazing (Typical Specification)

Refer to section 2.9 for detailed description of glass types.

2.3 General Description

All materials shall be of the best of their respective kinds and as described in the contract herein specified.

2.4 Glazing Gaskets and Strips

To be as recommended by the Window System Manufacturer generally and shall be of materials that do not react adversely with aluminium; aluminium finish or glass.

(a) To minimise gaps in joints and shrinkage internal gaskets are to be serrated to allow for the gasket to be continuous and not requiring mitre jointing at corners. The internal gaskets are to have one joint only which is to be sealed and located at a low critical area.

(b) Glazing gaskets shall be one of the following:

- (i) Chloroprene rubber, solid (cellular); or
- (ii) Chloroprene rubber, solid (non-cellular) conforming to BS 4255-1:1986; or
- (iii) Cured ethylene propylene diene monomer (epdm); or
- (iv) Plasticized PVC; or
- (v) NOTE: Plasticized PVC gaskets should not be used with polycarbonate glazing materials.
- (vi) PVC nitrile; or
- (vii) Thermoplastic elastomer (TPE); or
- (viii) Uncured ethylene propylene diene monomer (epdm).

(c) Glazing compounds shall be non-setting compounds, preformed mastic tapes, gun grade solvent release type sealants, one-part or two-part curing sealants or two part rubberizing compounds. Gun grade sealants shall conform to BS EN ISO 11600:2003+A1:2011.

2.5 Weatherstripping

To be as recommended by system manufacturers and shall be made from materials known not to react with aluminium or its finish and such that any shrinkage, warping or adherence to closing surfaces shall not impair the performance of the window.

(a) Weatherstripping shall be one of the following:

- (i) Ethylene propylene diene monomer (epdm); or
- (ii) Plasticized PVC (PVC-P); or

- (iii) Polychloroprene (CR); or
- (iv) Polypropylene pile; or
- (v) Sheathed cellular elastomeric polymer; or
- (vi) Silicone (Si); or
- (vii) Thermoplastic elastomer (TPE).

(b) NOTE 1: Non-cellular forms of materials i), ii) and iii) are specified in BS 4255-1:1986.

(c) NOTE 2: Guidance on weatherstripping products is given in BPF WG 345/1 [1].

2.6 External Glazing Schedule

a. Glazing Designation EGT-1

Type: Non-Fire Rated Insulating Double Glazed Units in Main rooflight over central stairs.

Performance Requirements

6mm Low Iron Float, annealed outer pane
 Low e-coating on position 2,
 16mm Argon 90% filled cavity
 6mm Low Iron Float, annealed outer pane

Colour:	Clear (or obscured finish to windows in bathrooms)
U-Value:	1.1 w/m ² K
Shading Coefficient:	0.64
Total solar energy transmittance:	51%
Light Transmittance:	67%

NB. Glass thicknesses are indicative only, Specialist glazing system supplier / manufacturer to provide final thicknesses and calculations for Architect & Structural Engineer review & approval.

b. Glazing Designation EGT-2

Type: Non-Fire Rated Insulating double Glazed Units with Safety Glass, for use in glazed external windows acting as barriers and glazing in doors and adjacent to doors in accordance with building regulations.

Performance Requirements

6mm thick, Low Iron Float, annealed outer pane
 Low e-coating on position 2,
 16mm Argon 90% filled cavity
 8mm thick, Low Iron Float, heat soaked thermally toughened inner pane

NB. Glass thicknesses are indicative only, Specialist glazing system supplier / manufacturer to provide final thicknesses and calculations for Architect & Structural Engineer review & approval.

Colour:	Clear (or obscured finish to windows in bathrooms)
U-Value:	1.1 w/m ² K
Shading Coefficient:	0.64
Total solar energy transmittance:	51%
Light Transmittance:	67%

3.0 WORKMANSHIP

3.1 Design

Reference	Requirements
EN 12207:2016 Air Permeability	Class 3 at 600Pa. or better
BS EN 12208:2000	Test Class 9A at 600Pa, or better
IS EN 12211:2016 Wind Resistance	P1=1600Pa, P2=800Pa, P3 = 2400Pa
BS 8200 Design of non-loadbearing external vertical enclosures of buildings	All windows and doors to comply with requirements of this standard
BS EN ISO 140 Acoustic Performance	The R_w sound reduction index for the Glazing should not be less than 27db
Thermal Transmittance ISO/NP 10077-1 and ISO 10077-2:2011	Table F.4 – Thermal transmittances for vertical doors with fraction of the frame area 20% of the window area, glazing spacer bars with improved thermal performance $1.3w/m^2k$. Design size: 1.2wide x 1.5m high top hung opening sash full size. Manufacturer to provide documentary evidence that the above sized window has a thermal performance of $1.3W/m^2k$ or better.
EN 12206-1 2004	Polyester Powder coating Interprun D or Syntapulvin applied by Qualicoat approved applicator using a standard RAL colour in matt finish.
BS EN 1670:2007 Building Hardware. Corrosion resistance. Requirement and test method	All Ironmongery to comply with the requirements of this standard. Multipoint single level locking system is to be incorporated in all opening sashes.

In addition to above table which provides overall U-Value targets, refer to specifications for Windows & Doors, for the avoidance of doubt, the overall U-Value for each project specific unit (frames and glazing) shall be $1.4 w/m^2k$ or better.

3.1.1 Loadings

- (a) Dead loads shall be calculated in accordance with BS EN 1991-1-1:2002 Eurocode 1
- (b) Imposed loads shall be calculated in accordance with BS EN 1991-1-1:2002 Eurocode 1
- (c) Subject to paragraph (e) wind loads shall be calculated in accordance with BS EN 1991-1-4:2005+A1:2010 & BS EN 1991-1-4 : 2005
- (d) Where any actual imposed load will exceed or is likely to exceed the load calculated in accordance with paragraph (2) (b), that actual load shall be substituted for the load so calculated.
- (e) In calculating wind loads in accordance with paragraph (2) (c) of this specification:-
 - (i) the basic wind speed V shall be taken to be the value appropriate to the location of the building obtained by interpolation between isopleths shown on the map in Schedule 3, evaluated to the nearest integral metre per second;
 - (ii) where a building falls outside the range of those for which the Code gives force and pressure coefficients, values shall be used which are appropriate in relation to that building, having regard to its construction, size, proportions, shape, profile and surface characteristics.

(f) Structural Engineers calculations for wind speed and dynamic pressure, are available in the project Documents:- Glazing to be designed to withstand.

(g) Interpretation "dead load" means the force due to the static mass of all walls, partitions, floors, roofs and finishes including all other permanent construction and services equipment affixed to the building; "imposed load" means the load assumed to be produced by the intended occupancy or use of the building including distributed, concentrated, impact, inertia and snow loads but excluding wind loads; and "wind loads" means all loads due to the effect of wind pressure or suction.

Glazing system must be designed to accommodate expansion and contraction when subjected to the minimum and maximum surface temperature that will be experienced by the building as located.

Class A to be used with the pressure coefficients applicable to the particular area in which the glazing occurs.

3.1.2 Weather-tightness

(a) The following weather-tightness requirements apply to all types of external glazing.

(i) The completed system shall meet the weather-tightness requirements for the appropriate classification specified in BS EN 12152:2002 & I.S. EN 12154:2000, when tested in accordance with EN 12153 : 2000, I.S. EN 13051:2001 & I.S. EN 12155:2000 and, for double Doors, with the appropriate additional procedure given below.

(ii) For air permeability, double Doors shall be tested with both Doors closed, the length of opening joint being that which is visible on the inner surface of the inner Door only.

(iii) For water-tightness, double Doors shall be tested with both Doors closed and the performance class shall be that obtained by the outer Doors.

(iv) For wind resistance, double Doors shall be tested with the inner Door open and the outer Door closed. The test shall then be repeated with the inner Door closed and, if the outer Door contains opening light(s), this (they) shall be opened.

3.1.3 Frame joints

(a) Joints in frames shall be made either by welding or by mechanical means (e.g. cleating and screwing) and shall have flush, stepped or lapped surfaces. For flush joints formed by mechanical means, any deviation from the same plane shall be within the limits set by the use of extrusion tolerances given in BS EN 755-9:2016.

(b) Welded joints shall be cleaned off smooth on surfaces that are exposed when the Curtain walling is in the closed position and where the joints would otherwise project into the glazing space.

(c) Sealing of joints

(i) Any frame joints, including those of the thermal barrier or cladding, which would otherwise cause loss of watertightness and/or increase of air permeability, should be sealed with sealant or by other means to achieve the performance required.

(d) Deviations in the plane of flush joints

(i) No allowance is given for assembly and machining tolerances. Therefore, to achieve the requirements specified it can be necessary to use extrusions with closer tolerances than those given in BS EN 755-9:2016. In practice, to avoid sharp exposed edges etc., manufacturers might need to agree tolerances with the extrusion supplier. It can be necessary to fit "L" shaping backing plates (chevrons) to flanges of mitred cornered frames to correct misalignment due to angular tolerances.

3.2 Construction

1. Construction units to give a flush external surface of extruded aluminium sections and flush internal surface of profile and face dimensions to suit to configurations as shown on drawings. Similar vertical and horizontal members to have equal dimensions max. depth of section to be 150mm.
2. Construct units with extended leg sections or extruded profile cills as cills where shown and where necessary.
3. Joints in frames to be made either by mechanical means (i.e. cleating and screwing) or by welding. If welded, joints shall be cleared off smooth on the surfaces which are exposed and where they come into contact with glazing. If mechanical, joints to be mechanically assembled with concealed angle blocks and mitre alignment plates clamped, crimped and sealed.
4. Carry out on site glazing to procedures as laid down in BS 6262 (glazing and fixing for Glass of Buildings). Curtain walling to be such that glazing or reglazing on site is possible without the need to remove the outer frame from the structure of the buildings.
5. Construct units making provision for suitable fixing devices. The fixings to be capable of withstanding the design wind load and any operating forces on the Curtain walling. The manufacturer to select the provision for fixing appropriate to the Curtain walling design.
6. Extruded weatherstripping to be continuous about the entire perimeter of the opening sections being mitre cut and chemically welded at corners.

3.3 Installation

1. Manufacturers Reference

The system shall be assembled by the manufacturer or by his / her duly authorised representative. If by the latter the manufacturer shall provide instructions as to the manner of assembly of the system and shall be responsible for the work.

2. Operatives

Installation by mechanics skilled in this work.

3.4 Inspection of Work

As each stage of work is completed, it will be inspected by the manufacturer who will certify work completed at that time.

3.5 Unloading, Handling, Storage and Protection

- (a) Do not deliver to site any components which cannot be immediately unloaded into suitable conditions of storage.
- (b) Unload, handle and store components in accordance with manufacturers recommendations.
- (c) Avoid distortion of components during transit handling and storage.
- (d) Prevent pre-finished surfaces from rubbing together.
- (e) Prevent contact with mud, ashes, plaster and cement.
- (f) Retain protective coverings in position. Keep paper and cardboard wrappings on aluminium components dry.

3.6 Protection of Coatings

- (a) Surface areas liable to damage during handling, fixing or by other building trades such as plasterers are to be protected by tape. The recommended tape is Sellotape Black Vinyl No. 1415 to be removed as soon as practicable after completion of all work in the area of installation. Panel constructions to be protected by polythene sheeting.
- (b) Install hardware in accordance with templates and manufacturers instructions.
- (c) Fix units securely to building to leave plumb, straight true and free from scratches, dents or other defects.
- (d) Conceal fixings except where approved by Architect.
- (e) Take care to assemble units with adjacent finish surfaces and colours matching.
- (f) Make provisions for thermal movement and still maintain full weatherproof installation.
- (g) Where aluminium is to be placed in contact with concrete masonry or mortar, back paint aluminium with one coat of fine chromate or bituminous paint.
- (h) Avoid displacement of d.p.c.s. and ensure that they are positioned correctly in relation to frame.
- (i) Prepare and point sealant joints in accordance with sealant manufacturer's recommendations. Insert backing strips in all joints to be pointed with sealant. Tool sealant to form a smooth flat bead.
- (j) Adjust operable parts for correct function.