

Assembling Terms

Definition:

"Organised collection of specific regulations, aiming at indicating to manufacturers, designers, checkers and users how they can assess the functional quality of doors and windows. This section includes the description of single performances and the regulations that must be observed."

The main elements that must be included in the tentative specifications worked out by the relevant parties are listed hereunder.

General characteristics of door and window systems

The specifications include the description of the main characteristics of door and window systems with reference to the following aspects:

- Kind of window
- Overall dimensions
- Wall opening dimensions
- Colour
- Accessories
- Exposure
- Climatic conditions
- Wind
- Height of the building
- Darkening system
- Glazing
- Installation
- Regulations

Requisites

Doors and windows are manufactured with extruded profiles of stiff, stabilised and non-plasticised polyvinyl chloride (PVC).

The profile sections have a box-type structure formed by different internal chambers. They have a smooth surface and uniform colour; they are perfectly flat, linear and have constant sections. They are characterised by two or more internal chambers that allow inserting appropriate internal reinforcements. They have drainage chambers for possible water infiltration.

The thickness of the profile external sides must not be less than 2.5 mm.

Technical characteristics – physical and mechanic – of profiles

The table hereunder shows the main technical characteristics of PVC profiles:

Characteristics	Peak value
Softening temperature	> 80°C
Traction test:	- yield load > 44 Mpa - ultimate elongation >120%
Modulus of flexural elasticity	> 3.000 Mpa
Resistance against impact traction	a -23° C >a 600 KJ/m2 a 0°C > a 400 KJ/m2
Resistance against impact flexure	a 0°C max 1 rottura/10 provette a 0°C max 1 rottura/10 provette
Heat shrinkage	< 2%
Heat aspect modification	Absence of blisters, flaws and lamination
Duration	
a) aspect	Absence of blisters and flaws Colour resistance > 3rd degree of the grey scale
b) Resistance against impact traction at 23°C	Average of 10 tests >a 250 KJ/m2
Lightfastness	Colour resistance > 3rd degree of the grey scale after 4GJ/ m2 of irradiation in compliance with existing regulations
Sealing resistance	Breaks must not occur on over 2/3 of the surface, in the sealing area.

Reinforcements

PVC windows must be reinforced according to specific static requirements concerning their use and function.

Glazing

The windowpanes are fixed with specific PVC snapping profiles.

Gaskets that can be inserted in the profiles or co-extruded guarantee the tightness between the windowpanes and profiles.

Shims and spacers must be inserted between the windowpane and the profile.

Gaskets

Doors and windows are equipped with perimeter gaskets that must be placed on the case and on the wing. They are made of strong materials, resisting against low temperatures and atmospheric agents, in particular against UV rays.

The form of gasket is studied in order to guarantee a perfect sealing, also when dilatation occurs thus modifying the strikers (specific requirements can be added with additional performance report).

Manufacturing

The profiles that form the windows must be assembled through the heat-sealing of angles, in compliance with European regulations (UNI, RAL, NF).

Surface finishing

In order to obtain different colours or wood-like finishing, the profiles surfaces can be coated with an acrylic film resisting against UV rays, or they can be painted or coated with special aluminium films, that are then painted.

Ironware

The ironware used for the windows must be adequately strong, well done and perfectly calibrated and finished. Metal components must be treated against corrosion. The fixing elements must be anchored to the reinforcement profile or at least to two parts of the PVC profile.

Installation

The case can be installed on the wall in different ways, according to the needs and building typology:

- With secondary frame (made of metal, wood or resin)
- With walled clamps
- With screw anchor
- On an existing frame (renovation)

Conformity verification

The windows characteristics can be verified through the experimental data concerning their performance.

A brief summary has been made of the parameters and technical characteristics that must be taken into consideration when working out the performance specifications.

The compliance with the aforementioned characteristics, with reference to Alphacan PVC "**open joint**", "**double gasket**" o "**blind**" systems, can be assessed in the following performance specifications.

STIFF PVC-u WINDOW AND DOOR SYSTEMS SPECIFICATIONS

"OPEN JOINT" MD SYSTEM

Supply and installation of door and window systems made of stiff, shockproof and stabilised PVC in compliance with the following regulations:

- RAL- RG 716/1,
- UNI-IIP 8648,
- NFP 24-500.

Characteristics of stiff PVC

The raw material employed for the extrusion of profiles is made of a compound of stiff, shockproof PVC (polyvinyl chloride) that guarantees the manufacturing of profiles "extremely resisting against impacts" also at very low temperatures.

The material is self-extinguishing and stabilised and is particularly strong against atmospheric agents. The raw materials employed for the production of profiles and the composition of the compound must be of top quality, in order to guarantee excellent physical and mechanic performances also with severe climatic conditions.

Technical characteristics	Regulation	Values
Specific weight	UNI 7092	1.46
Traction modulus of elasticity	ISO 175	2.400 M Pa
Traction breaking load	EN ISO 527 / 2 / 1	43 M Pa
Water absorption	ASTM D 570	0,04%
Resistance against traction impacts	UNI ISO 179	810 KJ/m ²
Notch toughness at 23° C	UNI ISO 179	46,3 KJ/m ²
Resistance against impacts (-10°C) Ball-drop at 1 Kgm	UNI EN 477	0 % rottura
Traction elongation	EN ISO 527 / 2 / 1	> 150 %
Linear dilatation coefficient	(Caratteristica del materiale)	75x10-3 mm/m°C
Sealing coefficient	DIN EN ISO 527	1,0
Thermal shrinkage	UNI EN 479	1,2 – 1,7 %
Softening temperature (VICAT)	ISO 306	81,5 °C
Resistance against atmospheric agents	ISO 4582 DIN EN 20105-A03	4 – 5 degree
Fire resistance (D.M. 26.6.84)	UNI 8457 - UNI 9174	Class 1

PVC profiles conformation.

The dimensions of PVC profiles and the thickness of walls must comply with the specifications described in the RAL, UNI-IP and NFP regulations. The external sides must be at least 2.8 mm thick. The PVC profiles for frames employed for windows must have 3 internal chambers, whilst wings and transoms can have 2 or more chambers. The case and the ledge must have a special configuration that allows collecting the water and favour its outlet and drainage through slots made in the external chamber of profiles. The water outlet chamber must not be in contact with the metal reinforcement. The frame profile must have a central PVC raised support for the median gasket, so that water can be easily collected and drained.

There must be the possibility to apply widening profiles, staff beads and coupling profiles. The glass stop with co-extruded gasket and double- or single-foot fixed joint must be fixed to the wing or to the frame all

along the perimeter. The wing and frame ledges must have a specific chamber for the insertion of interchangeable gaskets.

Surface finishing

The profiles have a smooth surface and uniform colour; they are perfectly flat, linear and have constant sections.

The profiles used for the realisation of windows with coloured or wood-like finishing must be coated with a special acrylic film, which is hot glued on the surface. The technical characteristics of the film are described in the paragraph on “surface finishing”.

Realisation of frames and ledges

Frames and ledges must be sealed on the corners through a heat-sealing process of the material; the breaking loads of the sealing area must meet the requirements envisaged by the RAL and UNI and NFP regulations.

The mechanic joint of transoms with the frames and wings must be realised with mechanic devices, whose suitability has been attested in compliance with the relevant testing regulations (IFT Rosenheim). PVC profiles must be reinforced with steel profiles treated against corrosion through the surface galvanisation process Z 200 - Z 275. The coupling of reinforcements to PVC profiles with fixing screws must guarantee the structural stability also with extreme loading conditions. The steel reinforcement must be inserted in a chamber separated from the drainage chamber in order to prevent it from coming into contact with water. Wing glazing or fixed windowpanes must be realised with glass stop profiles equipped with a continuous hooking system that can be adjusted according to the different thickness of windowpanes.

Sealing gaskets

Sealing gaskets are made with thermoplastic material sealed on the corners (santoprene or sunprene) or with elastomeric material (EPDM). The median gasket must be mounted on the frame (open joint system) and a third external gasket must also be inserted. The median gasket can be sealed along the perimeter together with the PVC profile.

Hardware

The opening and closing mechanisms must be treated on the surface with anti-corrosion agents and must be fixed to the steel reinforcements or at least on two PVC profile sides.

System certifications

TEST- CERTIFYING BOARD	REFERENCE	RESULT
System certification – RAL	RAL-RG 716/1 Absch I	Certified
System certification – UNI IIP	UNI 8648 + F.A. 1	Certified
Lightfastness – RAL	DIN 53387	Value 4 grey scale
Fire resistance – CSI	DM 26/6/84 UNI 8457 UNI 9174	Class 1 (self-extinguishing)
Thermal insulation of PVC profile sections- IFT	DIN 52619-3	1.6 W/m ² K
Water- and air-tightness and resistance against wind pressure – IFT	DIN 18 055 DIN EN 42 DIN EN 86 DIN EN 77 DIN EN 107	Class C
Mechanic resistance transom joint – IFT	Überprüfung IFT	Certified

STIFF PVC WINDOW AND DOOR SYSTEMS SPECIFICATIONS

"DOUBLE GASKET" MASTER SYSTEM

Supply and installation of door and window systems made of stiff, shockproof and stabilised PVC in compliance with the following regulations:

- RAL- RG 716/1,
- UNI-IIP 8648.

Characteristics of stiff PVC

The raw material employed for the extrusion of profiles is made of a compound of stiff, shockproof PVC (polyvinyl chloride) that guarantees the manufacturing of profiles "extremely resisting against impacts" also at very low temperatures.

The material is self-extinguishing and stabilised and is particularly strong against atmospheric agents. The raw materials employed for the production of profiles and the composition of the compound must be of top quality, in order to guarantee excellent physical and mechanic performances also with severe climatic conditions.

Technical characteristics	Regulation	Valori
Specific weight	UNI 7092	1.46
Traction modulus of elasticity	ISO 175	2.400 M Pa
Traction breaking load	EN ISO 527 / 2 / 1	43 M Pa
Water absorption	ASTM D 570	0,04%
Resistance against traction impacts	UNI ISO 179	810 KJ/m ²
Notch toughness at 23° C	UNI ISO 179	46,3 KJ/m ²
Resistance against impacts (-10°C) Ball-drop at 1 Kgm	UNI EN 477	0 % rottura
Traction elongation	EN ISO 527 / 2 / 1	> 150 %
Linear dilatation coefficient	(Caratteristica del materiale)	75x10 ⁻³ mm/m°C
Sealing coefficient	DIN EN ISO 527	1,0
Thermal shrinkage	UNI EN 479	1,2 – 1,7 %
Softening temperature (VICAT)	ISO 306	81,5 °C
Resistance against atmospheric agents	ISO 4582 DIN EN 20105-A03	4 – 5 degree
Fire resistance (D.M. 26.6.84)	UNI 8457 - UNI 9174	Class 1

PVC profiles conformation

The dimensions of PVC profiles and the thickness of walls must comply with the specifications described in the RAL and UNI-IP regulations. The external sides must be at least 2.8 mm thick. The PVC profiles for frames employed for windows must have 3 internal chambers, whilst wings and transoms can have 2 or more chambers.

The case and the ledge must have a special configuration that allows collecting the water and favour its outlet and drainage through slots made in the external chamber of profiles. The water outlet chamber must not be in contact with the metal reinforcement. There must be the possibility to apply widening profiles, staff beads and coupling profiles. The glass stop with co-extruded gasket and double feet fixed joint must be fixed to the wing or to the frame all along the perimeter. The wing and frame ledges must have a specific chamber for the insertion of interchangeable gaskets.

Surface finishing

The profiles have a smooth surface and uniform colour; they are perfectly flat, linear and have constant sections.

The profiles used for the realisation of windows with coloured or wood-like finishing must be coated with a special acrylic film, which is hot glued on the surface. The technical characteristics of the film are described in the paragraph on "surface finishing".

Realisation of frames and ledges

Frames and ledges must be sealed on the corners through a heat-sealing process of the material; the breaking loads of the sealing area must meet the requirements envisaged by the RAL and UNI-IIP regulations.

The mechanic joint of transoms with the frames and wings must be realised with mechanic devices, whose suitability has been attested in compliance with the relevant testing regulations (IFT Rosenheim). PVC profiles must be reinforced with steel profiles treated against corrosion through the surface galvanisation process Z 200 - Z 275. The coupling of reinforcements to PVC profiles with fixing screws must guarantee the structural stability also with extreme loading conditions. The steel reinforcement must be inserted in a chamber separated from the drainage chamber in order to prevent it from coming into contact with water. Wing glazing or fixed windowpanes must be realised with glass stop profiles equipped with a continuous hooking system that can be adjusted according to the different thickness of windowpanes.

Sealing gaskets

Sealing gaskets are made with thermoplastic material sealed on the corners (santoprene or sunprene) or with elastomeric material (EPDM). The median gasket must be mounted on the frame (open joint system) and a third external gasket must also be inserted. The median gasket can be sealed along the perimeter together with the PVC profile.

Hardware

The opening and closing mechanisms must be treated on the surface with anti-corrosion agents and must be fixed to the steel reinforcements or at least on two PVC profile sides.

System certifications

TEST- CERTIFYING BOARD	REFERENCE	RESULT
System certification – RAL	RAL-RG 716/1 Absch I	Certified
System certification – UNI IIP	UNI 8648 + F.A. 1	Certified
Lightfastness – RAL	DIN 53387	Value 4 grey scale
Fire resistance – CSI	DM 26/6/84	Class 1 (self-extinguishing)
	UNI 8457	
	UNI 9174	
Thermal insulation of PVC profile sections- IFT	DIN 52619-3	1.6 W/m ² K
Water- and air-tightness and resistance against wind pressure – IFT	DIN 18 055	Class C
	DIN EN 42	
	DIN EN 86	
	DIN EN 77	
	DIN EN 107	
Mechanic resistance transom joint – IFT	Überprüfung IFT	Certified

STIFF PVC WINDOW AND DOOR SYSTEMS SPECIFICATIONS

SHUTTER SYSTEM

Supply and installation of darkening systems made of stiff, shockproof and stabilised PVC.

Characteristics of stiff PVC

The raw material employed for the extrusion of profiles is made of a compound of stiff, shockproof PVC (polyvinyl chloride) that guarantees the manufacturing of profiles “extremely resisting against impacts” also at very low temperatures.

The material is self-extinguishing and stabilised and is particularly strong against atmospheric agents. The raw materials employed for the production of profiles and the composition of the compound must be of top quality, in order to guarantee excellent physical and mechanic performances also with severe climatic conditions.

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Fire resistance (D.M. 26.6.84)	UNI 8457 - UNI 9174	Class 1

PVC profiles conformation

PVC profiles employed for the realisation of external darkening systems must have all the components necessary to compensate for the absence of windowpanes and to guarantee the highest stability and stiffness of the product (refer to chapter 4.1.4).

There must be the possibility to fix expanding profiles and staff beads to the frame.

Surface finishing

The profiles have a smooth surface and uniform colour; they are perfectly flat, linear and have constant sections.

The profiles used for the realisation of blinds with coloured or wood-like finishing must be coated with a special acrylic film, which is hot glued on the surface. The technical characteristics of the film are described in the paragraph on “surface finishing”.

Realisation of frames and ledges

Frames and ledges must be sealed on the corners through a heat-sealing process; breaking loads must guarantee the same performance of the windows. In order to guarantee the product stability with reference to coplanar loads, the angles must be stiffened with the insertion of:

- Stainless steel squares of at least 15 mm inside the wing; they must be adequately shaped and screwed to the profile reinforcements.
- PVC blocks inserted inside the wing reinforcements, which allow joining the vertical and horizontal reinforcement elements, thus increasing the sealing area of the corner.

The mechanic joints with the frame and ledge transoms are made with the materials indicated in Alphacan assembling specifications.

PVC profiles must be reinforced with steel profiles treated against corrosion through surface galvanisation Z 200 - Z 275. The coupling of reinforcements to PVC profiles with screws must guarantee the stability of the structure under the most extreme loading conditions.

Darkening system typologies

The darkening system of blinds can be different according to the kind of panelling employed:

- blind panelling (total darkening)
- sloping slat panelling (half darkening); slats must be reinforced with the appropriate aluminium tubular profile.
- swinging panelling (adjustable darkening system); the slats, having a co-extruded gasket, must be reinforced with the appropriate aluminium tubular profile. When closed, the panelling must be completely flat, both inside and outside.

Hardware

The ironware employed on the blind (square or flat straps, pintles, hinges, espagnolette etc.) must be adequately chosen according to the characteristics of the blinds, in terms of dimensions and functionality. With reference to movement and closing devices, the components and accessories employed (especially for the joints) must be made of or treated with materials resisting against corrosion.