

## GENERAL TECHNICAL SPECIFICATIONS FOR PVC WINDOWS MANUFACTURING FROM HARD PVC PROFILES

### Scope:

These specifications contain the required rules to ensure that door and window manufactured from PVC profiles and all components thereof satisfy the technical specifications that are issued within scope of Construction Materials Regulations and rules for applying the doors and windows on the structure.

### A. COMPONENTS

1. Hard PVC profiles
2. Reinforcement Steel
3. Insulation materials
4. Fittings
5. Other components

#### 1. Hard PVC Profiles

- All main profiles (frame, wing, meeting rail and door) shall conform to TS 5358 EN 12608 standards.
- Wall thickness preferred for main profiles in the technical specifications as per TS 5358 EN 12608 shall be specified (Class A; exposed surface minimum 2.8 mm, concealed surface minimum 2.5 mm or Class B; exposed surface minimum 2.5 mm, concealed surface minimum 2.0 mm).
- Profile appearance shall be uniform, flat and smooth, the surfaces shall be free of cavities, dirt, spaces and similar imperfections.
- Exposed surfaces of the profile shall be covered with protective tape which ensures protection against damage during production, shipping and joinery assembly and can be removed upon installation without leaving any stain.
- Minimum laminate peel resistance shall be 2.5 N/mm in laminated profiles.

#### 2. REINFORCEMENT STEEL

- Reinforcement steel shall conform to TS 822 standard.
- Reinforcement steel shall be galvanized with a thickness of 45-50 micron using hot dip galvanizing method as per TS 914 standard and shall be resistant to salt test.
- Reinforcement steel shall be single piece along the profile, spaces in the inner corner at the profile joints shall not be higher than 2 cm, suitable drilling and notching shall be made on the reinforcement steel in the profile which are installed with handle and lock to ensure continuity.
- In order to satisfy usage purposes (minimum static strength, fitting assembly, prevention of damage to joinery during shipping, joinery assembly being square etc.), wall thickness of the frame profile Reinforcement steel which constitute the circumference of the PVC window may never be under 1.5 mm.
- Reinforcement steel used in other profiles shall be in thickness and form which can ensure required inertia momentum according to the static calculation made for critical cross-section.
- One of the two main data required for static strength calculation is the **maximum admissible deflection amount at unit length** and it shall be taken as 5 mm per one meter. **Wind speed** as the second value shall be calculated by taking the average value of maximum wind speeds measured in the last 10 years based on the data of meteorology station which is the nearest to the location of application and transferring such to the height of building to be constructed as per TS EN 1991-1-4 standard - if project engineers have not specified a value in the specifications -.

#### 3. Insulation Materials

##### 3.1. Seals

- Seals shall conform to TS 12365 or TS 7510 standard.
- Seal raw material shall be elastomer (EPDM) or thermoplastic (PVC-P or TPE).

### **3.2. Glazing**

- Glazing shall conform to TS 3539-1 EN 1279-1.
- Minimum total thickness of the double glazing shall be 20 mm (4+12+4 combination).
- Double glazing to be used shall bear CE sign.

## **4. Fittings**

### **4.1. Hinges**

- Hinges shall be manufactured from zamak, cast iron or steel to meet all properties specified in TS EN 1935.
- Hinges shall be coated with electrostatic paint suiting the profile color.
- Hinges shall be capable of bearing wind loads and distance between two hinges shall not exceed 80 cm.
- Hinge lengths shall not be no less than 75 mm.

### **4.2. Handles**

- Handles shall be subjected to 10,000 opening and closing test.
- Handles shall be made of electrostatic painted aluminum or plastic material with metal reinforcement bar resistant to salt test.
- Aluminum door handles shall conform to TS 1906 standard.

### **4.3. Bolt and Locking Systems**

- Bolts shall be subjected to salt test for anticorrosion properties and coated with zinc.
- Threaded slots shall be present on the hub of the window bolts to install handle bolts.
- Bolt locking pins shall be eccentric to ensure pressing adjustment.
- Minimum distance of locking pins at all locking and pressure equipment shall be 80 cm.

## **5. Other Components**

### **5.1. Meeting Rail Installation Components**

- Shall be made of zamak material.
- Zamak parts shall be screwed to meeting rail profiles from lateral surfaces and always to the support sheet metal.
- Meeting rail-meeting rail or meeting rail-frame connections using zamak parts shall be always be realized by extending metric screw from the base or connection shall be made to the reinforcement steel from base lugs.

### **5.2. Parapet-Windowsill Installation**

- Parapet on the inside wall surface applied under joinery and windowsill on the external wall surface shall be separate parts connected to each other at the joint with insulation material without causing thermal bridge.
- PVC or marble material can be used as parapet.
- Marble, galvanized sheet metal or aluminum material can be used as windowsill.
- Application according to the details provided in the annex shall be realized if parapet or windowsill will be used.

### **5.3. Rough Buck**

- Rough buck application shall be implemented at joinery wall connection detail if there is a technical requirement, otherwise, it shall not be preferred.

- In the case that it is used, rough buck insulation shall be realized beforehand as seen in the annexed detail to prevent thermal bridge.
- Rough buck profiles shall be galvanized resistant to salt test.

#### **5.4. Joinery-Wall Assembly Members**

- Special assembly screw shall be 7.5x100 mm for concrete walls, and 7.5x120 mm for walls made of solid brick, hollow brick, gas concrete, light concrete etc. materials.
- Special assembly screws shall be tightened to take the slack until the head rests on the frame surface and head of the screws shall be covered with plastic caps or shall be tightened until the support metal sheet at the base and the hole shall be closed with assembly plug using silicon.
- If expansion bolts will be used for assembly, expansion bolts according to the type of the wall.
- Since joineries are placed in a fashion to center the insulation material in double row brick applications with heat insulation, these applications shall always employ clamp flat iron made of galvanized or chrome-plated sheet metal with a minimum thickness of 1.5 mm.
- Application of all assembly members in hollow brick walls shall be made in the concrete grout between two bricks.

### **B. WINDOW AND DOOR JOINERIES**

- System owner companies (profile manufacturer) are required to be open to the inspection of the system they have established within the process from profile production and offering the joineries to final use.
- Contractor company is required to declare that the system owner company (profile manufacturer) is the authorized manufacturer or distributor agent.
- The company which manufactures joinery is required to hold CE declaration of conformity.
- Separate performance values for each position of the joineries shall be submitted in the project proposal according to TS EN 14351-1:2008 standard.
- The proposal shall include air permeability, water-tightness, load bearing capacity of safety equipment, wind load strength, hazardous materials and acoustic performance and heat conductivity coefficient values.
- Joinery heat conductivity coefficient ( $U_p$ ) value shall not be higher than 2.4 w/m<sup>2</sup>K according to TS 825.
- Contractor company is required to carry out production according to the technical manufacture file which constitute joinery manufacture principles issued by the system owner company and submit the file to the administration when required, for product acceptance control.
- Joineries shall be delivered to the installation site with packaging.
- Installation of windows to the wall shall be realized according to the specifications included in the joinery installation file of the system owner company, suitable assembly members (clamp flat iron, expansion bolt and special assembly screws etc.) shall be selected according to the properties of the wall (brick, brick with heat insulation, gas concrete, concrete etc.).
- Joinery shall be fixed to the wall with assembly members, starting from 15 cm distance from the inner corner on horizontal and vertical plane, provided that the distance between them does not exceed 70 cm.
- Joinery shall be rendered level by placing filler wedges between the joinery and wall at every point where assembly members are present. Plastic and wood in suitable dimensions providing adjustability shall be used as wedges, broken brick parts and similar items shall never be used.
- Joint gap shall be always be left between joinery and wall with dimensions that conform to the rules of structure physics. This joint gap shall be at distances specified by the system owner company according to the dimensions of the joinery and shall never be under 5 mm.
- Joint gaps between the joinery and wall shall be filled with polyurethane foam or similar insulation materials, sealing shall be ensured by applying silicon with UV additive at outdoor and indoor circumference.
- Work of installing the glazing to joinery shall always be realized on bearing wedges suitable for the glazing slot and placing plastic spacing glazing wedges at sufficient thicknesses on the top to fill the gap of the glazing and wedges shall be adhered to each other using silicon.

- At moving (wing) sections, wedging of the glazing shall be realized in a fashion that the weight of wings are borne by the glazing, sag caused by weight when wings are open shall be prevented.
- In order to ensure the required sealing performance, space between the profile glazing surface and edge of the glazing shall be filled with glazing wedges at points where locking pins on the bolt are located and flexion of profiles while locking shall be prevented.
- Glazing wedges shall be applied in a fashion that water discharge channels at the lower sections of the partitions are not blocked.
- Introduction and operating manuals of the joinery shall be given upon completion of the installation.
- Technical manufacturing and installation catalogs which indicate manufacturing and installation standards of the joineries shall be submitted when required.