

The MB-104 Passive window system with a thermal break featuring very good thermal insulation performance meets all the requirements imposed on the elements used in passive buildings. This system has been designed to execute elements of architectural external development, e.g. different types of windows, porch enclosures, store windows, spatial structures with high thermal and sound insulation performance, tightness to water and air infiltration, as well as high resistance of the structure itself.

The parameters of windows based on the MB-104 Passive system exceed the most stringent applicable regulations and standards.

FEATURES OF THE MB-104 Passive DOOR & WINDOW SYSTEM:

- The windows of this system have been certified by Passive House Institute, Darmstadt and granted the certificate which confirms that the certified products are perfectly suitable for installation in buildings with passive parameters. PHI Darmstadt is the most widely known institute promoting the idea of passive houses. The criteria to be met in order to be granted such certificate, established by this Institute, are the strictest on the market.
- Heat transfer coefficients in doors and windows with two-chamber glass panel and plastic frame between glass panels attain excellent values - $U_w \leq 0,80 \text{ W/(m}^2\text{K)}$. Examples of heat transfer coefficients U_w in selected windows and UD values for doors are shown on the following pages of this Technical Description.
- The structural depth of window profiles: 95 mm (window frame), 104 mm (sash) and 95 mm and 95 mm for the door frame and leaf respectively. Such depths of sash/leaf and frame profiles give the effect of unbroken surface as seen from the outside after closing a window or door and inside - in the case of the door - the leaf is flush with the door frame.
- The standardized door and window structure in this system does not require any non-standard operations at the production stage. The profiles used in the system feature three-chamber construction, the core of which is formed by an insulating chamber placed between thermal spacers 61, 60 mm or 48,5 mm wide.
- Without having to change basic profiles and accessories, the system may come in two 2 (in the case of windows) or 3 (in the case of doors) options featuring different thermal insulation. The options (MB-104 Passive SI and MB-104 Passive SI+) with the central chamber inside compound profiles, between thermal spacers, filled with the EPS insulation insert, have very high insulation performance. The option of doors and windows (MB-104 Passive AERO) with the central chamber filled with a special insulation AERO insert attains the highest insulation parameters. As the structure may come in different options, various needs of users can be met, maintaining at the same time low costs of storage of the system elements and door and window fabrication.
- The MB-104 Passive AERO version is fitted with innovative inserts made of materials of the highest thermal insulation performance. Aluprof S.A is the first company in the world which applied this excellent insulation material in its aluminum door and window systems.
- High tightness to water penetration and air infiltration, as well as excellent thermal insulation performance has been possible to achieve due to the special shape of 2-component central gasket (with cellular insulating part) as well as glazing and closing gaskets (compression seal).
- Most gaskets (e.g. glazing and internal closing gaskets) are fitted as continuous stripping, without any corner trimming. The ends of gaskets are joined at mid-length of the top rail of the door and window frame. The central gasket is trimmed at the angle of 45° and glued in the corners or trimmed at the angle of 90° and glued to a rubber corner. The central gasket is also available in the form of a vulcanized frame. Such manner of gasket fitting guarantees very high tightness to water penetration and air infiltration.
- Closed shape of glazing strips, both in the Standard and Prestige versions allow for secure installation of infills, which significantly facilitates fabrication of burglar-proof structures. Positioning rollers made of EPDM are fitted in the glazing strips, which makes it easier to fit strips in the door or window frame.
- Internal glazing gaskets are deep-fitted in glazing strips, that is why they are hardly visible from the outside.
- Allowable glazing ranges: window frame and door leaf from 26,5 to 71,5 mm, window sash from 35,5 to 80,5 mm. Such a wide glazing range allows for the installation of all types of two-chamber sound proof or

burglar-proof glass panels commercially available.

- Application of standard Euro grooves enables accommodation of most hardware types commercially available, intended for aluminum and plastic windows.
 - Both concealed and traditional hinges may be fitted in doors and windows of this system. Handles may be either with or without an escutcheon.
 - Drainage of profiles may be either concealed or it may come with a decorative cap.
 - Compound profiles of the MB-104 Passive SI version may be subjected to the process of powder coating or anodic oxidation (without EPS inserts), while profiles of the MB-104 Passive AERO version must be powder-coated and oxidized before crimping of thermal spacers.
 - Corners are offered in two options: as elements made from extruded profiles or as elements injected under pressure. Both options make it possible to apply the process of crimping or spinning, using 2-component Coralglue.
 - Door sills are fastened to the door frame in such a way as to enable their dismantling without having to unscrew other door elements. Working and fitting door sills are very simple and time efficient.
 - In grooves formed in the door sills two gaskets are fitted: a closing gasket (compression seal) and the gasket concealing assembly screws. These gaskets can be easily replaced with the new ones in the case of normal wear and tear
 - Doors and windows may come with astragals applied on the glass panel.
 - The technology of fabrication of the structure is simplified as much as possible, hence high time efficiency is achieved in door and window fabrication.
 - Tooling (e.g. drilling templates, presses or blanking dies) may be used for most workings. All elements of the tooling applicable in the MB-104 Passive system are contained in the section "Tooling".
- Maximum dimensions of window sashes significantly exceed the values adopted as the standard ones.
Windows: Hs max=2.9 m, Ls max=1.7 m. Maximum weight of the sash - 160 kg.
Door: Hs max=3 m, Ls max=1.4 m. Maximum weight of the leaf- 200 kg.
- The door may also come with leaves to which decorative insulation panels are glued.
 - The MB-104 Passive system is compatible with other systems manufactured by Aluprof, especially with the MB-86. Hence a great number of elements may be applied in more than one system, e.g. glazing strips, gaskets, hardware and most accessories.

