Technical Description

1. DESCRIPTION OF THE STRUCTURE

The MB-60E EI system of fireproof walls and doors is intended for execution of internal or external fireproof partitions with single or double doors and technical windows featuring fireproof EI15 and EI30 according to PN-EN 13501-2+A1. The system has been classified as non-fire propagating (NFP).
The application of glazed fireproof barriers in building industry should be subject to the technical documentation of the building, designed in accordance with applicable standards and regulations.

FEATURES OF THE MB-60E EI SYSTEM:

- The construction of the system is based on aluminium profiles with thermal spacers belonging to the MB-60E system. The constructional depths of profiles is 60 mm.
- Elements of the GKF fire insulation are inserted in the insulation spaces between the profiles.
- Working required to connect profiles is reduced to minimum due to the application of aluminium connecting members and auxiliary accessories provided with the system. Corner connections of the “L” type are executed by trimming the ends of the frame or leaf profiles at the angle of 45°, followed by crimping or pinning and gluing (with two-component glue CORALGLUE®) to aluminium corner cleats embedded in the inner chambers of profiles. Crosswise joints of the “T” type are performed by pinning of crosspieces to the inserted corner cleats and gluing with CORALGLUE®.
- The glass panels are additionally protected on the outside with steel holders, screwed to the inner and outer profile with sheet metal screws.
- Glazing beads of closed shape fitted on the inner side allow for installation of infills of high resistance. EPDM positioning rollers are fitted in these beads to facilitate the installation of beads in the frame.
- Inner glazing seals are deeply embedded in glazing beads, hence they are hardly visible on the outside.
- The system allows for application of all standard fireproof glass panels of various classes within the range between 6 and 41 mm.
- The system enables glazing with all standard fireproof glass panels of thickness ranging from 4,5 to 40,5 mm. Glazing shims are made from fireproof material.
- Each structure of the MB-60E EI system, designed to be fitted in external developments must be equipped with an efficient drainage and ventilation system deflecting water from the glass pane chamber. The working and the diagram with the layout of drainage and ventilation holes are presented in the section “Working”.
- Allowable dimensions of door leaves: height Hs=2475 mm, width Ls=1400 mm.
- The MB-60E EI system of fireproof partitions with doors is compatible to a large extent with the MB systems, in particular with the MB-60E, MB-86 and MB-78EI systems (a large number of common profiles, details, hardware, workings, etc.).

Conformance with the instructions presented in this catalogue guarantees that the finished product will meet expectations of users over many years’ operation.
In the event of any queries or doubts, ALUPROF S.A.’s specialists are always ready with their assistance and advice.

Each structure made from elements of the MB-78EI system must have authorisation for use in accordance with regulations applicable in the country in which it is mounted.
A reference document (e.g. Technical Approval) used by the manufacturer to declare conformity at the stage of marketing a fire protection product strictly defines the range of structures authorised for use in a particular country, including detailed solutions. Only the solutions presented herein may be applied in the production of the product.

2. TECHNICAL DESCRIPTION OF RAW MATERIALS AND MATERIALS

2.1. ALUMINIUM PROFILES

Aluminium profiles are made in the process of mechanical working of the aluminium alloy EN AW-6060 as per PN-EN 573-3, T66 temper, according to the standard PN-EN 515 or from the alloy AlMgSi0,5 F22 according to DIN 1725 T.1.
Profiles are conformant with the PN-EN 755-1 standard.
Mechanical properties of profiles comply with PN-EN 755-2.
Tolerances on dimensions and form - according to PN-EN 12020-2.
Surfaces of profiles should be finished with anodic oxidation coatings according to the Qualanod requirements or with polyester powder coatings according to the Qualicoat requirements - as protection against corrosion.

2.2. THERMAL SPACERS

Thermal spacers are made of polyamide strips strengthened with fibreglass PA 6.6 GF25 as per DIN 16941 T.2 (they have manufacturer's certificate).
Thermal spacers feature very high resistance and their thermal expansion is similar to aluminium, which excludes the risk of joint deformation and prevents tearing of joints on the polyamide / aluminium border when the face of buildings is exposed to significant changes in temperature during the normal use.
Properly crimped thermal spacers ensure such resistance of compound profile as provided under the relevant standard.

2.3. FIRE INSULATION ELEMENTS

Infills are made of GKF plasterboards. Fire- resistant expanding strips are cut off from boards or supplied in rolls. These elements are performed in accordance with the applicable standards and relevant technical approvals.

2.4. SEALS

Glazing and closing seals are made from synthetic EPDM rubber as per DIN7863 and working standard DIN7715 E2 or ISO3302-1. The seals are joined in the process of gluing.

2.5. GLASS PANES

Transparent fields are glazed with special glass panes, selected to meet the requirements provided for the fireproof safety class EI15, EI30 and thermal and acoustic insulation performance of rooms.
All glass panes installed in the MB-60E EI system must be certified as admitted for use in the relevant fireproof constructions, according to the regulations applicable in a particular country.

2.6. INFILLS OF NON-TRANSPARENT FIELDS

Infills of non-transparent fields are executed as sandwiched elements, arranged as follows:

Doors, technical windows and walls of EI15 class:

- A sandwich element, made of a GKF plasterboard 12.5 mm thick, covered on both sides with aluminium sheet (anodized or paint coated) 1.5 ÷ 3 mm thick or steel sheet (stainless or paint coated) 0.8 ÷ 1.25 mm thick.
- A sandwich element, made of a Promatect H board 10 mm thick, covered on both sides with aluminium sheet (anodized or paint coated) 1.5 ÷ 3 mm thick or steel sheet (stainless or paint coated) 0.8 ÷ 1.25 mm thick or tempered glass panel min. 6 mm thick.

Doors, technical windows and walls of EI30 class:

- A sandwich element, made of a GKF plasterboard 15 mm thick, or two boards 12.5 mm thick, covered on both sides with aluminium sheet (anodized or paint coated) 1.5 ÷ 3 mm thick or steel (stainless or paint coated) 0.8 ÷ 1.25 mm thick or tempered glass panel min. 6 mm thick.

- A sandwich element, made of two Promatect H boards 12 mm thick each, covered on both sides with aluminium sheet (anodized or paint coated) 1.5 ÷ 3 mm thick or steel sheet (stainless or paint coated) 0.8 ÷ 1.25 mm thick or tempered glass panel min. 6 mm thick.

All non-transparent infills installed in the MB-60E EI system must be certified as admitted for use in the relevant fireproof constructions, according to the regulations applicable in a particular country.

2.7. FASTENERS
Fasteners used to make connections (self-tapping screws, screws, rivets, nuts, washers) used to make joints are made of stainless or zinc-coated steel according to the standards referred to in the system documentation.

2.8. HARDWARE
Hardware should be mounted onto door and technical window profiles in accordance with the system documentation or documentation of hardware manufacturer. The type of hardware should be adjusted to the dead weight of leaves and their operational load and dimensions.
All kinds of hardware fitted in the MB-78EI system must be certified as admitted for use in the relevant fireproof constructions, according to the regulations applicable in a particular country.

2.9. AUXILIARY MATERIALS
Auxiliary elements (glazing shims, glues, mineral wool, polyurethane foam and silicones used to seal joints) – in accordance with the system documentation.

3. SUPPLEMENTARY INFORMATION

3.1. PROFILE CONSTRUCTION
The profiles applied in the MB-60E EI system are built as a three-chamber construction, the core of which is an insulating chamber placed between thermal spacers 24 or 16 mm wide.
The system of connections by means of a thermal spacer enables application of dual-colour profiles – different on the inside and different on the external part of the façade of the building. The shape of thermal spacers guarantees good thermal insulation performance and proper drainage of the inner chambers of profiles.

3.2. STRENGTH CALCULATIONS
Proper selection of optimal structure profiles should be made on the basis of guidelines contained in the section “Structural Analysis”. This section also provides information on maximum dimensions of partitions, door leaves and sashes of technical windows.

3.3. EXTERNAL DEVELOPMENT
External structures must be equipped with drainage and ventilation holes.

3.4. WORKING
Decorative surfaces of profiles should be covered with a protective film in order to protect them against any damage during working.
Linear and angular dimensional tolerance, disregarding individual designation of tolerance, as per PN-EN 22768-1, Class of tolerance – m (medium accuracy level). Any splinters which occur in the process of working should be deburred.

3.5. STORAGE AND TRANSPORTATION
- Storage
  Aluminium profiles and sections, details, infills, glass panes, windows and doors should be stored in dry rooms in order to be protected against mechanical damage and damage to anodised or painted coatings.
  Elements of GKF fire insulation should be stored in original packaging in the horizontal position. If it is necessary to repack the inserts, the following rules must be followed:
  - inserts must rest in the horizontal position on a hard and flat surface ((e.g. on a particle board);
  - subsequent layers must be separated by PE film (e.g. thin plastic sheeting);
  - maximum number of layers in one packaging – 25, but the stack must not be higher than 600 mm.

They should be stored in storehouses, in normal weather conditions, i.e. in the temperature between 5° and 25°C and humidity ranging between 50 and 80%.
After opening the package and taking out the required number of inserts, the packaging should be covered with a protective film. Packaging should be protected against dampness and excessive drying up Inserts should be carried with care to avoid the risk of damage – cracking.

- Transportation
  Aluminium sections, details, elements of GKF fire insulation, infills, glass panes, windows and doors may be transported by any means of transport provided they are protected against soiling, dust and exposure to any damage during transportation.

3.6. ASSEMBLY GUIDELINES AT THE BUILDING SITE

Walls, technical windows and doors in the MB-78EI system, class EI15 and EI30 may be installed in:

- walls built of solid, perforated or chequer brick, at least 12 cm thick;
- concrete and reinforced concrete walls at least 8 cm thick;
- cored brick or cellular concrete walls at least 12.5 cm thick;
- light plasterboard walls featuring fireproof class not lower than EI30.

The MB-60E EI walls may be installed vertically or at an angle of ±10° to the vertical; however doors and technical windows may be installed only in a vertical position.
The installation of walls, technical windows and doors on a building site should be carried out in the temperature not lower than 5° C. During its installation, the structure should be protected against exposure to weather conditions, such as water, snow and any type of mortar and dust.
The walls and frames of technical windows and doors should be installed with the use of steel expansion bolts min. Ø10 mm, steel system anchors, bolts or screws min. Ø5 mm (M5), spaced up to 600 mm but their distance from the corners must not exceed 250 mm and 200 mm from the wall pillars.
The gaps formed between the wall, technical window or door and masonry should be filled with non-flammable mineral wool of min. density 70 kg/m^3 or with any other fireproof filling, admitted for use in fireproof structures and then closed with non-flammable material (e.g. plasterboard, concrete-lime plaster, fireproof caulk, aluminium profile, steel profile or flashings).
Detailed information regarding the assembly of products is contained in the section “Examples of Development”.

3.7. MAINTENANCE

Anodised or paint-coated aluminium profiles should be washed with a soft cloth and mild cleaning agents. Alkaline-based liquids are not allowed, as they may damage the anodic oxidation coatings or varnished coatings. Cleaning agents with ph below 5 or over 8 must not be used. While cleaning, the temperature of coatings and the temperature of water must not exceed 25°C. After each cleaning the surface must be immediately rinsed with clean and cold water.
Regular cleaning prevents formation of obstinate and difficult to remove dirt.
Maintenance of hardware should be performed in accordance with the instructions provided by manufacturers of the hardware.

3.8. CATALOGUE UPDATES

The catalogue should be updated by downloading PDF files at http://www.aluprof.eu in the authorised section “Catalogues”.

3.9. AVAILABILITY OF CATALOGUE PRODUCTS

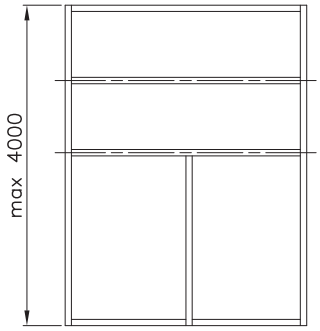
Rules and availability dates of the elements presented in the catalogue have been specified in Aluprof SA Price List, included in the authorised section of the website http://www.aluprof.eu in the section “Price Lists”

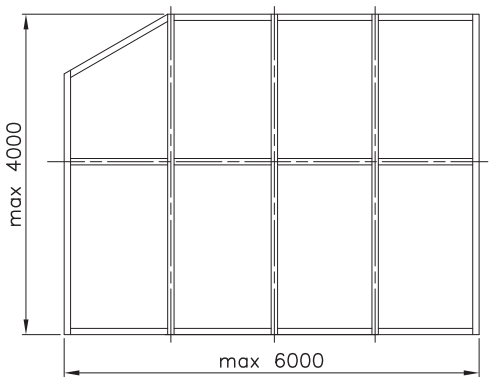
4. GRAPHIC SYMBOLS USED IN THE CATALOGUE

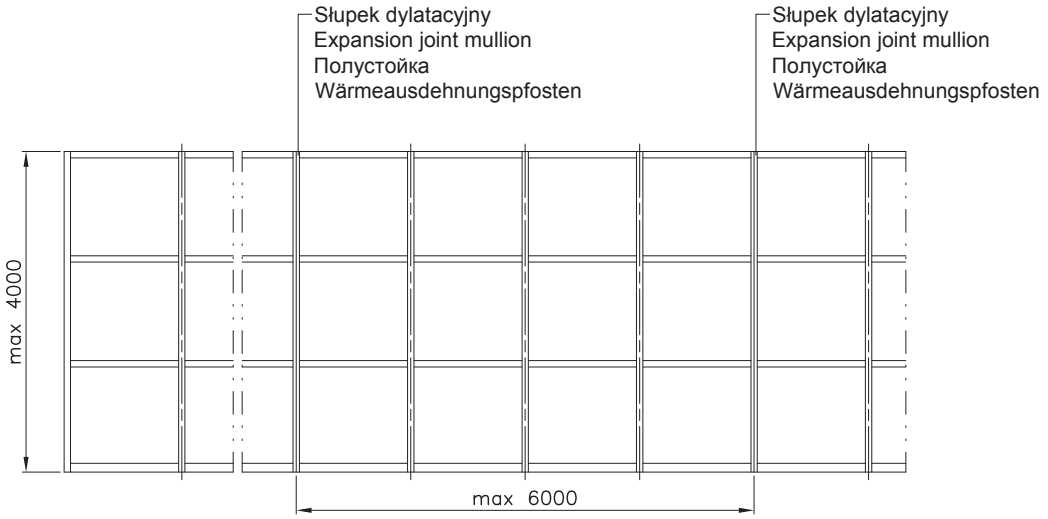
№	Number		Working
!	Remarks		Compatible elements
	Total area [dm²/m]		Cut
	Decorative area [dm²/m]	G	Glue with two-component glue
	Angle of cut [º]	MS	Glue and seal
	Dimensions [mm]	S	Seal with silicone
1..	Number of items	G	Glue
	Material	_ _ _ _ _	Perform with the use of: _ _ _ _ _
N	Standard		

MB-60E EI

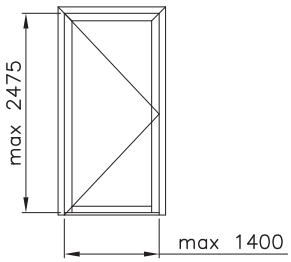
EI 15, EI 30. Maksymalne wymiary ścianek i drzwi.
EI 15, EI 30. Maximum dimensions of wall segments and door.
EI 15, EI 30. Максимальные размеры стеновых панелей и двери.
EI 15, EI 30. Maximale Abmessungen von Wand und Flüglige.

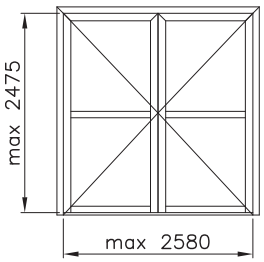




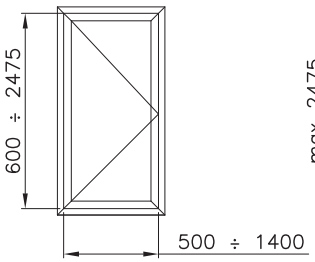


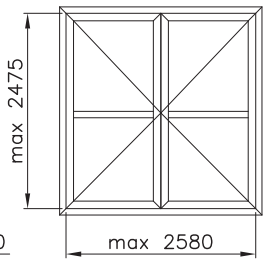
Drzwi
Door
Дверь
Tur





Okno techniczne
Technical window
Техническое окно
Technische Fenster





MB-60E EI

EI 15, EI 30. Maksymalne wymiary ścianek i drzwi.
EI 15, EI 30. Maximum dimensions of wall segments and door.
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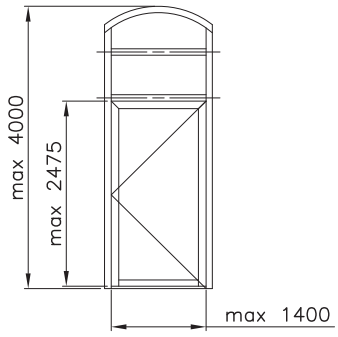
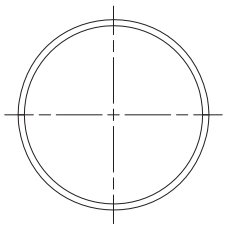
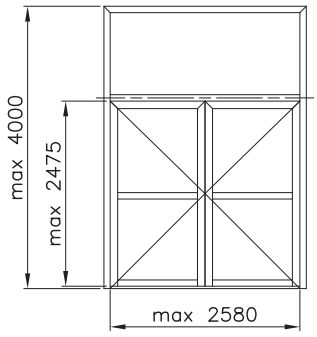
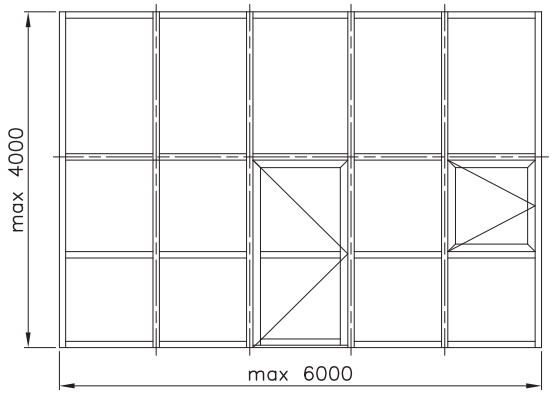
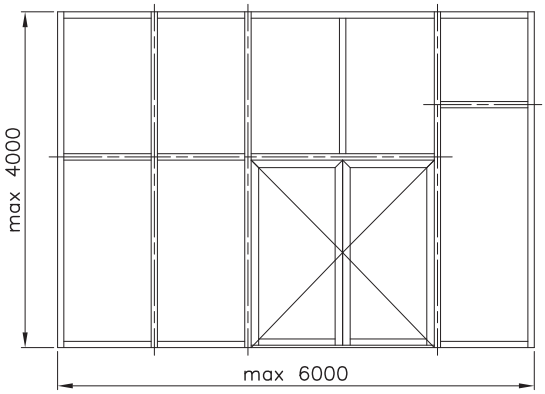
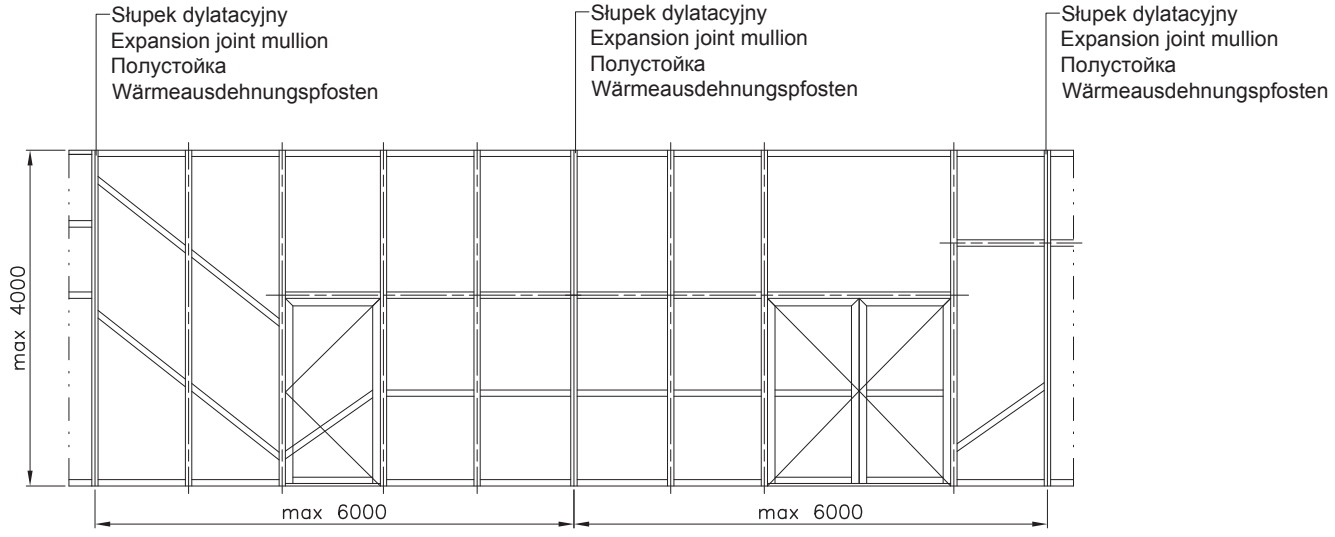








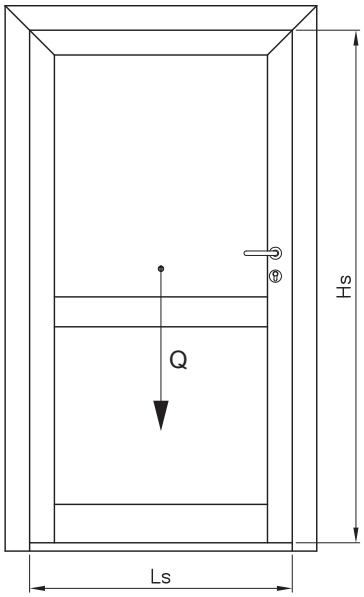




MB-60E EI

Maksymalne wymiary skrzydeł drzwi
Maximum dimensions of leaves
Максимальные размеры створок, подбор дверей
Maximale Abmessungen für Türflügel

Wymiary maksymalne mają ścisły związek z profilami, z których wykonane są skrzydła i obowiązują jedynie z kompletnymi zestawami okuć oraz po skojarzeniu ich z zakresem stosowania tych okuć przedstawionym w rozdziale "Okucia" i katalogu "Okucia"
Maximum dimensions are closely correlated with the profiles of which the sashes are made and they are applicable only with complete sets of hardware and they are subject to the application range of this hardware, presented in the section "Hardware" and "Hardware"catalogue
Максимальные размеры тесно связаны с профилями, из которых выполнены створки и обязательны только с полными наборами фурнитуры, а также после сочетания х с пределом применения этой фурнитуры, представленным во главе "Фурнитура" .
Maximale Maße stehen im engen Zusammenhang mit Flügelprofilen und gelten ausschließlich mit kompletten Beschlägen sowie ihrem Einsatzbereich (siehe Kapitel „Beschläge“ und Katalog „Beschläge“)



№	Ls max [mm]	Hs max [mm]	Q max [kg]
K518390X	1400	2475	150
K518391X			

Minimalne wymiary drzwi należy dobierać biorąc pod uwagę aktualne zalecenia przepisów i norm.
Adjust minimum dimensions of door taking into account current regulations and standards
Минимальные размеры дверей следует подобрать учитывая актуальные рекомендации положений и стандартов.
Minimale Türabmessungen haben den geltenden Vorschriften und Normen zu entsprechen.