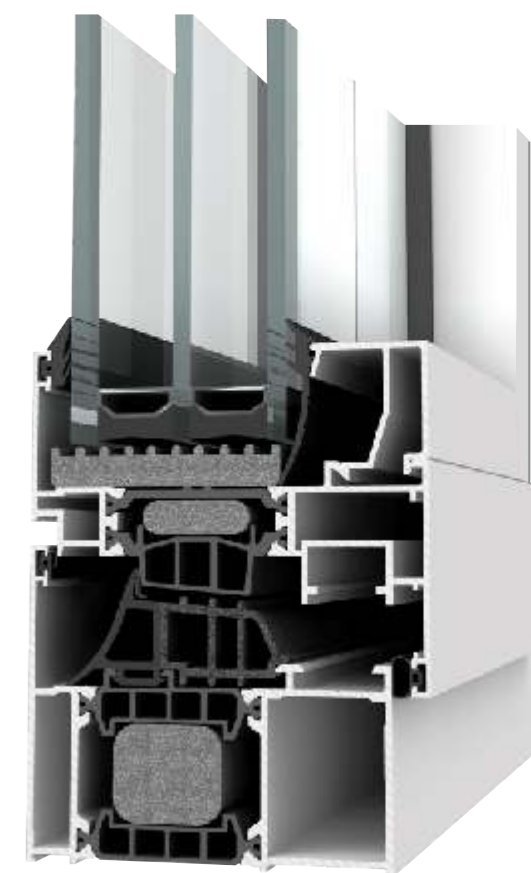


LINEAL



LINEAL



THE FUTURE OF ENERGY EFFICIENCY

ALUMINIUM SYSTEMS FOR WINDOWS AND DOORS

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Zadržavamo pravo tehničkih promena i odstupanja od boja. © Tehnomarket doo 03/2020

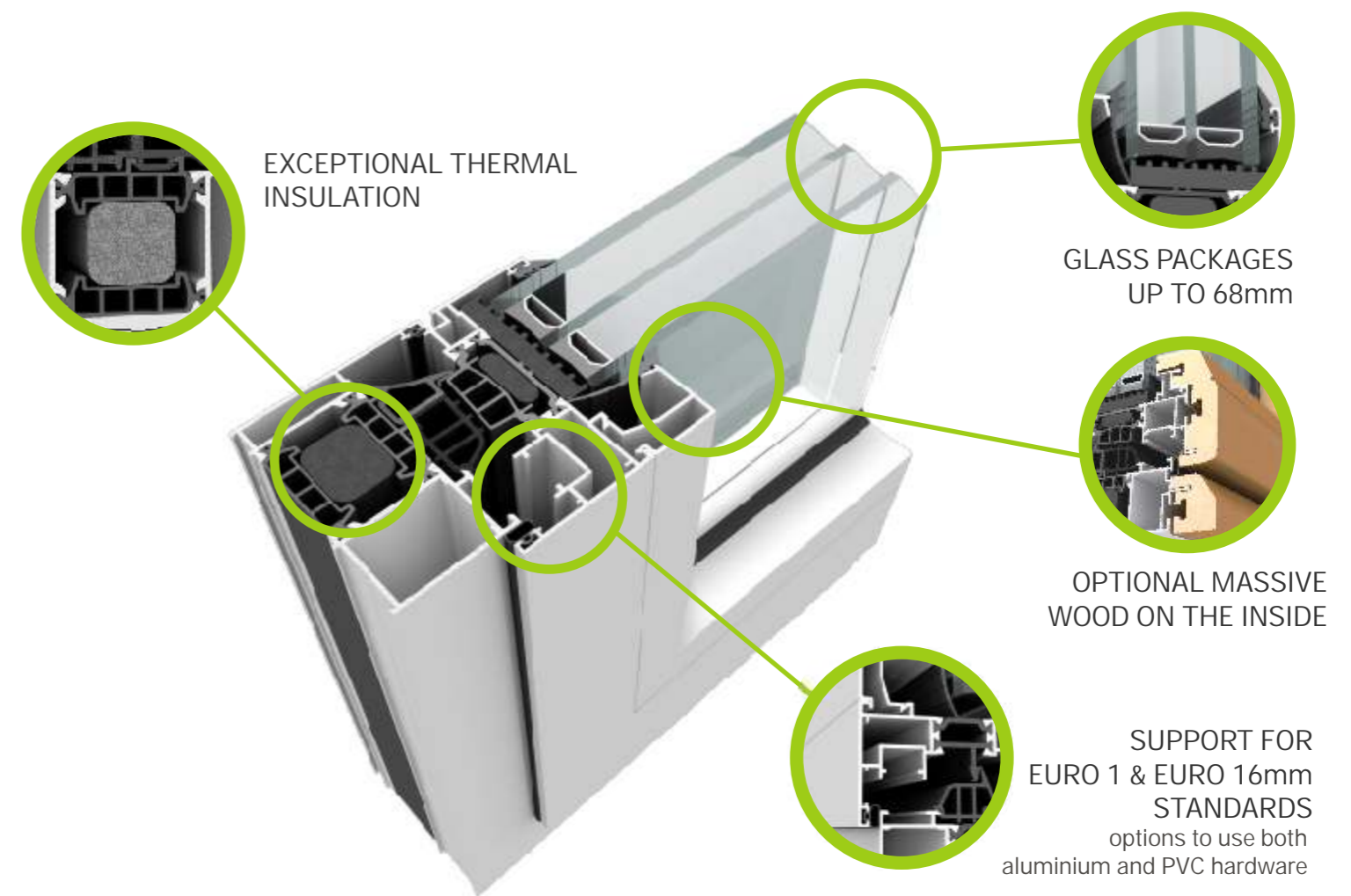
DESIGNED AND MANUFACTURED BY TEHNOMARKET



THE FUTURE OF ENERGY EFFICIENCY

New Lineal system was designed in Tehnomarket with a view to exploit the advantages of using aluminium in the production of the new generation doors and windows with special demands regarding energy efficiency to the maximum capacity. The use of aluminium makes the stable and elegant form of the frame possible, with improved thermal isolation achieved through a thermal break provided by wide polyamide strips and integrated foam fills.

Lineal offers two types of profile construction with thermal break - one with an aluminium base, and one combining an aluminium construction and a wooden inner lining. The system is modular, so that different element combinations provide eleven subsystems with different installation depths starting with 54mm in aluminium, all the way to 104mm in the luxury aluminium-wood combination.

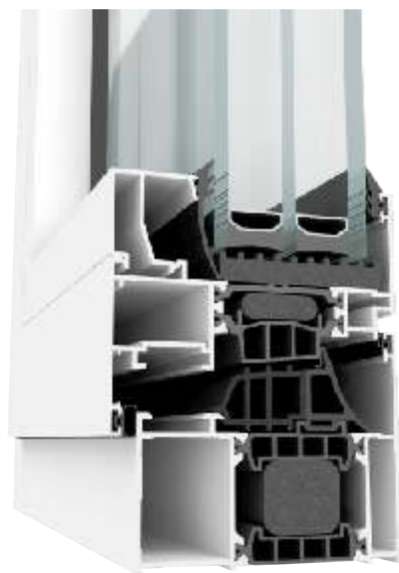


LINEAL

LINEAL GROUP CONSISTS OF THREE PROFILE SYSTEMS

- ALUMINUM SYSTEMS
- BLOCK SYSTEMS WITH HIDDEN SASH
- ALUMINIUM-WOOD SYSTEMS

THERM 77



THERM 62



Three different installation depths – 54mm, 62mm and 77mm offer the customers the possibility of choosing between 4 subsystems that meet the desired and projected requirements in the planned exploitation of doors and windows. Optimized thermal isolation as an important factor of comfort is achieved through thermal break in the shape of polyamide strips of varied width - 16mm, 24mm and 39mm, and is directly related to the installation depth of the frame.

THERM 77 system, as technologically most complex, possesses enhanced thermic characteristics achieved through honeycomb structure multi-chambered polyamide, foam fills and co-extruded central seals. Combined with three layer glass ($U_g=0,5W/m^2K$) in this systems windows it is possible to achieve a minimal heat transfer through the entire window of $U_w=0,96W/m^2K$ designed for low energy buildings.



system characteristics



EURO 1 & EURO 16mm



POLYAMIDE STRIPES



INFILL



MAXIMUM INSULATION

Lineal profile systems support the usage of aluminum or PVC hardware

3 levels of thermal isolation available with polyamide strips 16, 24 i 39mm wide

Support for two-and three-layered packages of glass, up to 68mm wide

Created by application of special foam fill in the Therm 62 and 77 systems

PLUS 62



ST 54





DIVERSITY

The option of the aluminum system offers a wide range of combinations with the limited number of profiles, for the production of windows, balcony and entrance doors with threshold and portals, together with the installation of a number of different accessories ranging from turn, tilt, tilt-turn, hinge-slide and slide mechanisms. A special convenience for investors and clients is the option of EURO 1 or EURO 16mm standardized hardware.

COMFORT

Comfort in exploitation is achieved by improving three key elements of comfort: thermal isolation providing heat to the touch, control of micro-aeration of the room which eliminates the unpleasant feeling of airtightness and, finally, sound isolation necessary for the peace and privacy of living and working spaces.

STABILITY

Optimal ratio of static capacity of the profile and the width of thermal break zone provides us with a possibility of projecting large openings and introducing an ideal amount of light into the ambient. All three subsystems offer elegant views in rod-wing combination with visual heights ranging from 91mm for the windows to the maximum of 186mm for balcony doors.

SAFETY

As a design priority we have defined the choice of safe materials, certified with a CE stamp, which offer total safety from unfavourable outside conditions in our ready-made elements. Also, the possibility of integrating a burglar security system has been enabled through safety grade RC2 and RC3 accessories, which provides additional safety for the clients and their property.

LINEAL

TYPES OF ELEMENTS

INFILL

TYPES OF OPENING

LOW ENERGY BUILDINGS

U_w



| | | | | | | | | | | | W/m ² K |
|----------|---|---|---|---|---|---|---|---|---|---|--------------------|
| ST 54 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 1,67 |
| PLUS 62 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 1,30 |
| THERM 62 | ● | ● | ● | | ● | ● | ● | ● | ● | ● | 1,10 |
| THERM 77 | ● | ● | ● | | ● | ● | ● | ● | ● | ● | 0,96 |

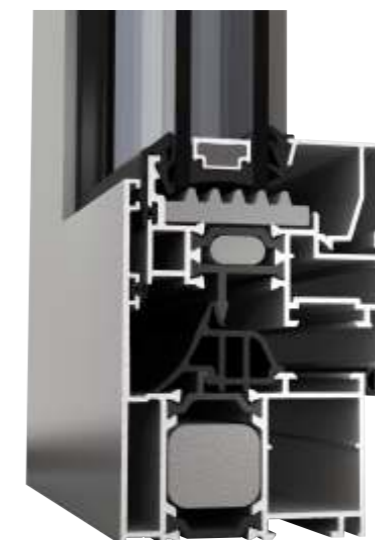
All the elemental are available in two options of surface protection – pulverisation in all RAL tones or anodisation.

BLOCK series with hidden sash

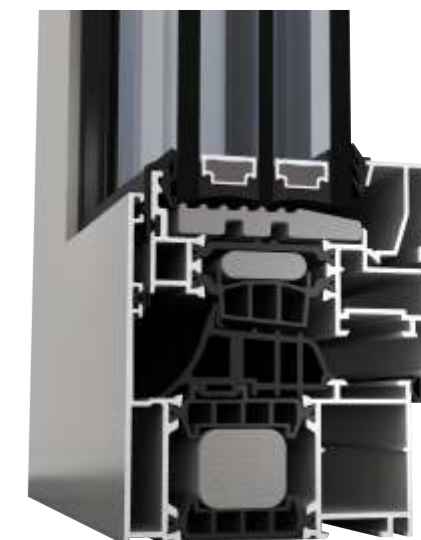
LINEAL



PLUS 62



THERM 62



THERM 77

Lineal Block systems with the hidden sash enable the production of clean, minimal looking windows, without the visual difference between the fixed and the opening sashes like with the traditional systems. Due to the constructive specifics, this profile type is suitable only for the production of the windows where all of the system advantages can be used. The hidden sash option is available in the Lineal Plus 62, Lineal Therm 62 and Lineal Therm 77 systems, with supported glazing thickness from 5 to 68mm.

LINEAL

TYPES OF ELEMENTS

INFILL

TYPES OF OPENING

LOW ENERGY BUILDINGS

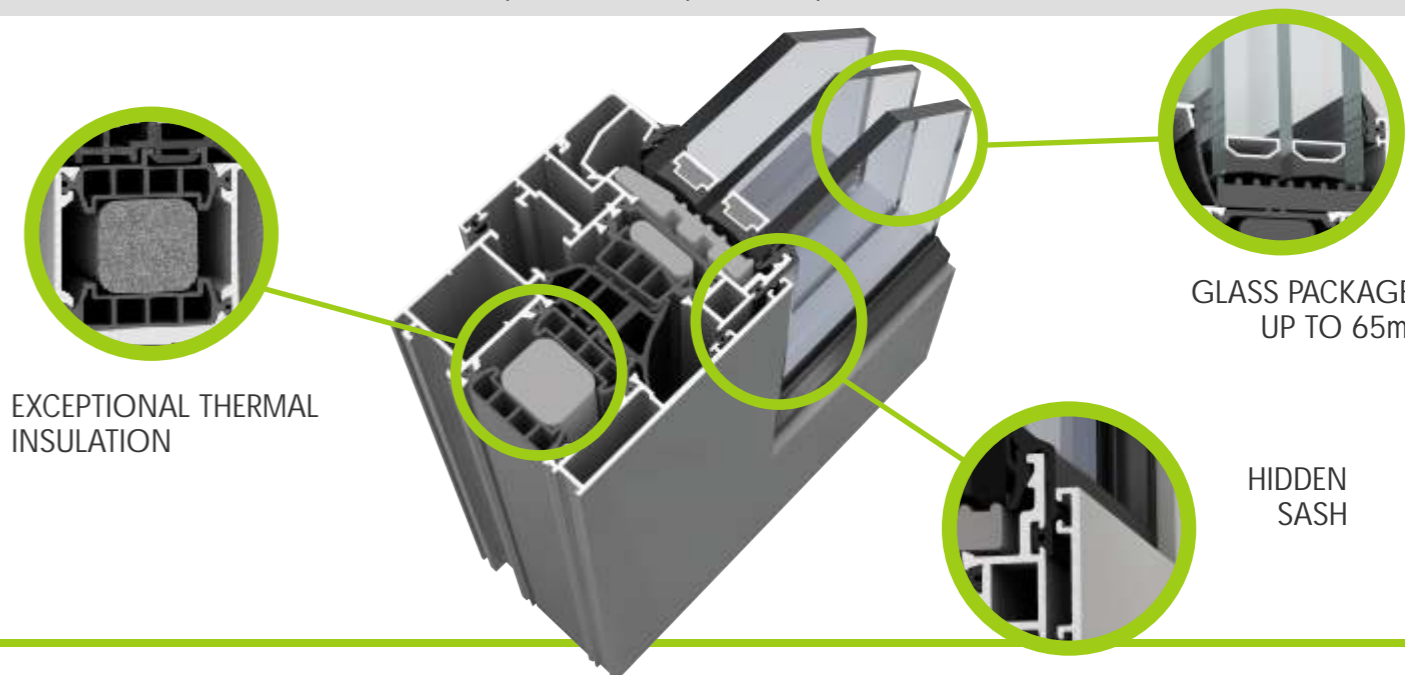
U_w



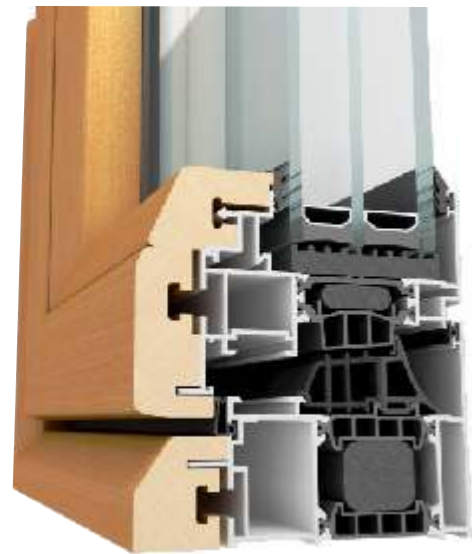
BLOCK series

| | | | | | | | | | | | |
|----------|---|--|--|---|---|---|---|---|--|---|------|
| PLUS 62 | ● | | | ● | ● | ● | ● | ● | | | 1,17 |
| THERM 62 | ● | | | ● | ● | ● | ● | ● | | | 1,10 |
| THERM 77 | ● | | | | ● | ● | ● | ● | | ● | 0,83 |

All the elemental are available in two options of surface protection – pulverisation in all RAL tones or anodisation.



W-THERM 104



W-THERM 89



An ideal combination of durable and solid aluminum and precious wood for inner lining is created to provide a superior window, which can be an excellent addition to any workspace or home. The four projected subsystems with installation depths of 81mm, 89mm and 104mm meet the current standards of energy efficiency in modern construction, but at the same time they are distinguished by their improved performances, design and luxurious materials.

As a subsystem with the best characteristics W-THERM 104 is singled out as it possesses the qualities of enhanced isolation with the possibility of achieving $U_w=0,79W/m^2K$ (with the use of three layer glass $U_g=0,5 W/m^2K$), and with an incredible price-quality ratio, so important to the investors today.



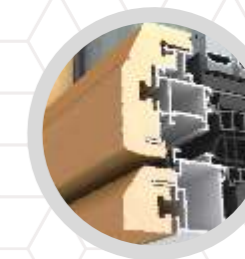
system characteristics



POLYAMIDE STRIPS



INFILL



NATURAL WOOD



COLORS

There are three levels of heat insulation with polyamide stripes up to 39 mm in width

Support for two and three-layered glass up to 60mm in width

Warmth and luxury which only natural wood can provide

The solid wood cladding is available in many different colors

W-PLUS 89



W-ST 81



IN SYNC WITH
NATURE



WARMTH

Exceptional thermal insulation is the main characteristic of the products in this group, with the values that absolutely comply to both the current standards and the demands of the modern users. Aluminum with the thermal break makes for the stronger carrier part of the element construction, while the wooden lining adds to the warmth with its rich natural structure of isolation material.

DURABILITY

The windows of the three subsystems offer the highest level of durability. Aluminum - a strong and stable material, impervious to weather conditions - carries the entire construction of the finished element and as such is on the outer side. The wooden lining, attached with a patent connection which enables the independent activity of the two main construction materials, is on the inside, completely protected from atmospheric influences, where its beauty and duration can really be appreciated.

MASSIVE WOOD

Massive and high-quality wood discreetly adds to the beauty of the space, making it luxurious and attractive for the users. As internal lining it is used for designer battens on the wings, rods and glass holders in the total height of the frame from 106mm to 132mm, with a rich assortment of wood types, as well as the protective layer color and structure.

AESTHETICS

Wood as a traditional and natural material, tested through the centuries of use, offers a new aesthetic dimension to the windows. It undoubtedly adds to the comfort of the interior with an unparalleled feeling of warmth and luxury. The ability to choose between the different types of wood lining, such as oak, walnut, beech and cherry tree, with different colors and structures makes the finished elements fit easily into different types of interiors.

| LINEAL | TYPES OF ELEMENTS | | | INFILL | | TYPES OF OPENING | | | | LOW ENERGY BUILDINGS | | U _w |
|-------------|-------------------|---|--|--------|---|------------------|---|---|---|----------------------|---|----------------|
| | | | | | | | | | | | | W/m²K |
| W-ST 81 | ● | ● | | | ● | | ● | ● | ● | ● | | 1,67 |
| W-PLUS 89 | ● | ● | | | ● | ● | ● | ● | ● | ● | | 1,13 |
| W-THERM 89 | ● | ● | | | ● | ● | ● | ● | ● | ● | | 0,99 |
| W-THERM 104 | ● | ● | | | | ● | ● | ● | ● | ● | ● | 0,79 |

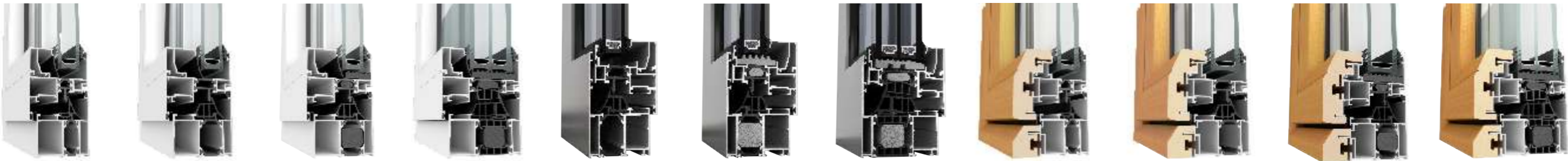
All elements are available in two options of surface protection - powder-coating in all RAL colors or anodisation.

DIFFERENT SHADES OF ECOLOGICAL WOOD COLORS AVAILABLE



COMPARATIVE OVERVIEW OF THE LINEAL PRODUCT LINE

LINEAL



| | ST 54 | PLUS 62 | THERM 62 | THERM 77 | BLOCK PLUS 62 | BLOCK THERM 62 | BLOCK THERM 77 | W-ST 81 | W-PLUS 89 | W-THERM 89 | W-THERM 104 |
|---|------------|------------|------------|------------|---------------|----------------|----------------|------------|------------|------------|-------------|
| Uf - coefficient of the heat transfer through the profile | 2.87 W/m²K | 2.38 W/m²K | 2.15 W/m²K | 1.37 W/m²K | 2.6 W/m²K | 2.1 W/m²K | 1.4 W/m²K | 2.36 W/m²K | 2.05 W/m²K | 1.89 W/m²K | 1.14 W/m²K |
| Uw-koefficient of the heat transfer - triple glazing | / | 1.3 W/m²K | 1.1 W/m²K | 0.96 W/m²K | 1.17 W/m²K | 1.1 W/m²K | 0.83 W/m²K | / | 1.13 W/m²K | 0.99 W/m²K | 0.79 W/m²K |
| Uw-koefficient of the heat transfer - double glazing | 1.67 W/m²K | 1.6 W/m²K | 1.4 W/m²K | 1.1 W/m²K | 1.55 W/m²K | 1.4 W/m²K | 1.2 W/m²K | 1.52 W/m²K | 1.39 W/m²K | 1.34 W/m²K | / |
| infill thickness min-max | 8-45 mm | 8-53 mm | 8-53 mm | 23-68 mm | 5-50 mm | 5-50 mm | 20-65 mm | 16-37 mm | 24-45 mm | 24-45 mm | 39-60 mm |
| profile height min-max | 91-186 mm | 91-186 mm | 91-186 mm | 91-186 mm | 73-88 mm | 73-88 mm | 73-88 mm | 106-132 mm | 106-132 mm | 106-132 mm | 106-132 mm |
| window | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| balcony door | ● | ● | ● | ● | | | | ● | ● | ● | ● |
| entrance door | ● | ● | ● | ● | | | | | | | |
| EURO 1 hardware | ● | ● | ● | ● | ● | ● | ● | | | | |
| EURO 16mm hardware | ● | ● | ● | ● | | | | | | | |
| Tehnomarket hardware | | | | | | | | ● | ● | ● | ● |
| Eugen Nötter hardware | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| safety hardware RC 2, RC 3 | ● | ● | ● | ● | ● | ● | ● | | | | |

triple glazing package Ug 0,5 W/m²K / EN ISO 10077-2
double glazing package Ug 1,0 W/m²K / EN ISO 10077-2



Certification results of the Lineal systems



Sound insulation

EN ISO 140-3



Thermal performance

EN ISO 12567-1



Water Impermeability

EN 12208:1999-11



Air Impermeability

EN 12207:1999-11



Wind load

EN 12210:1999-11/AC:2002-08

Lineal Plus 62

Rw(C;Ctr)= 34 (-1; -5) dB Uw=1,3 W/(m²K) CLASS 6A CLASS 4 CLASS C5/B5

Lineal Therm 77

Rw(C;Ctr)= 40 (-1; -5) dB Uw=0,96 W/(m²K) CLASS E750 CLASS 4 CLASS C5/B5

Lineal W-Therm 104

Rw(C;Ctr)= 43 (-2; -5) dB Uw=0,79 W/(m²K) CLASS 7A CLASS 4 CLASS C5/B5

Lineal system is designed and produced according to health and safety requirements of the relevant directive for construction products 89/106/EEC and harmonized standard for windows and doors EN 14351-1:2006+A1:2010

All Lineal subsystems have the possibility of labeling the completed doors and windows with CE mark, which is necessary for the clients within European Union. In that way it is possible to make a product "passport", which is a required part of the export procedure.



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