

insulbar®
Perfect insulation for metal windows.



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insulbar®

by **ENSINGER** 

insulbar® from ENSINGER insulates perfectly.



ENSINGER is the world leader in the development of thermal insulation profiles for window and facade construction. insulbar® profiles satisfy the highest quality demands. They have been used successfully around the world for more than 20 years. Using insulbar® in windows and doors provides perfect insulation and cuts costs due to reduced energy consumption. It also therefore provides greater environmental protection.

| Certifications

International certifications prove the high quality of the ENSINGER products. Tested plastics with certification of suitability according to DIBt Guidelines and aTg certificate from UBAtc: TECATHERM 66 GF, TECATHERM 66 LX and TECATHERM PP GF.

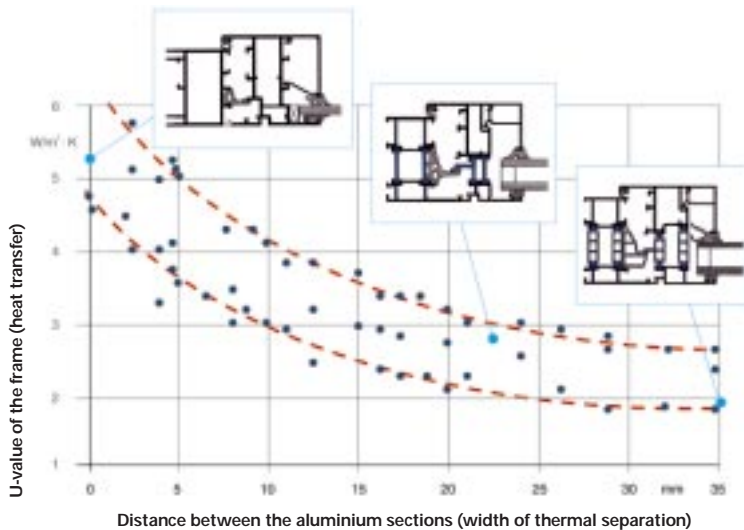


- | The advantages of insulbar®-profiles at a glance:
 - | Available in any cross-section and with extremely tight tolerances
 - | Extensive standard programme
 - | Material selection, tailor-made specifically for the application and production processes
 - | Secure handling during assembly and installation due to high precision and tight tolerances
 - | Highly heat-insulating
 - | Secure long-term function of the assembly (Q, T, c)
 - | Resistant to chemicals, detergents and processing agents
 - | Suitable for stove enamel, resistant in the anodic coating process
 - | Weatherproof, rainproof and moisture-proof
 - | Eco-friendly due to the use of recyclable materials

Cost reduction through thermal separation.

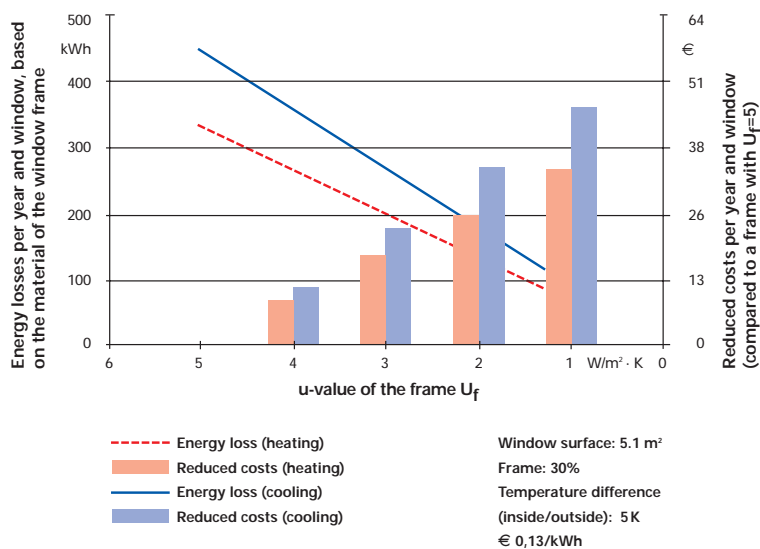
Thermal separation can lead to huge savings. The insulation of windows using insulbar®-profiles achieves first class results with regard to cutting energy consumption and heating or air condition costs.

| Cutting energy costs, depending on the height of the insulbar®-profiles, among others.



The larger the insulbar®-profiles, the more you can cut energy consumption and costs.

| Cost savings for heating and cooling, depending on the U_f value of the window frame.



insulbar®-profiles for SCHMIDLIN AG, Switzerland. In the "Sphinx" mountain restaurant at the Jungfraujoch at 3450 m the extremely strong TECATHERM can withstand temperatures down to -30 °C and wind speeds of up to 250 km/h.



The "Neue Zollhof" at the Dusseldorf Rhine Harbour. SCHÜCO INTERNATIONAL combined the function, appearance and design with perfect thermal insulation using insulbar®-profiles from ENSINGER



Hotel Atlantic on the banks of the River Alster in Hamburg. During the course of the modernisation of this old building, Eduard Hueck GmbH & Co. KG recreated the appearance of the original wooden windows using aluminium. insulbar®-profiles from ENSINGER fit flexibly and perfectly in the various winged, tilted and casement windows.



For new, creative system solution extensive know-how is required. The insulbar®-specialists develop informed and reliable tailor-made concepts for complex geometries using high-performance plastics.

| Consulting

Our competent consultants are reliable partners who can answer all questions. The main focus is on customer benefit in all phases of insulbar® development.

| Selection of material

Each application places different and specific requirements on the characteristics the plastic must have.

| Development

The insulbar® design is tailored to exactly suit customer requirements, using among others finite element calculations to determine the heat transfer coefficient.

A continual flow of data from the customer through all ENSINGER divisions speeds up the processes and creates flexibility from planning through to manufacturing.

| Tools and production methods

The company's tool making department and production methods ensure flexibility and speed right from the start.

| Prototypes

Rapid prototyping can be used to create machined or bonded prototypes made of semi-finished products in the original plastic very quickly for initial testing. Alternatively, prototype tools can be used to create prototypes that are identical to the volume products.

| Production

Highly flexible, dual-base production ensures that delivery times are kept short. It not only covers the extrusion of the insulbar®-profiles, but also the further stages of finishing, such as preliminary drilling, punching or the initial installation of accessories.

| Quality management

has a high-performance quality management system. Agreements concerning additional testing, labelling, packaging and such like can be made individually with the customer. Computer assisted, comprehensive quality control is implemented before an insulbar®-profile enters volume production.

| Logistics

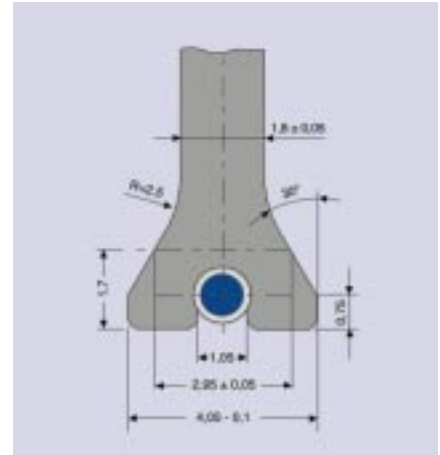
Customer-orientated logistic concepts and a worldwide distribution network also enable the shortest possible delivery times.

insulbar®-geometries for any application.

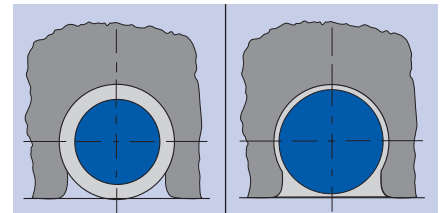
ENSINGER has the better solution. In addition to an extensive standard programme, ENSINGER also supplies extremely precise profiles for any geometry. insulbar®-profiles are provided in volumes and without any additional costs with Coex glue wire. This is used as a reliable moisture barrier and perfect seal. It also ensures that the bond remains firm.

| Profiles with individual geometries

Whether solid or hollow profiles, ENSINGER experts can create the most complicated, specific geometries to suit individual customer requirements. Special adaptations for further processing and application save time and money during installation.



insulbar®-profiles from ENSINGER with Coex glue wire: a reliable moisture barrier and a perfect seal.



Before...

...and after powder coating

| The standard range for rolled assemblies

ENSINGER has an extensive standard range of thermal insulation profiles. For these customers are not required to pay any tool costs. insulbar® standard profiles are available in incremental sizes (from 12 to 36 mm), in straight or offset design and with seal locations. insulbar® hollow profiles enable high heat-insulating constructions to meet the requirements of the new energy-saving regulations.



British Embassy, Berlin. The special construction of the WICONA element façade with top-hung, open-out windows achieves excellent thermal insulation with insulbar®-profiles.

ENSINGER-plastics are convincing.



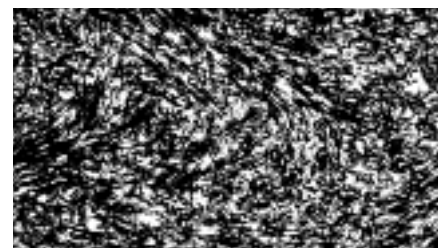
Extensive examinations and tests are carried out on the plastics and insulbar®-profiles within the framework of the ENSINGER quality management system in order to ensure fully developed products that show their full performance in use.

ENSINGER has in its programme the perfect plastic for any requirement. With the aid of extensive tests, ENSINGER investigates whether the characteristics of the material correspond with the customer specifications.

Tried and tested standard materials such as TECATHERM 66 GF and 66 LX have proved themselves over the years due to their excellent combinations of characteristics.

ENSINGER drafts with the customer a tailor-made material solution for special requirements: for example special materials such as TECATHERM 66 ESP, which can ensure that the powder is attracted well during powder coating.

ENSINGER also develops special materials for particular requirements: For example: non-melting materials such as TECATHERM VE GV, which are used in thermally separated fire alarm systems.



ENSINGER employs state of the art process engineering to achieve a multi-directional fibreglass orientation in insulbar®-profiles. The highly isotropic characteristics this achieves leads to considerable improvements in the behaviour towards the multi-axial stresses that occurs during application.

ENSINGER-plastics for thermal insulation profiles.

Tried and tested standard materials:

- | **TECATHERM 66 GF**
Ideal for extreme loads: Highest safety in dealing with dynamic load combinations. Therefore particularly suited to hollow profiles with thin walls – for powder coating and anodising in the assembly.
- | **TECATHERM 66 LX**
The new high-performance material with reduced thermal conductivity for lower heating energy consumption. Suitable for powder coating and anodising.
- | **TECATHERM 66 XP**
Suitable for rolled assemblies, which are anodised but not powder coated.
- | **TECATHERM PP GF**
Suitable for rolled assemblies that are coated before rolling, e.g. dual colour systems.

Examples of tailor-made special materials:

- | **TECATHERM PA HT**
High heat distortion temperature for PVDF powder coating.
- | **TECATHERM 66 ESP**
Material with optimised electrostatic properties for secure powder attraction in powder coating.
- | **TECATHERM 66 GF lub**
Reinforced with glass fibre and lubricated for lock and bolt rods.
- | **TECATHERM 66 LGF or PP LGF**
Reinforced with long fibreglass, extremely strong, extremely stiff, for façade pressure profiles or glass holding profiles.
- | **TECATHERM VE GV**
Reinforced with continuous glass fibre, non-melting, for thermally separated fire alarm systems.
- | **TECATHERM PCX**
Modified polycarbonate, low fogging, for Thermix® spacers and bars in insulating glass.
- | **Material combinations:**
Co-extruded profiles with different plastics (e.g. hard/soft), or profiles with metal inserts.



The world's largest photovoltaic roof (Further Education Academy NRW). Here WICONA combines the use of solar power and thermal insulation. These specially developed aluminium profiles are insulated with insulbar® from ENSINGER.



Scale reconstruction of the historical bay window façade by JOSEF GARTNER in Steibs Hof in Leipzig. insulbar® insulates the copper and aluminium profiles in a static, supporting unit.



Headquarters of the LVA Brandenburg/Oder. Despite the transparency of the building, profile technology from SCHÜCO INTERNATIONAL is an effective thermal protection. insulbar® profiles stop the metal profiles losing heat.

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