

Standard programme

insulbar® insulating bars for windows, doors and façades

Edition 1-2023

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*The thermal break professionals.
Innovative and future-oriented – but steeped in tradition!*

Plastic insulating profiles are key components for the thermal break of modern window, door and façade systems made of metal. Ensinger profiles are the first choice for quality-conscious system manufacturers and processing companies.

Under the brand name insulbar, Ensinger develops and produces technically superior thermal insulating bars, and for over 40 years has been one of the leading manufacturers worldwide.

Profile professionals and inventors

It was over four decades ago that company founder and pioneer Wilfried Ensinger developed insulating profiles for metal windows, doors and façades. The driving force for this was the rising market demand for thermally improved aluminium systems, in order to thereby save on energy and costs and protect the environment. Nowadays, one associates the name Ensinger with the invention of the plastic insulating bar: durable, stable, quality made in Germany – marketed across the world under the insulbar brand name.

Plastics experts and partners to industry

insulbar represents only a part of Ensinger's extensive range of products and services. The company develops and produces – with its outstanding expertise in plastics – compounds, stock shapes, composites, finished parts and profiles made from technical plastics. These products are used nowadays in nearly all areas of industry and are impressive thanks to their cost-effectiveness and performance advantages. To process the thermoplastic engineering and high-performance plastics, Ensinger uses a number of production techniques, such as extrusion, machining, injection moulding, custom casting, sintering and pressing.

Left:
The Ensinger company headquarters in Nufringen near Stuttgart. Home to the company's administration, production and warehousing activities.

Right:
The insulbar® production facility in Cham, Bavaria.



Efficient thermal break of window, door and façade systems with insulbar insulating bars



Aluminium systems are weather-resistant, light and yet stable – but also have a high thermal conduction capacity. insulbar plastic insulating bars minimise this heat loss and thereby enable particularly low U values. In this way the energy consumption and hence heating and cooling costs can be lowered efficiently.

Thermal break of windows, doors and façades

Plastic insulating bars are key components of modern window, door and façade systems made of metal. They thermally decouple aluminium frames and thereby reduce heat losses to a minimum.

Insulate effectively and save energy - with insulbar insulating profiles

insulbar insulating bars, also known as thermal insulating bars, thermal insulating profiles or insulating profiles, prevent energy losses in buildings very efficiently and enable outstanding U_f values even up to passive house standards. Reduce energy consumption, save on heating and cooling costs and protect the environment in the process – these are the effects which can be achieved with insulbar bars.

With a standard to a system

insulbar insulating bars from the standard programme: universal, versatile, economical.

Economical and rapidly available – for any task

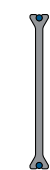
System manufacturers and metalworkers benefit from an extensive range of standard profiles. Using the insulating bars from the standard programme, nearly all common thermally separated window, door and façade systems can be put together quickly and cost-effectively. In addition, no tool costs arise.



All profile types from a system group

Profile type A

Simple, straight or offset profile, without additional functional element.



straight



offset



hollow chamber



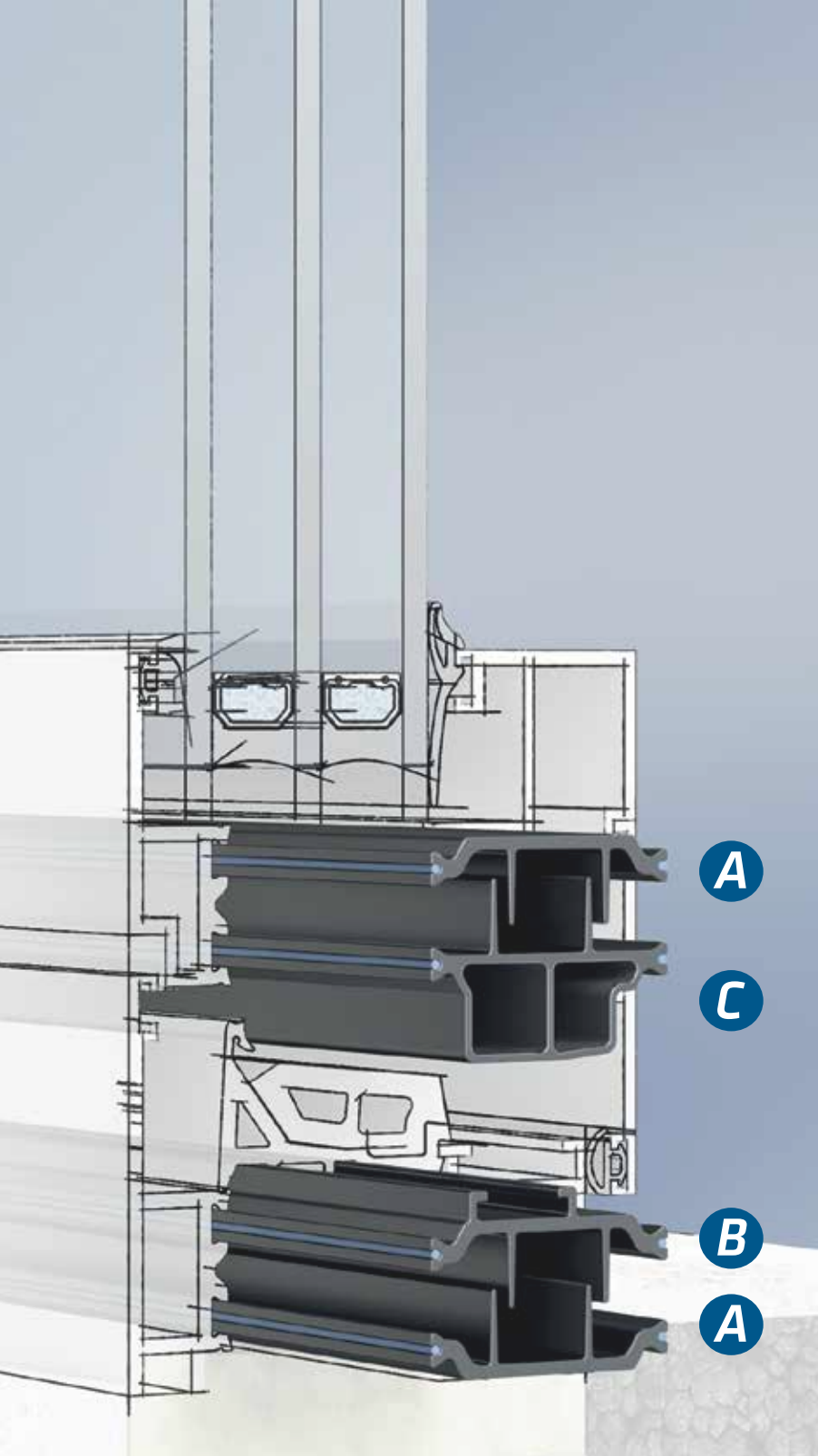
offset with flags

Profile type B

Profile for accommodating a central gasket with groove, hook or "T".



offset with groove



Diversity as a matter of course

insulbar standard profiles are available in several geometries, made from different materials and, on request, having undergone further finishing. Depending on the window type and climatic conditions, all requirements for a system are thus optimally fulfilled.

Standard bars – the rapid system solution

For simple and quick complete solutions for tilt and turn windows, we also offer – in the common insulation depths – several system groups as standard. These consist of three different profile types (A, B, C) in an identical size with all the requisite functional zones. The insulating bars within a group have the same base geometries and offset areas and are characterised by their standardised tolerances.

Profile type **C**

Functional element such as nose, arrow, hollow chamber.



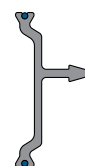
offset with hook



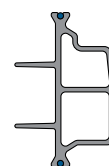
offset with "T"



offset with nose



offset with arrow



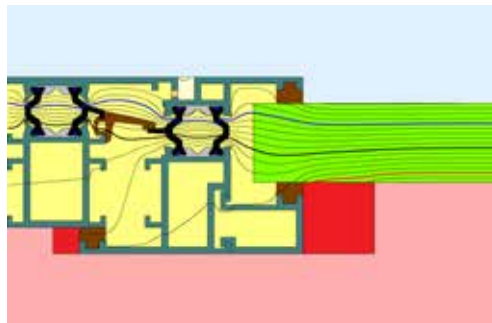
special hollow chamber

System groups: typical applications

Four schematic window cross sections: the right profile for every requirement

The U_f values and isothermal lines have been calculated using two-dimensional simulation software.

① Standard profiles with insulation depth 14.8 mm



Article number: 2440, 3286, 2167

Installation depth: 45.8 mm

Visible width: 90 mm

$U_f = 3.3 \text{ W/m}^2\text{K}$

$U_w = 3.1 \text{ W/m}^2\text{K}^*$

* Double glazing $U_g = 2.7 \text{ W/m}^2\text{K}$
Aluminium spacer $\Psi = 0.08 \text{ W/mK}$

③ Standard profiles with insulation depth 34 mm



Article number: 2807, 2805, 3172*

Installation depth: 68 mm

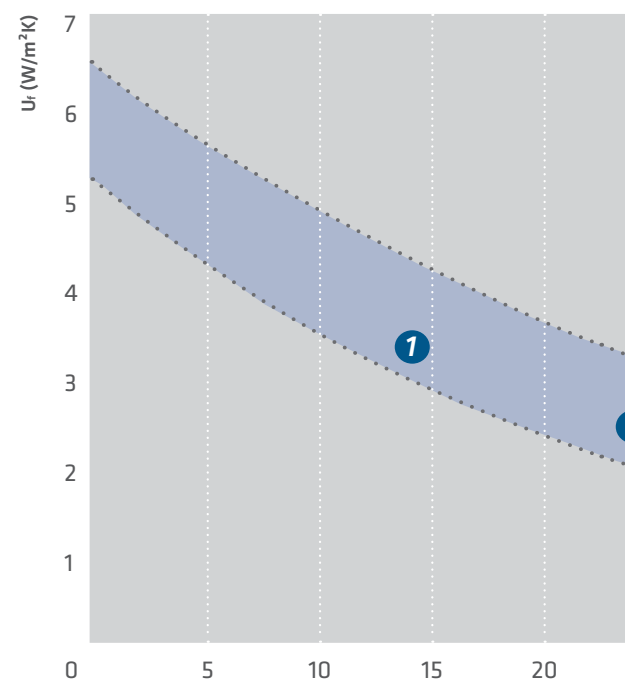
Visible width: 92.5 mm

$U_f = 1.9 \text{ W/m}^2\text{K}$

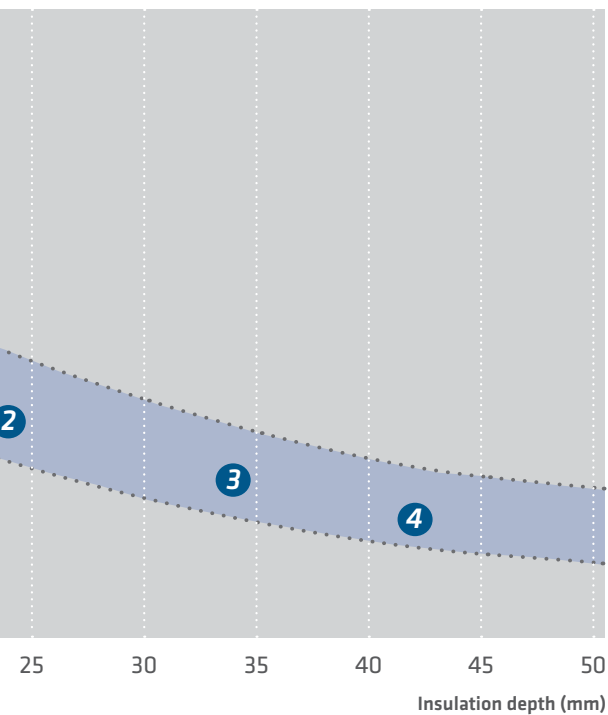
$U_w = 1.1 \text{ W/m}^2\text{K}^*$

* Triple glazing $U_g = 0.7 \text{ W/m}^2\text{K}$
Warm edge spacer $\Psi = 0.044 \text{ W/mK}$
* All profiles with Low-E film on the flags

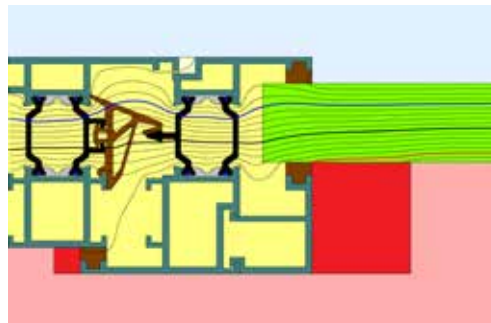
Influence of insulation depth on the U_f value



The U_f value of a thermally broken tilt and turn window is determined to a large degree by the insulating height of the insulating bar. Gaskets, flags, reflective films, insulating foams etc. also influence the thermal transmission coefficient. As visible from the graphic, the U_f value decreases with increasing insulation depth. Numbers 1 to 4 stand for the system cross sections.



2 Standard profiles with insulation depth 24 mm



Article number: 3023, 3024, 3285

Installation depth: 58 mm

Visible width: 92.5 mm

$U_f = 2.6 \text{ W/m}^2\text{K}$

$U_w = 1.6 \text{ W/m}^2\text{K}^*$

* Double glazing $U_g = 1.1 \text{ W/m}^2\text{K}$

Warm edge spacer $\Psi = 0.049 \text{ W/mK}$

4 Standard profiles with insulation depth 42 mm



Article number: 3272, 3273, 3274

Installation depth: 76 mm

Visible width: 96.5 mm

$U_f = 1.5 \text{ W/m}^2\text{K}$

$U_w = 1.0 \text{ W/m}^2\text{K}^*$

* Triple glazing $U_g = 0.7 \text{ W/m}^2\text{K}$

Warm edge spacer $\Psi = 0.044 \text{ W/mK}$

Always the right profile

Insulating bars for the thermal break of windows, doors and façades must above all be stable and reliable as well as having a highly insulating effect. But not all bars are the same. Different application requirements require different materials.

insulbar RE

made of TECATHERM 66 GF RE

The recycled profile: from 100 % recycled polyamide, unmixed and with an environmental declaration.

Thanks to the special upcycling process has outstanding mechanical properties - just like the conventional insulbar insulating bars.

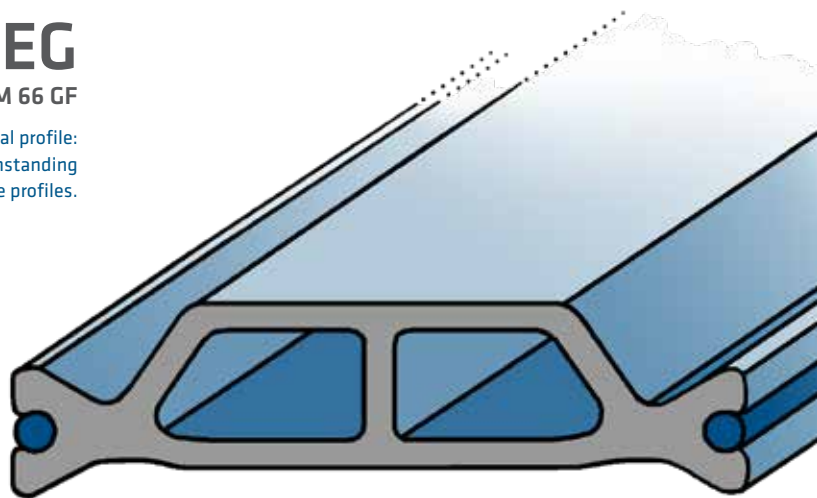
insulbar REG

made of TECATHERM 66 GF

The universal profile:
glass fibre reinforced and capable of withstanding
extreme loads, for customary metal frame profiles.

made of TECATHERM 66 GF40

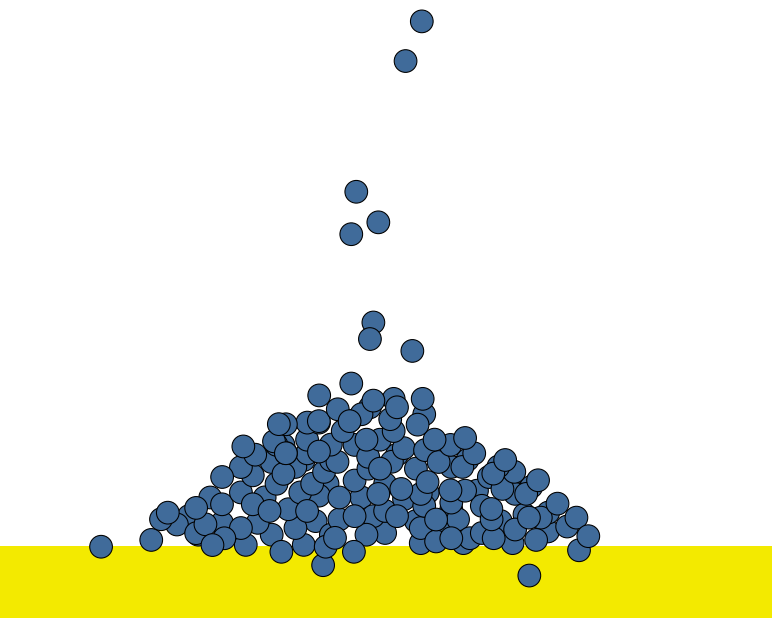
Highly reinforced profile with optimised
strength and stiffness:
perfect for demanding mechanical applications.



insulbar ESP

made of TECATHERM 66 ESP

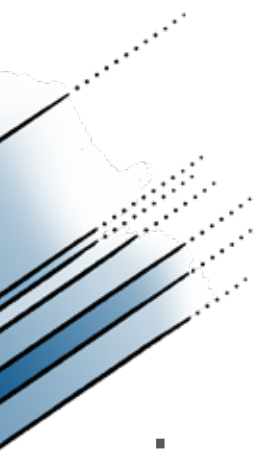
From electrostatically optimised polyamide 66 GF:
thanks to improved powder attraction, ideal for
powder coating.



insulbar LI

made of TECATHERM 66 GF

The insulating profile made from foamed polyamide 66 GF with a lambda value of 0.21 W/mK (in the optimum product): ideal for improving existing systems in respect of the U_f value or installation depth.



insulbar RE-LI

made of TECATHERM 66 GF RE

The bar which combines the low thermal conduction capacity of a foamed polyamide 66 GF with the ecological advantages of recycled material: ideal for green construction.

insulbar materials:

it's all about the right mixture

Our standard profiles are made from glass fibre reinforced polyamide 66, which is one of the most important engineering plastics. This material stands out for its optimum mechanical strength, high rigidity and thermal dimensional stability. It conducts little heat and also has a similar linear expansion to aluminium. For decades it has therefore been used for the thermal separation of window, door and façade systems made from aluminium.

Alongside our most commonly used material TECATHERM 66 GF, we also offer other polyamide materials with a variety of property profiles, specific to the profile and application. We will be pleased to advise you, clarify what is feasible and support you when selecting the material.

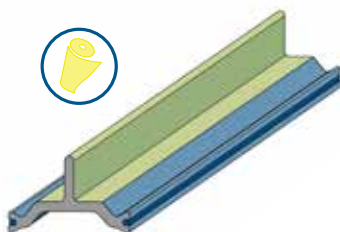
Certified quality and performance

insulbar bars meet high internationally applicable quality standards. This is proven by a large number of documents, for example the ATG test, Environmental Product Declaration (EPD) and Cradle-to-Cradle Material Health Certificates.



Further finishing at the customer's request

We supply profiles that have already been fully processed – with individually defined properties and ready to assemble.

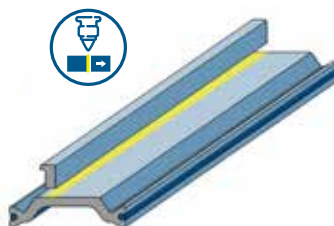
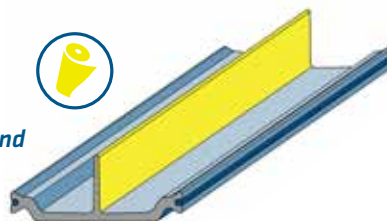


Film-coating with a temperature-resistant, removable film: more possibilities during powder coating

The film protects defined areas of the profile prior to paint application and can subsequently be removed without leaving any residues.

Low-E film: the simple alternative to foam

The insulating profile with a Low-E film 12 ε 3 reflects heat radiation and thereby enables reduced U_f values without the additional use of foam.



Milling: when it's not worth buying a new tool

If there is so little demand for new tools that they do not represent a financially viable alternative, functional zones such as grooves can be removed from existing geometries. Flaps, too, can be shortened to a certain length or completely removed.



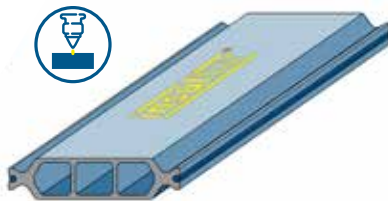
Bundling of the profiles: for easy handling in the production process

In order to facilitate the handling of the insulating profiles during storage, order picking and processing, we offer our customers delivery of the bars in bundles with the desired numbers of units.



Delivery in the form of coils: easy handling, less waste

For system manufacturers and processing companies whose logistical processes or processing methods are tailored to coils, we also supply the profiles in roll form if requested – if the geometry permits this.

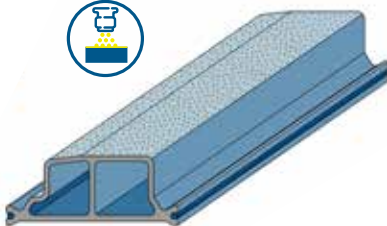
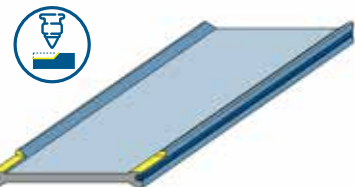


Marking: for optimised quality assurance

With inkjet or laser technology, or through embossing, customer-specific product markings can be applied to the profiles. This ensures reliable traceability of all the associated data.

Sharpening of the profiles: improved drawing-in

"Sharpening" of the profile ends to a point facilitates the automatic insertion of the bars into the receiving cavities of the aluminium shells.

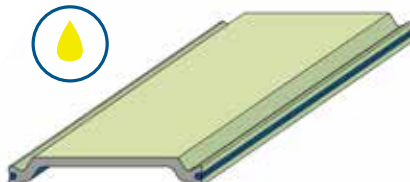
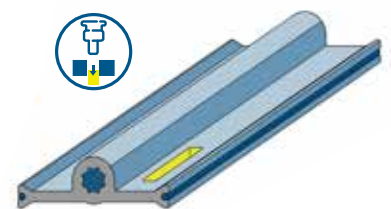


Dust blasting: optimum painted results

Dust blasting roughens the surface of the insulating bar. This increases the surface energy, improves the paint adhesion and thereby the painted result.

Recesses in accordance with the tolerances in DIN ISO 2768-1 m: precise, rapid, cost-effective

Before the bars leave the factory we punch any desired drainage, attachment or pressure equalisation openings. Application-specific boreholes or milling operations are also possible. This eliminates the need for subsequent punching by processing companies



Conditioning: moisture content as required

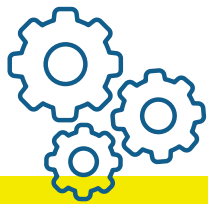
The polyamide profiles can be conditioned in a water bath after manufacture. By this means, the moisture content of the insulating bars can be adjusted in order, for example, to facilitate subsequent machining. The moisture content is dependent on the geometry, water temperature and conditioning period.

Ensinger – your expert partner



Contact

Do you have questions about our insulating profiles, require detailed technical data or additional information regarding application engineering and possible uses? Or would you like to place a direct order and require a quotation? Talk to us!



Development and application engineering

Application engineering-related advice, from the choice of material and geometry through handling and processing to the application of insulbar insulating profiles is one of our core competencies.

We are at your side to give advice and will be pleased to help you further in every instance.

RPT

RPT Rapid Prototyping

Using rapid prototyping we develop and produce profile samples of your individual insulating bars, precisely in line with your specifications and wishes. We supply series-identical bars extruded from prototype tools reliably, on schedule and on fair terms.



Production and Logistics

Our efficient, highly flexible production at several locations ensures short delivery times and enables virtually unlimited delivery quantities. Our logistics processes ensure that your goods are delivered fast, reliably and on time.



Quality Management

Whether a standard or special solution – all insulbar bars fulfil stringent quality requirements which also comply with country-specific stipulations. Quality-relevant parameters are constantly monitored, continually checked, registered and the associated data archived for reasons of traceability.

The cavity makes all the difference

The aluminium cavity is instrumental in determining the efficiency of the overall assembly.

The cavity of the aluminium profile forms the connection to the insulbar thermal insulating bar. Its correct configuration ensures a high shear strength, lateral stiffness and shear stiffness of the assembly.

For insulbar insulating profiles, Ensinger recommends two different aluminium cavities depending on the application. The most commonly used variant is the cavity with a short hammer. In exceptional circumstances

– for instance in the case of obstacles which make the hammer difficult to access for the roll-on wheel – Ensinger offers an alternative with a long hammer.

Both variants are compatible for most standard profiles. A full overview is provided by the table on pages 40 - 47. We will be pleased to check your cavities for compatibility with insulbar insulating profiles.



Variant 1 - short hammer



Variant 2 - long hammer

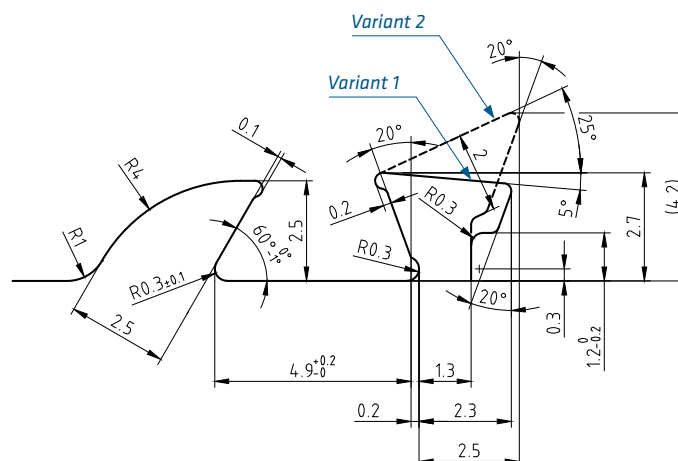
Steps to create the perfect connection



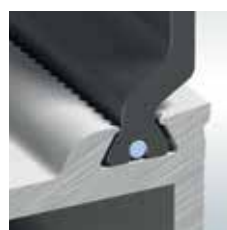
Extruded aluminium cavity



Rolled-on hammer



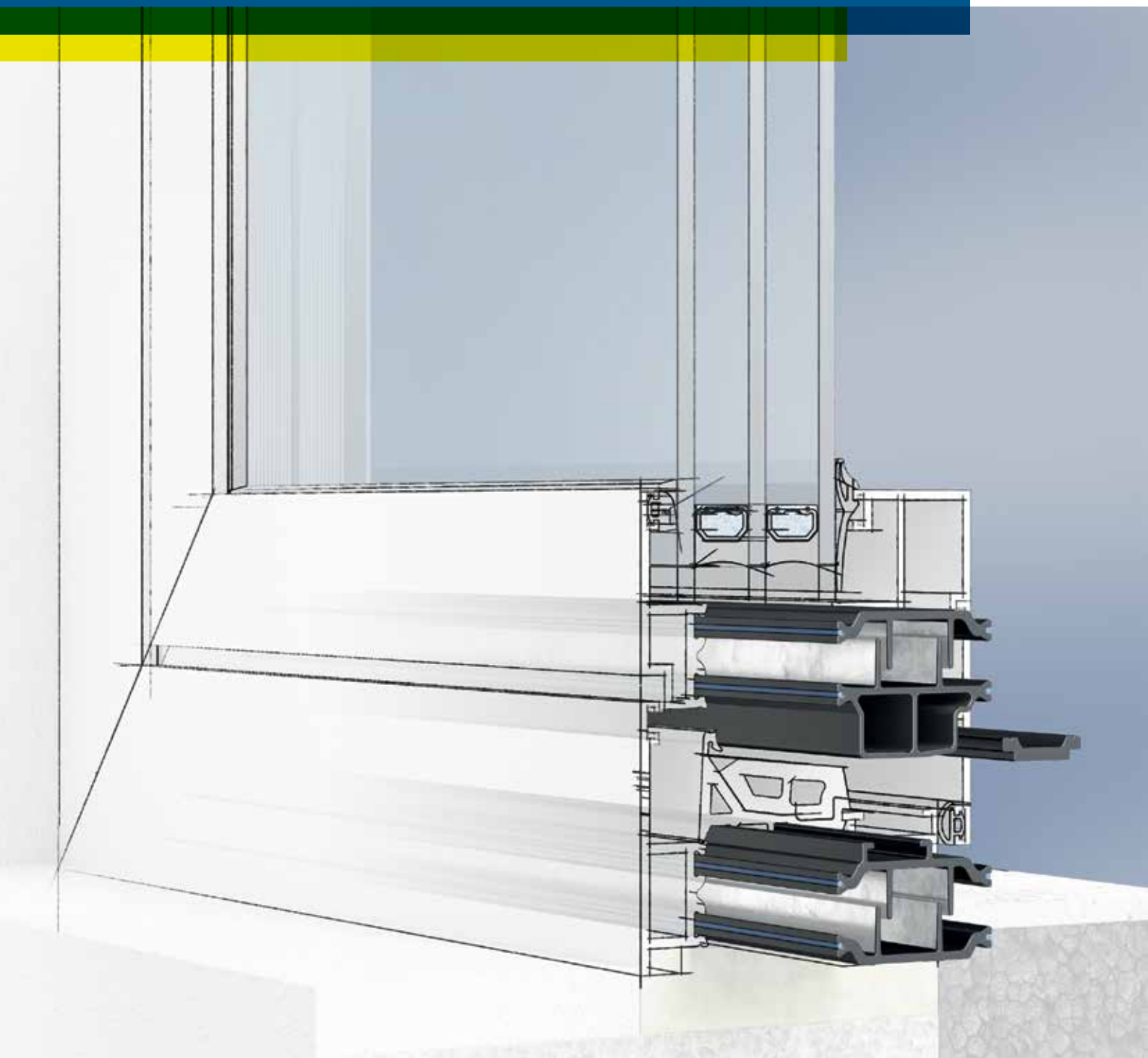
Milled cavity



Cavity with insulbar insulating profile inserted

Roll-up profiles for windows, doors and façades

Our classic roll-up profiles enable the thermal break of all commonly used metal systems. Depending on the window type and area of application, all requirements for insulation are thus optimally fulfilled.



***Functionality as standard,
diversity as a matter of course***

To meet the needs of the different window, door and façade systems, Ensinger offers insulating bars in all common profile shapes and/or geometries and for all common insulation depths (size of 10 to 54 mm). The insulating profiles are – appropriate to the particular requirements – equipped with special functional elements and can be supplied in different wall thicknesses and base geometries. Thus when designing the insulation zone the design engineer has a large number of options available to them for optimising thermal insulation and achieving the desired U_f value.

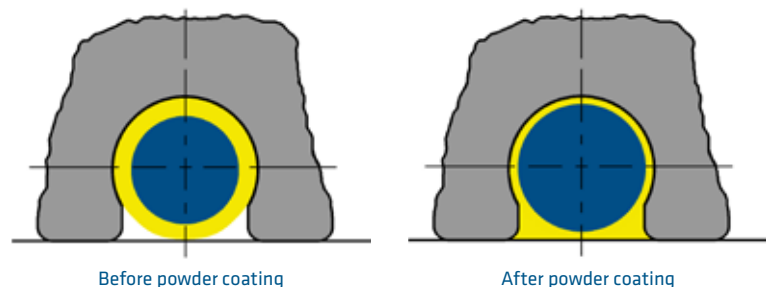
You can find special profiles for particular applications from page 30 onwards.

***insulbar with Low-E film -
an effective upgrade***

You can achieve a simple but effective system upgrade by using our highly reflective Low-E film 12 ϵ 3, which can be additionally applied to flags. This enables outstanding U_f values without the use of foams. insulbar with Low-E film is suitable for coating and anodising in the assembly.

***Coex wire -
a reliable moisture barrier***

The coex wire integrated into the base serves to perfectly seal the assembly system. Alongside a reliable moisture barrier, it also provides additional protection against shifting of the assembly. The polyamide core of the coex wire is coated with a hot-melt glue. This melts under the impact of temperature during coating and is activated by this.



Specific, accompanying documents


































→ Brochures: insulbar with Low-E film

→ Data sheets: Coex sealing wire

insulbar.com/en/downloads

Not found anything suitable here? If you have any further questions, get in touch with us, we will be pleased to advise you.

Roll-up profiles

10 mm	12 mm	13.4 mm	13.5 mm	14 mm	14.6 mm		14.8 mm	
3632 	2192 	2014 	2156 	1044 	1910 	1884 	2440 	2102 
2530 	3560 			4386 	2046 	4059 	2237 	3138 
	1142 			2104 	0818 		3286 	2186 
	2531 			3725 	2028 		3745 	0508 
	2164  				2045 		2167 	3633 
					1674 			3388 



	15 mm	16 mm				17 mm		18 mm
1946	1754	2423	1928	1864	2635	2250	1918	3375
2134	2196	4102	1945	2634	2335	2262	1919	3374
3368	3985		1947	2103	2189	2263		3373
0785			1927	2334	2375			
1135			1989	1532	2376			
1090				1866				

Roll-up profiles

18 mm			18.6 mm		20 mm			21 mm
1987 	2111 	2063 	1926 	2305 	3062 	3591 	2031 	1136
2154 	2797 	3122 	1991 	3370 	3199 	1220 	3255 	3804
1988 	2379 	2594 	3369 	2793 	3454 	2078 	2016 	
2098 	2593 		0838 	1418 		1673 	2495 	
	2444 		3389 	0346 		2742 		
		3621 	2126 	2703 		3546 		



21.9 mm	22 mm		23 mm	23.9 mm	24 mm			
0748 	2202 	2049 	3341 	0292 	3425 	4543 	3023 	2206
0749 	2204 	4263 			3387 	4544 	4063 	2279
0750 	2203 	2285 				3893 	4101 	2432
		2062 				4388 	3024 	2331
		3918 					3285 	
		2380 					3022 	

Roll-up profiles

24 mm								24.8
1922	1393	2884	3380	2794	1498	2426	4283	4215
1921	3020	3371	3257	2199	2214	2191	2729	4216
2268	3622	0839	2730	1619	2632	3258	2395	
1920	3283	2633	2780	3386	2200	2425	2316	
2267	3021	3284	2424	3149	2396	3372		
	1392	1707	3390	3148	2165	1750		



mm	25 mm		25.3 mm	26 mm		27 mm		28 mm	
4214	2050	1058	4271	2006	1993	3078	2883	3920	
	2155	2106	4317	4492	3433	3080		3798	
	2051	2817	4272	1186		3079		3842	
		2311		2535				3843	
	4330			4493					
				4494					

Roll-up profiles

28 mm			29 mm	30 mm		31.8 mm	31.9 mm	
2795	2007	2614	3555	3432	3606	3212	0724	0774
3109	2198	2501		1729	3419		3723	1651
3110	1669	2515		3790	2383		0725	0773
	3724	3413		4262			0726	
	3896	3244		2080			0758	
	2796			2740				



32 mm		34 mm						
2638 	2361 	3829 	2805 	3282 	2765 	3123 	1885 	4347
2246 	2649 	2807 	3315 	3172 	2857 	3124 	3935 	1650
2631 	2727 	3316 	3825 		2856 	3125 	1861 	4275
3889 	2764 	3986 	3623 		2855 		3660 	
2728 		3746 	3620 				3655 	
3025 		3377 	3826 				3379 	


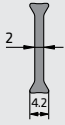


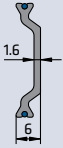
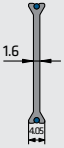





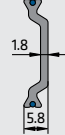

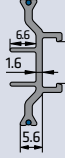





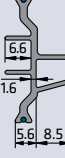

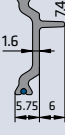

Roll-up profiles

35 mm		35.3 mm	36 mm	38 mm	39 mm		40 mm	42 mm
3391	3281	4320	1814	4277	3827	3638	3353	3272
3351	3279	4318	1958	3824	3399	3828	3354	3273
3352	2427	4319		4276	3637	2429	3307	4022
3392	1986				3984	3398		3274
3936	3280				3400	3640		
3350					3636	3639		


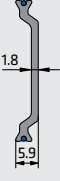





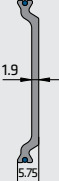

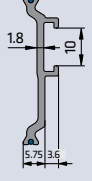

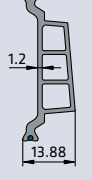

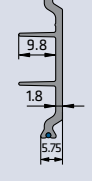

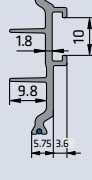

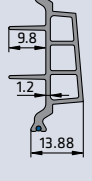


mm	44 mm	46 mm	50 mm	54 mm
2655 	2647 	3641 	3311 	3339
2656 	4348 		4062 	3338
	4349 		3310 	3277
				3278

Roll-up profiles

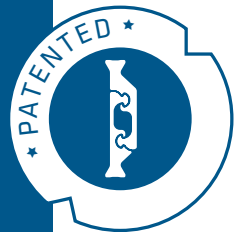
20 mm	24 mm	26 mm	28 mm	30 mm	32 mm		34 mm	
4245  	4543  	4616  	4618  	4619  	4467  	4620  	3829  	4621  
	4544  	4542  	4296  		4468  		3377  	1861  
	3893  	4617  	4298  		4469  		2807  	
	4388  						2805  	
							3172  	
							3282  	



37 mm	39 mm	40 mm	44 mm
4325  	3827  	4518  	4622  
	3984  		
	4623  		
	3399  		
	3400  		
	3398  		

Special profiles for doors

The ideal solution for doors with thermal breaks: shear-free profiles from insulbar minimise the impact of the bi-temperature effect. In this way the door stays in perfect shape even in the case of extreme differences between the external and internal temperature.



How the door stays in shape

The shear-free insulating bar consists of two intermeshing parts. With temperature-related, differing linear expansion of the inner and outer shells, the two parts shift against one another. A moveable, corrective insulating zone is generated which minimises the bi-temperature effect and reduces deformation of the door effectively. Thanks to this solution, top climate categories can be achieved for aluminium doors.

Easy to process

A rivet at the end of the profile rod prevents slippage of the two parts of the bar during processing. By this means, the anti-bi-metal profile can be easily drawn into the aluminium cavity like a conventional insulating bar, and coated in the assembly. To ensure the assembly is perfectly balanced, Ensinger recommends that insulbar shear-free be incorporated with the profiles as mirror images.

To ensure that drawing-in as mirror images is straightforward, we supply the shear-free bars appropriately aligned: half of the goods are ready-turned in the stillage. Two rivets of different colours ensure clear marking of the direction of rotation of the plastic profiles



Advantages

- Can be rolled up and laminated like a conventional insulating profile
- Ensures high transverse tensile strength Q thanks to optimised geometry
- Minimises shear stiffness c and ensures low shear strength T
- Reduces the bi-temperature effect more significantly compared with shear-weak and shear-resistant profiles

Specific, accompanying documents

- Brochures: Shear-free insulating profile from insulbar
insulbar.com/en/downloads

Not found anything suitable here? If you have any further questions, get in touch with us, we will be pleased to advise you.

Our recommendation

Material shear-free













- TECAHTERM 66 GF
- TECAHTERM 66 GF RE

Further processing



You can find more detailed information on pages 10-13

Shear-free profiles

20 mm	22 mm	24 mm	26 mm	28 mm	30 mm	32 mm	34 mm	36 mm
3963	3995	3998	4004	4007	3884	4010	4013	4362
								
42 mm	46 mm							
4019	4607 							
								

Special profiles for hidden sash

Hidden sash windows have particular appeal thanks to their elegant design with a particularly slim frame. The window sash is completely hidden and does not have any outer shell. The glazing is held directly on the insulating bar by the glazing bead.



insulbar profiles for hidden sash

Enables high design and insulation standards

Hidden sash windows combine an elegant, light appearance with slim visible widths and very good U_w values. The insulbar profiles, specially developed for these systems, either have a wide roll-in base or two bases which are connected to the inner shell of the sash. Narrow tolerances enable the profiles to be easily inserted into the aluminium cavity.

For an optimum painted result: insulbar ESP

With assemblies that are difficult to coat, for example the hidden sash, insulbar ESP is the ideal solution.

The insulating profile made from electrostatically modified material ensures improved attraction of paint particles during powder coating of the assembly. Combined with a dust-blasted surface of the plastic bar, the particles thereby adhere significantly better to the material. The result is a perfect painted finish.

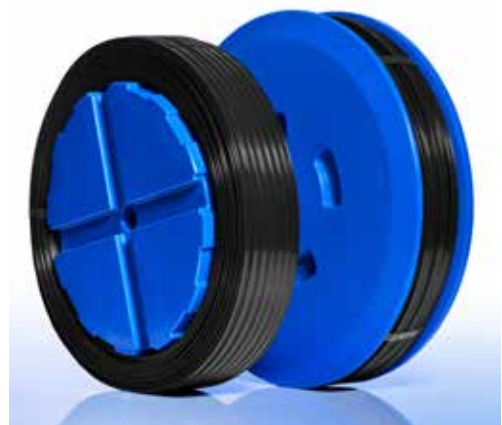
Special profiles - bolt operating profile

insulbar bolt operating profiles are the perfect alternative to metal push rods: the plastic profile prevents the rattling in the window commonly encountered with aluminium rods. A sophisticated packaging and spool concept ensures ease of handling and cost-effective processing.



All nicely wound

All bolt operating profiles are available as rolled goods, referred to as coils. You therefore have less waste from unnecessary cutting compared with cut lengths. Reusable spools from Ensinger fix the wound profile and dispense with the need for disposable spools.



With two different types of spools (left: single spool, right: double spool) the coils fit onto all commonly available unwinding facilities.

Our recommendation

Material bolt operating profiles

- TECATHERM 66 GF
- TECATHERM 66 GF RE

Further processing



You can find more detailed information on pages 10-13

Easy handling, guaranteed quality

The coil can simply be positioned on the spool and fixed in the unwinding machine. Thanks to the optional orderly winding and stable fixing, the bolt operating profile runs into the blank in a straight line, stress-relieved and without tilting. Precise, accurately positioned punching operations are the result.

Specific, accompanying documents

→ Brochures: insulbar bolt operating profiles
insulbar.com/en/downloads

Not found anything suitable here? If you have any further questions, get in touch with us, we will be pleased to advise you.

Bolt operating profiles

17.7 mm	19.5 mm		19.7 mm
3788	3266	3668	1840

Special profiles for sliding systems

Thermally broken sliding systems enable contemporary and open room concepts and create a pleasant indoor climate at all times. At the same time they must meet tough functional and thermal requirements. Special insulating profiles from Ensinger help with this.



Runner profiles for maximum functionality

Runner profiles from the material TECATHERM 66 GF have a very smooth surface with very narrow tolerances. They thereby guarantee movement that is as friction-free as possible.

With large elements, runner profiles made from TECATHERM 66 GF40 with an increased glass fibre component are suitable, as is Article 3129, where additionally a metal rail is inserted.

Chicane for the middle section

Chicanes are in the visible area, therefore appearance plays an important part. Like all insulbar bars, our chicanes have a deep black, shiny surface. Lots of customised chicanes are coated in the assembly. Here, Ensinger recommends these dust-blasted from electrostatically modified TECATHERM 66 ESP. Attraction and adhesion of the powder particles is thereby improved significantly and ensure an optimum painted result.

Special profiles for sliding systems

By way of an addition, our programme for sliding systems also encompasses special profiles e.g. for incorporating the roller cage or bolt operating profile.

Specific, accompanying documents

→ Data sheets: TECATHERM 66 ESP,
TECATHERM 66 GF40
insulbar.com/en/downloads

Not found anything suitable here? If you have any further questions, get in touch with us, we will be pleased to advise you.

Our recommendation

Material chicanes

- TECATHERM 66 GF
- TECATHERM 66 GF RE

Material runner rails

- TECATHERM 66 GF
- TECATHERM 66 GF RE
- TECATHERM 66 GF40

Material supplementary profiles

- TECATHERM 66 GF
- TECATHERM 66 GF RE
- TECATHERM 66 GF40

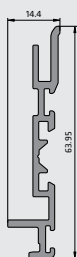
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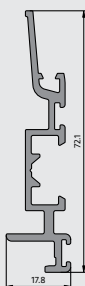
You can find more detailed information on pages 10-13

Chicanes

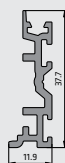
3298



3077



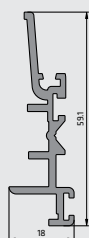
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3342

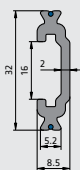


3494

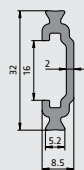


Supplementary profiles

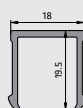
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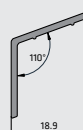
3726



3008



3424



Runner rails

2835



3129



Special profiles for façades

Spacers and roll-in profiles made from polyamide are the perfect complement to thermally broken façade systems – above all when it comes to green construction. Because all profiles are also available made from 100 % recycled polyamide.



Spacers for curtain walls

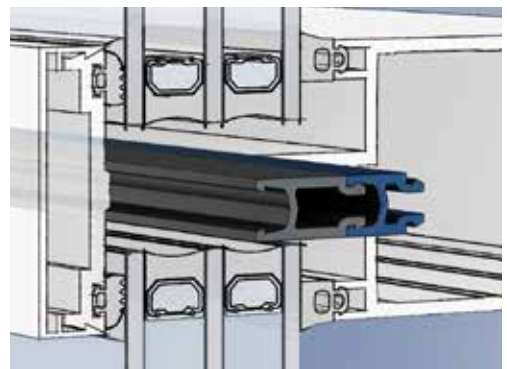
Owing to the improved thermal dimensional stability and the increased requirements in relation to fire safety, spacers made from glass fibre reinforced polyamide are increasingly being incorporated into the mullion and transom façade. For optimised thermal insulation, PE foams can additionally be glued to the side of these.

Roll-up profiles for element façades

In order to thermally separate the aluminium shells of element façades, conventional roll-up bars made from PA 66 GF are used. They reduce heat losses and enable large areas of glass with low U values. All of our materials recommended for the façade fulfil the requirements relating to suitability for thermal separation in line with DIN EN 14024.

You can find more on insulbar roll-up profiles on pages 16 and 17.

Through a combination of two spacers, the insulation depth of the façade can be adapted to fit the particular filling thickness



Green construction – building certification made easy

Particularly in project business and in construction projects with building certification, green construction in line with DGNB, LEED or BREEAM plays a key role. For this reason, like with all other insulbar® bars, façade profiles from unmixed recycled polyamide with a significantly reduced CO₂ footprint are also available.

Customised solutions such as glass edge profiles, contact pressure rails or special spacers are available on request.

Specific, accompanying documents

→ Brochures: insulbar RE

insulbar.com/en/downloads

Our recommendation

Material spacers

→ TECATHERM 66 GF

→ TECATHERM 66 GF RE

Material glass edge profiles

→ TECATHERM 66 GF

→ TECATHERM 66 GF RE



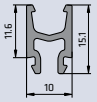
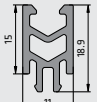
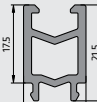
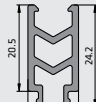
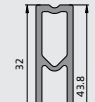
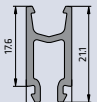
Further processing



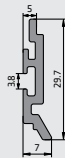
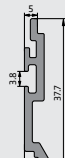
You can find more detailed information on pages 10-13

Not found anything suitable here? If you have any further questions, get in touch with us, we will be pleased to advise you.

Spacers

11.6 mm	15 mm	17.5 mm	20.5 mm	32 mm
3693	3297	3836 	4329	3102 
				
17.6 mm				
3747				
				

Glass edge profiles

29.7 mm	37.7 mm
4331	4332
	

Article number	Insulating depth (mm)	Description of the geometry	Pieces per stillage *	Foot compatible with aluminium cavity suggestion short hammer	Foot compatible with aluminium cavity suggestion long hammer	Coils **
0292	23.9	straight	2400	■	■	☉
0346	18.6	straight with nose	2300	■		
0508	14.8	straight	4800	■	■	☉
0724	31.9	offset	1600	■		
0725	31.9	offset with groove	1500	■		
0726	31.9	offset with nose	1000	■		
0748	21.9	offset	2500	■		☉
0749	21.9	straight with groove	2400	■		
0750	21.9	offset with nose	1300	■		
0758	31.9	offset with nose	1100	■		
0773	31.9	straight with nose	1000	■	■	
0774	31.9	straight	2000	■	■	☉
0785	14.8	straight with nose	3000	■	■	
0818	14.6	straight	4500	■	■	☉
0838	18.6	straight	3000	■	■	☉
0839	24	straight	3100	■	■	☉
1044	14	straight	4800	■	■	☉
1058	25	straight	2400	■	■	☉
1090	14.8	straight with nose	3000	■	■	
1135	14.8	straight with nose	3000	■	■	
1136	21	straight	2700	■	■	☉
1142	12	straight	5200	■	■	☉
1186	26	straight	2200			☉
1220	20	straight	2900	■	■	☉
1392	24	offset with nose	1150	■		
1393	24	offset	2300	■		☉
1418	18.6	straight with nose	1700	■	■	
1498	24	straight with arrow	1300	■	■	
1532	16	offset	3200	■	■	☉
1619	24	offset	2300	■	■	☉
1650	34	offset	1700	■		
1651	31.9	offset	1500	■	■	
1669	28	offset	1900	■	■	
1673	20	offset	2600	■	■	☉
1674	14.6	straight with nose	3000	■	■	
1707	24	straight with noses	2400	■	■	☉
1729	30	straight	2500	■	■	☉
1750	24	straight with nose	1300			
1754	15	straight	4200	■	■	☉
1814	36	straight	2200	■	■	☉
1840	19.7	bolt operating profile	2500			☉
1861 	34	3 hollow chambers	1300	■	■	
1864	16	straight	4000	■	■	☉
1866	16	straight with arrow	2300	■	■	
1884	14.6	straight with nose	3000	■	■	
1885	34	straight	2000	■	■	☉
1910	14.6	straight	4500	■	■	☉
1918	17	offset with groove	1800	■		
1919	17	offset with nose	1800	■		
1920	24	straight with groove and nose	1500	■	■	
1921	24	straight with groove and "T"	1500	■	■	
1922	24	straight with groove	2200	■	■	☉

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Article number	Insulating depth (mm)	Description of the geometry	Pieces per stillage *	Foot compatible with aluminium cavity suggestion short hammer	Foot compatible with aluminium cavity suggestion long hammer	Coils **
1926	18.6	straight	3000	■	■	☉
1927	16	straight with nose	2900	■	■	
1928	16	straight	4000	■	■	☉
1945	16	offset	3200	■	■	☉
1946	14.8	offset	3500	■	■	☉
1947	16	offset with arrow	2800	■	■	
1958	36	offset	1500	■	■	
1986	35	offset with flag	1500	■	■	
1987	18	offset	3550	■		☉
1988	18	offset with nose	1900	■		
1989	16	straight with nose	2900	■	■	
1991	18.6	straight	3000	■	■	☉
1993	26	straight with screw channel	1500	■	■	
2006	26	straight	2200	■	■	☉
2007	28	straight	2600	■	■	☉
2014	13.4	offset	3800	■		☉
2016	20	offset with nose	1500	■	■	
2028	14.6	offset	3650	■		☉
2031	20	offset with hook	1600	■	■	
2045	14.6	straight with nose	3000	■	■	
2046	14.6	straight	4500	■	■	☉
2049	22	straight	2600	■	■	☉
2050	25	offset	2200	■		
2051	25	offset with nose	1400	■		
2062	22	straight with nose	2400	■	■	
2063	18	offset with nose	1950	■	■	
2078	20	offset	2600	■	■	☉
2080	30	offset	2000	■	■	
2098	18	offset with nose	1800	■		
2102	14.8	straight	4800	■	■	☉
2103	16	straight	4000	■	■	☉
2104	14	hollow chamber	2200	■	■	
2106	25	straight with noses	2100	■	■	☉
2111	18	straight	3550	■	■	☉
2126	18.6	offset	2800	■	■	☉
2134	14.8	offset with groove	2500	■		
2154	18	offset with "T"	1900	■		
2155	25	offset with "T"	1900	■		
2156	13.5	offset	3500	■		☉
2164	12	hollow chamber	3200	■		
2165	24	offset with hook	1300	■	■	
2167	14.8	offset with nose	2100	■	■	
2186	14.8	straight	4800	■	■	☉
2189	16	offset with hook	2100	■		
2191	24	offset with groove	1300	■		
2192	12	straight	5200	■	■	☉
2196	15	offset	3650	■		☉
2198	28	straight	2600	■	■	☉
2199	24	offset	2500	■		☉
2200	24	offset with hook	1500	■		
2202	22	offset	2500	■		☉
2203	22	offset with nose	1500	■		





Article number	Insulating depth (mm)	Description of the geometry	Pieces per stillage *	Foot compatible with aluminium cavity suggestion short hammer	Foot compatible with aluminium cavity suggestion long hammer	Coils **
2204	22	offset with groove	1500	■		
2206	24	offset	2500	■	■	☉
2214	24	straight with arrow	1300	■	■	
2237	14.8	offset	3650	■	■	☉
2246	32	offset	1600	■		
2250	17	offset	2800	■		☉
2262	17	offset with groove	1800	■		
2263	17	offset with nose	2800	■		
2267	24	straight with nose	1700	■	■	
2268	24	straight with "T"	1700	■	■	
2279	24	offset with arrow	1400	■	■	
2285	22	offset	2500	■	■	☉
2305	18.6	straight with nose	2400	■	■	
2311	25	offset with hook	1600	■	■	
2316	24	straight with screw channel	2000	■	■	
2331	24	offset with nose	1550	■	■	
2334	16	straight	4500	■	■	☉
2335	16	straight with arrow	2300	■	■	
2361	32	offset with groove	1300	■		
2375	16	offset with hook	2100	■	■	
2376	16	offset with arrow	2500	■	■	
2379	18	offset	3550	■		☉
2380	22	offset with nose	1300	■	■	
2383	30	straight with screw channel	1400	■	■	
2395	24	offset with nose	1250	■		
2396	24	offset with hook and groove	1500	■		
2423	16	offset	3200	■	■	☉
2424	24	offset	2500	■	■	☉
2425	24	offset with arrow	1250	■	■	
2426	24	offset with groove	1300	■	■	
2427	35	offset	1700	■	■	
2429	39	offset with 3 hollow chambers and 2 flags	450	■		
2432	24	offset with nose	1600	■	■	
2440	14.8	offset	3650	■	■	☉
2444	18	straight with groove	3000	■		
2455	31.5	profile for hidden sash	850			
2495	20	offset with nose	1800			
2501	28	offset with nose	1000	■	■	
2515	28	offset with nose	800	■	■	
2530	10	offset	5000	■	■	☉
2531	12	offset	4500	■		☉
2535	26	offset	1700	■		
2593	18	offset with hook	1900	■	■	
2594	18	straight with screw channel	2500	■	■	
2614	28	offset with groove	2000	■	■	
2631	32	offset	1600	■		
2632	24	straight with arrow	1300	■	■	
2633	24	straight	3100	■	■	☉
2634	16	straight	4000	■	■	☉
2635	16	straight with arrow	2300	■	■	
2638	32	straight	2000	■	■	☉
2647	44	offset	1300	■	■	









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Article number	Insulating depth (mm)	Description of the geometry	Pieces per stillage *	Foot compatible with aluminium cavity suggestion short hammer	Foot compatible with aluminium cavity suggestion long hammer	Coils **
2649	32	offset with hook and "T"	870	■		
2655	42	offset	1450	■	■	
2656	42	offset with groove	1450	■	■	
2703	18.6	straight with screw channel	2500	■	■	
2727	32	offset with hollow chamber	820	■		
2728	32	offset with "T"	1160	■	■	
2729	24	offset with nose	1560	■	■	
2730	24	offset	2760	■	■	
2740	30	offset	1920	■		
2742	20	offset	2600	■		⊗
2764	32	straight with screw channel	1300	■	■	
2765	34	offset	1700	■		
2780	24	offset	2500	■		⊗
2793	18.6	straight with nose	1700	■	■	
2794	24	offset	2300	■		⊗
2795	28	offset	2000	■	■	
2796	28	offset with hook and "T"	1150	■	■	
2797	18	offset	3550	■	■	⊗
2805 	34	offset with groove and 2 flags	1140	■		
2807 	34	offset with 2 flags	1520	■		
2817	25	offset	2200	■	■	⊗
2834	32	supplementary profile for sliding systems	1200			
2835		runner rail for sliding systems	800			
2855	34	offset with 3 hollow chambers	600	■		
2856	34	offset with 2 hollow chambers	750	■		
2857	34	offset with hook and "T"	950	■		
2883	27	offset	2300	■		
2884	24	straight	3100	■	■	⊗
3008		supplementary profile for sliding systems	1900			
3020	24	offset with flag	1300	■		
3021	24	offset with arrow and groove	1300	■		⊗
3022	24	offset with nose	1600	■	■	
3023	24	offset	2500	■	■	⊗
3024	24	offset with groove	1320	■	■	
3025	32	offset with hook	1400	■		
3062	20	offset	2600	■		⊗
3077		chicane for sliding systems	270			
3078	27	offset	2300	■		
3079	27	offset with nose	1400	■		
3080	27	offset with groove	1300	■		
3102 	32	spacer for curtain walls	780			
3109	28	offset with "T"	1400	■	■	
3110	28	offset with 3 hollow chambers	1090	■		
3122	18	offset with nose	1950	■	■	
3123	34	offset	1760	■	■	
3124	34	offset with "T"	1260	■	■	
3125	34	offset with 4 hollow chambers	1060	■		
3129		runner rail holder for sliding systems	860			
3138	14.8	straight	4800	■	■	⊗
3148	24	straight with arrow	1300	■	■	
3149	24	straight with groove	2150	■	■	
3172 	34	offset with 2 hollow chambers and 2 flags	540	■		



















Article number	Insulating depth (mm)	Description of the geometry	Pieces per stillage *	Foot compatible with aluminium cavity suggestion short hammer	Foot compatible with aluminium cavity suggestion long hammer	Coils **
3199	20	offset with hook	1600	■	■	
3212	31.8	3 hollow chambers with screw channel	1470	■	■	
3244	28	offset with hollow chamber	300	■		
3255	20	offset with groove	1600	■		
3257	24	offset	2500	■	■	⊗
3258	24	offset with arrow	1300	■	■	
3266	19.5	bolt operating profile	3500			⊗
3272	42	offset	1400	■		
3273	42	offset with hook and "T"	800	■		
3274	42	offset with 3 hollow chambers	480	■		
3277	54	6 hollow chambers with 2 grooves and noses	600	■		
3278	54	offset with 5 hollow chambers and noses	550	■		
3279	35	offset with 2 flags	700	■		
3280	35	offset with groove and 2 flags	1400	■		
3281	35	offset with 2 flags	1000	■		
3282	34	offset with 2 hollow chambers	820	■		
3283	24	offset with double hook	1300	■		
3284	24	straight with noses	2400	■	■	⊗
3285	24	offset with arrow	1100	■	■	
3286	14.8	offset with hook	2100	■	■	
3297	15	spacer for curtain walls	1600			
3298		chicane for sliding systems	360			
3307	40	offset with 3 grooves	900	■		
3310	50	offset with groove and flag	700	■		
3311	50	offset	1150	■		
3315	34	offset with groove and 2 flags	840	■		
3316	34	offset with 2 flags	820	■		
3319	47.05	profile for hidden sash	430			
3320		glazing bead	2500			
3338	54	6 hollow chambers with noses and 5 flags	450	■		
3339	54	6 hollow chambers with noses	800	■		
3341	23	offset with hook	1500	■	■	
3342		chicane for sliding systems	360			
3350	35	offset with 2 hollow chambers and 2 flags	500	■		
3351	35	offset with 3 flags	720	■		
3352	35	offset with hook and groove	920	■		
3353	40	straight	2200	■	■	⊗
3354	40	offset	1500	■	■	
3368	14.8	straight with nose	3000	■	■	
3369	18.6	straight	3000	■	■	⊗
3370	18.6	straight with nose	2200	■	■	
3371	24	straight	3100	■	■	⊗
3372	24	straight with nose	1300	■	■	
3373	18	offset with nose	1900	■	■	
3374	18	offset with groove	1700	■		
3375	18	offset	3550	■	■	⊗
3377	34	offset with groove	1100	■		
3379	34	offset with 2 "T"	900	■	■	
3380	24	straight with noses	2400	■	■	
3386	24	2 hollow chambers	2000	■	■	
3387	24	offset with "T"	1800	■		
3388	14.8	offset	3650	■	■	⊗

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Article number	Insulating depth (mm)	Description of the geometry	Pieces per stillage *	Foot compatible with aluminium cavity suggestion short hammer	Foot compatible with aluminium cavity suggestion long hammer	Coils **
3389	18.6	offset	2800	■	■	☉
3390	24	offset	2500	■	■	☉
3391	35	offset	1700	■		
3392	35	offset with hook, groove and 3 flags	500	■		
3398 	39	offset with 3 hollow chambers and 2 flags	440	■		
3399 	39	offset with 2 flags	950	■		
3400 	39	offset with groove and 2 flags	750	■		
3413	28	offset with hollow chamber	1150	■	■	
3419	30	offset with hook	1600	■	■	
3424		supplementary profile for sliding systems	2500			
3425	24	offset with arrow	1250	■		
3432	30	straight	2500	■	■	
3433	26	straight with screw channel	1700	■	■	
3454	20	offset with nose	1500	■		
3493		chicane for sliding systems	900			
3494		chicane for sliding systems	320			
3546	20	2 hollow chambers	2200	■		
3555	29	offset	1950	■		
3560	12	straight	5200	■	■	☉
3591	20	straight	2900	■	■	☉
3606	30	2 hollow chambers with flag	1300	■		
3620	34	offset with 2 "T" and 2 flags	750	■	■	
3621	18	offset with nose	2000	■	■	
3622	24	offset with hook	1800	■		
3623	34	offset with 2 "T"	1200	■	■	
3632	10	straight	6000	■	■	☉
3633	14.8	offset	3500	■		☉
3636	39	offset with groove and 2 flags	800	■		
3637	39	offset with 2 flags	650	■		
3638	39	offset with groove and 2 flags	550	■		
3639	39	offset with 3 hollow chambers and 2 flags	400	■		
3640	39	offset with 3 hollow chambers and 2 flags	440	■		
3641	46	offset	1200	■		
3655	34	offset with flag	800	■		
3660	34	offset with flag	1050	■		
3668	19.5	bolt operating profile	4200			☉
3693	11.6	spacer for curtain walls	2500			
3723	31.9	offset	1900	■		
3724	28	offset	2000	■	■	
3725	14	hollow chamber	4000	■	■	
3726	32	supplementary profile for sliding systems	1300			
3745	14.8	offset with "T"	2300	■	■	
3746	34	offset with groove	1950	■	■	
3747	17.6	spacer for curtain walls	1800			
3778	17.7	bolt operating profile	2900			☉
3790	30	offset wih flag	800	■	■	
3798	28	offset wih flag	1100	■	■	
3804	21	offset	2800	■	■	☉
3824	38	offset	1600	■	■	
3825	34	3 hollow chambers with groove	940	■	■	
3826	34	offset with 2 hollow chambers	840	■	■	
3827 	39	offset	1600	■	■	

Article number	Insulating depth (mm)	Description of the geometry	Pieces per stillage *	Foot compatible with aluminium cavity suggestion short hammer	Foot compatible with aluminium cavity suggestion long hammer	Coils **
3828	39	2 hollow chambers with groove	900	■	■	
3829 	34	offset	1800	■	■	
3836 	17.5	spacer for curtain walls	1150			
3842	28	offset with groove and flag	1100	■	■	
3843	28	offset with hollow chamber and flag	720	■	■	
3884	30	shear-free profile	1700	■	■	
3889	32	offset with flag	1050	■	■	
3893 	24	offset with hollow chamber	1050	■	■	
3896	28	offset with flag	1200	■	■	
3918	22	offset with nose	1500	■	■	
3920	28	offset with flag	1200	■	■	
3935	34	offset	1800	■	■	
3936	35	2 hollow chambers	850	■	■	
3963	20	shear-free profile	2400	■	■	
3966	43.5	profile for hidden sash	600			
3984 	39	offset with groove	1000	■	■	
3985	15	offset with nose	2500	■		
3986	34	3 hollow chambers	1200	■	■	
3995	22	shear-free profile	2300	■	■	
3998	24	shear-free profile	2100	■	■	
4004	26	shear-free profile	1950	■	■	
4007	28	shear-free profile	1800	■	■	
4010	32	shear-free profile	1600	■	■	
4013	34	shear-free profile	1450	■	■	
4019	42	shear-free profile	1200	■	■	
4022	42	offset with 3 hollow chambers	550	■		
4059	14.6	hollow chamber with wide feet	2500			
4062	50	offset	1150	■		
4063	24	offset with hook	1600	■	■	
4101	24	offset with hook	1600	■	■	
4102	16	offset with arrow	2500	■	■	
4214	24.8	offset	2200	■	■	
4215	24.8	offset with nose	1600	■	■	
4216	24.8	offset with hook	1900	■	■	
4245 	20	straight	2900	■	■	
4262	30	offset	2000	■	■	
4263	22	offset	2500	■		
4271	25.3	offset	2200	■		
4272	25.3	offset with hollow chamber	1200	■		
4275	34	straight with screw channel	1400	■	■	
4276	38	offset	1600	■	■	
4277	38	straight	2200	■	■	
4283	24	offset with hollow chamber	1050	■	■	
4296 	28	offset with 2 flags	1500	■	■	
4298 	28	offset with "T" and flag	1400	■	■	
4317	25.3	offset with groove	1300	■		
4318	35.3	3 hollow chambers with hook and "T"	940	■		
4319	35.3	offset with 3 hollow chambers	850	■		
4320	35.3	3 hollow chambers	1500	■		
4325 	37	offset	1600	■	■	
4329	20.5	spacer for curtain walls	1350			
4330	25	hollow chamber with wide feet and groove	1400			

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Article number	Insulating depth (mm)	Description of the geometry	Pieces per stillage *	Foot compatible with aluminium cavity suggestion short hammer	Foot compatible with aluminium cavity suggestion long hammer	Coils **
4331	29.7	supplementary profile for curtain walls	2500			
4332	37.7	supplementary profile for curtain walls	1900			
4347	34	offset with groove	1200	■		
4348	44	offset with 2 grooves	740	■		
4349	44	offset with 4 hollow chambers	550	■		
4362	36	shear-free profile	1300	■	■	
4386	14	offset	3600	■	■	Ⓢ
4388 	24	offset with nose	1600	■	■	
4430	36.5	profile for hidden sash	700			
4467 	32	offset with 2 2 flags	1400	■	■	
4468 	32	offset with groove and 2 flags	1100	■	■	
4469 	32	offset with hollow chamber and 2 flags	1000	■	■	
4492	26	straight	2800	■	■	Ⓢ
4493	26	offset	2500	■		
4494	26	offset with nose	1450	■		
4518 	40	straight	2200	■	■	
4542 	26	offset	2500	■	■	
4543 	24	offset	2500	■	■	Ⓢ
4544 	24	offset with hook	1600	■	■	
4558 	40	profile for hidden sash	850			
4607 	46	shear-free profile	1100	■	■	
4616 	26	straight	2800	■	■	
4617 	26	straight with screw channel	1700	■	■	
4618 	28	offset	2000	■	■	
4619 	30	straight	2500	■	■	
4620 	32	offset	1600	■	■	
4621 	34	offset	1800	■	■	
4622 	44	offset	1300	■	■	
4623 	39	offset with 3 hollow chambers	600	■	■	

Additional information

insulbar.com

Product brochures

- insulbar with Low-E film
- Shear-free insulating profile from insulbar
- insulbar ESP
- insulbar RE
- insulbar LI
- insulbar RE-LI

Recommendations

- Transport, storage, delivery form
- Coating of insulbar from polyamide GF
- Anodising of insulbar from polyamide GF
- Processing of shear-free profiles

Datasheets

- insulbar REG made from TECATHERM 66 GF or 66 GF 40
- insulbar RE made from TECATHERM 66 GF RE
- insulbar LI made from TECATHERM 66 GF
- insulbar RE-LI made from TECATHERM 66 GF RE
- insulbar ESP made from TECATHERM 66 ESP
- Coex wire
- Low-E film 12 ε 3
- Cover film 8.4 T 200
- Cover film 5.5 T 200
- Surface protection film



We will be pleased to send you additional information such as test reports, certificates etc. on request.

insulbar Germany

Ensinger GmbH
Rudolf-Diesel-Straße 8
71154 Nufringen
Tel. +49 7032 819 0
Fax +49 7032 819 270
insulbar@ensingerplastics.com

Ensinger GmbH
Wilfried-Ensinger-Straße 1
93413 Cham
Tel. +49 9971 396 0
Fax +49 9971 396 570
insulbar@ensingerplastics.com

insulbar worldwide

France

Ensinger France S.A.R.L.
Rue des Petites Combes
ZAC des Batterses
01700 Beynost
Tel. +33 4 78 55 36 35
Fax +33 4 78 55 68 41
contact@ensinger.fr

Italy

Ensinger Italia S.R.L.
Via Franco Tosi 1/3
20020 Olcella di Busto Garolfo
Tel. +39 0331 562 111
Fax +39 0331 567 822
insulbar.it@ensingerplastics.com

Spain

Ensinger S.A.
Girona, 21-27
08120 La Llagosta
Tel. +34 935 74 57 26
Fax +34 935 74 27 30
insulbar@ensinger.es

United Kingdom

Ensinger Building Products Ltd.
Wilfried Way
Tonyrefail
Mid Glamorgan
CF39 8JQ
Tel. +44 1443 678 400
Fax +44 1443 671 153
ebp-uk@ensingerplastics.com

China

Ensinger (China) Co., Ltd.
1F, Building A3
No. 1528 Gumei Road
Shanghai 200233
Tel. +86 21 522 851 11
Fax +86 21 522 852 22
info@ensinger-china.com

USA

Ensinger Inc.
1 Main St.
Grenloch, NJ 08032
Tel. +1 856 227 0500
Fax +1 856 232 1754
insulbar@ensingerusa.com