


## **FischerTHERM**

Efficient energy saving with DUO-sealant





A photograph of a modern building with a light blue facade and large windows. A prominent red pillar stands in the foreground, and a set of stairs with red steps leads up to the building. The sky is clear and blue.

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# We create high

Fischer Profil GmbH is one of Europe's leading manufacturers of prefabricated roof, wall and floor elements.

Fischer Profil GmbH has comprehensive expertise in manufacturing and building technology. Expert advice coupled with accessible service are a matter of course at Fischer Profil.

"FischerTHERM" sandwich elements are part of our product range. FischerTHERM elements for walls and roofs are available in a wide variety of designs.

## For walls

- **FischerTHERM** as a standard element
- **FischerTHERM plus** with concealed fastening
- **FischerTHERM T** with trapezoid profile outer skin
- **FischerTHERM W** with corrugated profile as outer skin

## For roofs

- **FischerTHERM D**

Our products are manufactured on two modern production lines. The IT-controlled production line guarantees excellent and consistent quality, square metre on square metre.

FischerTHERM consists of two steel sheet outer skins with a core of rigid polyurethane foam between them, which is CFC- and HCFC-free.



Production line 1



Production line 2



# FischerTHERM – for cost-effective quality

The outer skins are shear-resistant and rigidly bonded to the rigid polyurethane foam core and are manufactured with the wall elements in the following surface designs

- L = Profiling
- S = Beading
- M = Microprofiling (8 mm)
- V = Microprofiling (16 mm)
- K = Combi-profiling
- E = Smooth
- T = Trapezoid profiling
- W = Corrugated profiling

FischerTHERM elements come ready to install. They are very light yet extremely rigid which means they have a large span and can be handled easily when installing. The outer skins take up the tensile and compressive forces and are resistant to external influences such as extreme weather conditions, many chemicals, and mechanical and temperature-related strains. The bulk density of the rigid polyurethane foam is around 38 kg/m<sup>3</sup> and this fixes the outer skins at the required spacing and takes up the tensile and compressive forces when the element is under stress.

FischerTHERM elements have DUO sealant in their longitudinal joints, consisting of a PU thermal insulation strip and on the inner skin an additional EPDM sealing profile. This results in a minimal thermal bridge and the highest level of airtightness, even where joint sizes have not been complied with during installation.

Various coating qualities can be selected for the outer skins, depending on application and stresses:

- Colorcoat HPS200 Ultra®
- Colorcoat Prisma®
- Polyester

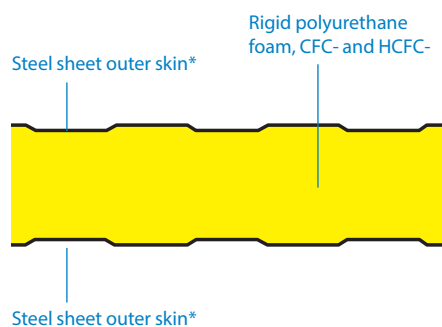
FischerTHERM elements have large bend radii, which is a particular advantage with coatings which are only 25 µm thick. The various surface designs of FischerTHERM elements combined with the range of colours available allow architects, planners and building owners – who place equal value on both aesthetics and functionality – free range in terms of design. The FischerTHERM standard wall element comes in a 1100 mm width, which means quicker installation and improved use of transport space on 2.40 m-wide HGVs. Optically the FischerTHERM plus is a particularly elegant wall element due to its concealed fastenings (within the element itself) and the optional fine beading or microprofiling on its outer skin.

FischerTHERM plus generally requires no additional installation equipment, as ordinary fasteners suffice. The fasteners are visible on connecting profiles. FischerTHERM TL with its trapezoidally-profiled outer skin, has a special visual appearance and greater rigidity. Fis-

cherTHERM WL is a new wall element with a corrugated outer skin. FischerTHERM DL roof elements elements with their broad lower chords allow easy access during installation. A generous overlap of the longitudinal joints with an additional labyrinth seal prevents surface water from penetrating.

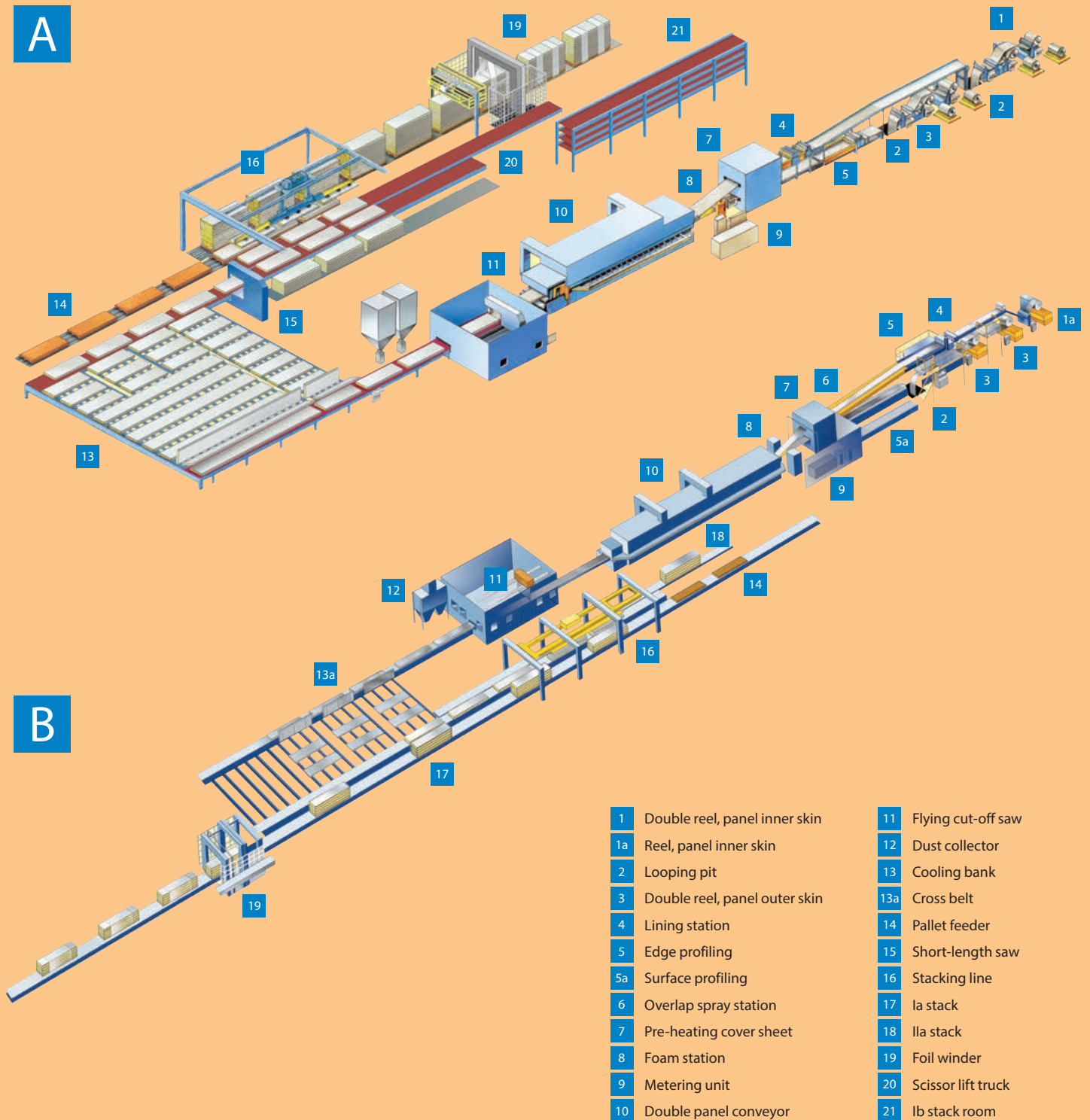
FischerTHERM DL elements are installation-friendly and have fine grooves in the upper and lower chords, which prevent the drill from slipping off, thereby helping to prevent damage to the plastic coating. FischerTHERM DL elements can be supplied in lengths up to a maximum of 26.5 m.

FischerTHERM roof and wall elements are light, stable and thermally well insulated. They are used in industrial, trade, commercial and sports facilities. Contact us if you are looking for cost-effective construction with pre-fabricated panels.



\*Strip galvanized Z 275 plastic coated steel sheet.

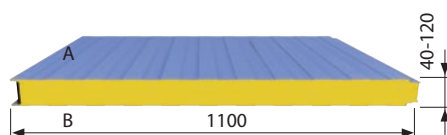
# FischerTHERM – Production lines



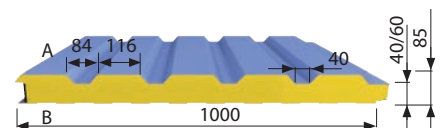
# FischerTHERM – the great product range

## Wall elements

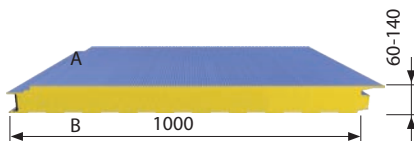
FischerTHERM\*  
40, 60, 80, 100, 120



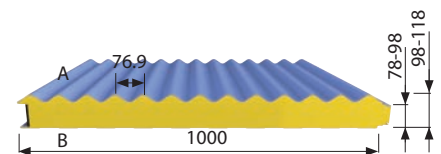
FischerTHERMT  
85



FischerTHERM plus\*  
60, 80, 100, 120, 140

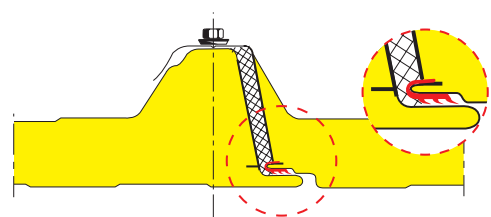
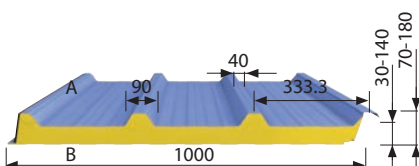


FischerTHERM W  
100, 120



## Roof elements

FischerTHERM D  
70, 80, 100, 120, 140, 160,  
180



The soft joint sealing strip with additional EPDM sealing profile (DUO sealant) ensures that FischerTHERM roof and wall cladding elements are extremely airtight and offer good thermal insulation.

A = outside surface

B = inside surface

\* For further combination options for surface designs see FischerTHERM brochure page 8

**Table 1: FischerTHERM product range**

Element designation	Sheet thickness t <sup>1</sup> Outer skin resistance ta [mm]	Sheet thickness t <sup>1</sup> Inner skin resistance ti [mm]	Element thickness d [mm]	Element length recom. max. L [m] <sup>2</sup>	Element weight g[kg/m <sup>2</sup> ]	U <sub>ds</sub> Thermal transmission coefficient W/(m <sup>2</sup> K)	U <sub>ns</sub> according to DIN 14509 (without joint) W/(m <sup>2</sup> K)	R <sub>tot</sub> Total thermal resistance <sup>3</sup> (m <sup>2</sup> K)/W
<b>FischerTHERM</b>								
40	0.55	0.50	40	12 <sup>2)</sup>	10.4	0.584 <sup>4)</sup>	0.537	1.9
60	0.55	0.50	60	16 <sup>2)</sup>	11.2	0.385 <sup>4)</sup>	0.366	2.7
80	0.55	0.50	80	16 <sup>2)</sup>	12.0	0.288 <sup>4)</sup>	0.278	3.6
100	0.55	0.50	100	16 <sup>2)</sup>	12.8	0.231 <sup>4)</sup>	0.224	4.5
120	0.55	0.50	120	16 <sup>2)</sup>	13.4	0.192 <sup>4)</sup>	0.187	5.3
<b>FischerTHERM plus</b>								
60	0.63	0.50	60	16 <sup>2)</sup>	12.7	0.408 <sup>4)</sup>	0.366	2.7
80	0.63	0.50	80	16 <sup>2)</sup>	13.5	0.297 <sup>4)</sup>	0.278	3.6
100	0.63	0.50	100	16 <sup>2)</sup>	14.3	0.235 <sup>4)</sup>	0.224	4.5
120	0.63	0.50	120	16 <sup>2)</sup>	14.9	0.195 <sup>4)</sup>	0.187	5.3
140	0.63	0.50	140	16 <sup>2)</sup>	15.7	0.167 <sup>4)</sup>	0.161	6.2
<b>FischerTHERM T</b>								
85	0.55	0.50	85	16 <sup>2)</sup>	12.4	0.318 <sup>4)</sup>	0.307	3.3
<b>FischerTHERM W</b>								
100	0.63	0.50	98	16 <sup>2)</sup>	14.1	0.269 <sup>4)</sup>	0.265	3.8
120	0.63	0.50	118	16 <sup>2)</sup>	14.7	0.218 <sup>4)</sup>	0.215	4.6
<b>FischerTHERM D</b>								
70	0.55	0.45	70	26	10.5	0.698 <sup>5)</sup>	0.661	1.5
80	0.55	0.45	80	26	10.9	0.536 <sup>5)</sup>	0.513	1.9
100	0.55	0.45	100	26	11.7	0.366 <sup>5)</sup>	0.355	2.8
120	0.55	0.45	120	26	12.5	0.278 <sup>5)</sup>	0.271	3.7
140	0.55	0.45	140	26	13.4	0.224 <sup>5)</sup>	0.219	4.6
160	0.55	0.50	160	26	14.0	0.188 <sup>5)</sup>	0.184	5.4
180	0.55	0.50	180	26	15.1	0.162 <sup>5)</sup>	0.159	6.3

<sup>1)</sup> Other sheet thicknesses possible on request

<sup>2)</sup> recommended maximal Length, other Lengths available on request

<sup>3)</sup> according to DIN EN 6949 (without joint)

<sup>4)</sup> U<sub>ds</sub> according to DIN EN 14509 - Exact method with FEM according to DIN EN ISO 10211

<sup>5)</sup> U<sub>ds</sub> according to DIN EN 14509 - Simplified procedure with f<sub>joint</sub>

Table 2: Possible combinations of surface designs –

Element designation	outer skin										inner	
	L	F	A	V	K	D	R	T	D		L	D
FischerTHERM 40, 60, 80, 100, 120	●		●	●	●	●					●	●
FischerTHERM plus 60, 80, 100, 120, 140	●	●	●	●	●	●					●	●
FischerTHERM T 65, 85								●			●	●
FischerTHERM W 80, 100, 120							●				●	●
FischerTHERM D 70, 80, 100, 120, 140, 160, 180									●		●	●

**Caution!** 1. Letter = outside surface 2. Letter = inside surface The outside surfaces on EE and EL versions should be selected solely from Colorcoat HPS200



L = Profiling



S = Beading



M = Microprofiling (8 mm)



V = Microprofiling (16 mm)



K = Combi-profiling



E = Smooth



T = Trapezoid profiling  
Wall element T



W = Corrugated profil-  
ing  
Wall element W



D = Trapezoid profiling  
Roof element D





# FischerTHERM – thermally well insulated

## Thermal insulation

Thermal insulation in buildings is important for:

- reducing heat loss through the roof and walls of a building
- the health of the occupants by providing a hygienic atmosphere
- protecting the building itself from the damaging effects of climate-induced damp.
- minimising energy consumption for heating and cooling
- keeping production and operating costs down

Roof and wall surfaces must comply with energy conservation code (EnEV) regulations by fulfilling very stringent requirements regarding insulation technology. This includes ensuring that joints are sealed so that they are permanently airtight. Furthermore, the requirements of DIN 4108 (insulation for surface engineering) must also be complied with. In this context, planners, architects and building owners are all faced with the question of which insulating material fulfils these requirements and yet is cost-effective. Rigid polyurethane foam with gas diffusion-proof cover sheets fulfils these requirements and is the best insulating material in the building sector. As regards possible fluctuations in conductivity resulting from diffusion processes, cover sheets are considered gas diffusion-proof without the need for further proof provided they are made from metallic materials with a thickness of at least 50 µm. When the edge area is less than 10% of the total surface panel area, these edges do not have to be covered by the cover sheet.

Rigid polyurethane foam does not rot, remains decay and mould-free, has no smell and is physiologically safe when used in standard applications. Rigid polyurethane foam is also chemically neutral.

FischerTHERM Carrier with its PU core and diffusion-tight cover sheets achieves a better level of thermal conductivity than any other form of insulation, which results in beneficial heat conductivity coefficients U of less than 0.16 W/(m<sup>2</sup>K), applicable to all types of elements. The thermal retention capacity of FischerTHERM elements is minimal.

This represents a considerable advantage compared with heavier building materials when used on commercial properties which are utilised only on a part-time basis as significant amounts of energy can be saved. There is no need to be concerned about moisture protection with FischerTHERM. The moisture-proof cover sheets prevent any moisture from being diffused either into or out of the element, thus ensuring a high level of long-term insulation. There is no need to calculate the “moisture balance” as is usual with many other building systems.

## Consideration of punctual thermal bridges

In the area of metallic fasteners for FischerTHERM sandwich elements, punctual heat losses occur which must be considered when determining the heat transfer coefficient U according to the energy conservation code (EnEV). At RTWH University Aachen the effect of thermal bridges due to metallic fasteners was determined using three-dimensional numeric FEM calculations. If FischerTHERM elements are fastened to a substructure, thermal insulation of the rigid polyurethane foam is only slightly

affected. According to DIN EN ISO 6946, no correction must be made in respect of the screws as thermal bridges if the overall correction is less than 3% of the U value. For up to three stainless steel thread-cutting or self-tapping screws the correction value is less than 3% and therefore unaffected thermal insulation may be assumed when calculating the U0 heat transfer coefficient. When using steel screws the 3% limit is 1 screw per m<sup>2</sup> as the thermal conductivity of steel is 50 W/mK while that of stainless steel is only 17 W/mK.

## Quality assurance

The rigid polyurethane foam used in FischerTHERM panels is subject to quality control and fulfils the requirements of DIN 18164 (Plastic foam acting as insulating material for surface engineering). FischerTHERM elements guarantee the user consistently high-quality material with specific properties.

## Noise insulation

Sound measurements carried out in the test centre at the North-Rhine Westphalian Testing Authority in Dortmund produced a noise insulation value of  $R_w = 25\text{dB}$  for FischerTHERM LL 60 and FischerTHERM plus SL 60, test certificate numbers 420520493-1 and 420520493-2. For such sandwich elements the noise insulation value is roughly the same for all element types and thicknesses.

### Fire behaviour

Fire behaviour is divided into “Euroclasses” A - F according to DIN EN 13501 Part 1. In particular flammability, flame spread and heat release are determining factors. Building materials of classes A2, B, C and D are also classified in terms of smoke production as s1, s2 or s3, where smoke increases from class s1 to class s3. Flaming droplets according to classes A2, B, C and D are rated using classes d0, d1 or d2.

- a) d0: no flaming droplets/particles
- b) d1: flaming droplets/particles for a short time
- c) d2: persistent flaming droplets/particles

FischerTHERM sandwich elements are space-enclosing, thermally-insulating components for outer walls and roofs. The fire behaviour of FischerTHERM elements has been rated in accordance with DIN EN 13501-1 as B-s2,d0. This is equivalent to the national official identification “barely flammable”. The FischerTHERM DL roof element is also resistant to flying sparks and radiant heat in accordance with DIN 4102, Part 7. FischerTHERM DL elements therefore comply with the criteria pertaining to “hard roofing” defined in the premium guidelines of the Verband der Sachversicherer (Association of Insurers). FischerTHERM roof and wall elements demonstrably display defensive behaviour in the event of a fire, i.e. they only burn in the area of direct heat impact from the fire source. This assures the building contractor that a fire will not spread across the roof or walls to another part of the building. Additionally, the foam will not produce flaming droplets. FischerTHERM elements do not, therefore, contribute to the maintenance or spread of a fire.

### Lightning protection

All Fischer PROFILES with  $\geq 0.5\text{mm}$  thick outer steel sheets with metallic coatings can be used as natural components of a conducting device in accordance with DIN EN 61024-1 (lightning protection for constructional systems). The outside surface may have a coating thickness of up to  $500\text{ }\mu\text{m}$ . The spacing between the individual metal surfaces may not exceed  $1\text{ mm}$ , the overlap of the elements in relation to each other must be at least  $100\text{ cm}^2$ . Metal walls can be used as conductors if the individual elements are joined together by bolts, rivets or overlapping. A secure, current-conducting connection to the earthing system and to the conducting device via the connection between Fischer roof and wall panels, for example, must be ensured. If Fischer construction elements, e.g. FischerTHERM wall elements, are not connected to each other in such a way that they will conduct electricity but the metal substructure is connected so that it conducts without interruption from the point of connection to the wall elements to the point of connection to the earthing system, this can be used as a conductor.

### Joint tightness

If FischerTHERM roof and wall elements are correctly installed using tongue-and-groove joints, they will remain airtight and resistant to driving rain. The tightness of the joints (a-value) is just as significant in construction elements as the U-value, for instance. One of the requirements of the energy-saving regulations is the minimising of thermal bridges and a high level of airtightness of the joints between thermally-conductive peripheral surfaces. Particularly with increasing standards of thermal insulation, heat loss through ventilation has rela-

tively more of an impact and can even considerably exceed transmission heat losses, denoted by the U-value. If sandwich elements are to be used, **particular attention should be paid to the a-value**. The soft joint sealing strip with additional EPDM sealing profile (**DUO sealant**) ensures that FischerTHERM roof and wall cladding elements are extremely airtight and offer good thermal insulation.

Such space-enclosing construction elements generally require a minimum value of  $a \leq 0.10\text{ m}^3/(\text{h} \cdot \text{m} \cdot (\text{daPa})^{2/3})$ . Tests with FischerTHERM DL 120 at Cottbus Technical University recorded an a-value of  $a \leq 0.004\text{ m}^3/(\text{h} \cdot \text{m} \cdot (\text{daPa})^{2/3})$ .

The roof element was impervious to rainwater up to a rainwater volume of up to  $3\text{ litres/min. per m}^2$  and up to a wind speed of up to  $12\text{ m/sec}$ . One particular advantage of the new registered utility model joint construction of the FischerTHERM elements is that the nominal width of the joint must not necessarily be adhered to. Even where installation has been inexact, a very high degree of joint sealing is nevertheless achieved.

In order to prove this, we had further tests carried out at Cottbus Technical University. A  $40\text{ mm}$  thick FischerTHERM wall element with a nominal joint width of  $8\text{ mm}$  was tested and for comparison purposes an  $11\text{ mm}$  panel with a  $3\text{ mm}$  wider longitudinal joint compared with the nominal joint width. The a-value in the case of the  $11\text{ mm}$  joint width on a simulation of a badly assembled wall was still  $0.02\text{ m}^3/(\text{h} \cdot \text{m} \cdot (\text{daPa})^{2/3})$ . This means that compared with the state of the art value of  $a \leq 0.1\text{ m}^3/(\text{h} \cdot \text{m} \cdot (\text{daPa})^{2/3})$  is five times as good.

**For your own peace of mind choose FischerTHERM elements with the new DUO sealant (See Joint Tightness brochure)**

When using sandwich elements for cold stores with high air humidity, e.g. potato stores, it is recommended that the longitudinal joint and all connections are additionally sealed on the outside in order to take account of fluctuations in vapour pressure. For roof elements a sealing tape should be inserted in the outer longitudinal joint overlap and for wall elements an injectable sealant should be applied to the outer groove area before joining the tongues and grooves.

When sandwich panels are rigidly fastened, the outer sheet is subject to elongation, which induces tension and deformation of the sandwich element as a result of temperature influences. This may lead to the production of

noises in the supporting structure, in particular when it is made of timber.

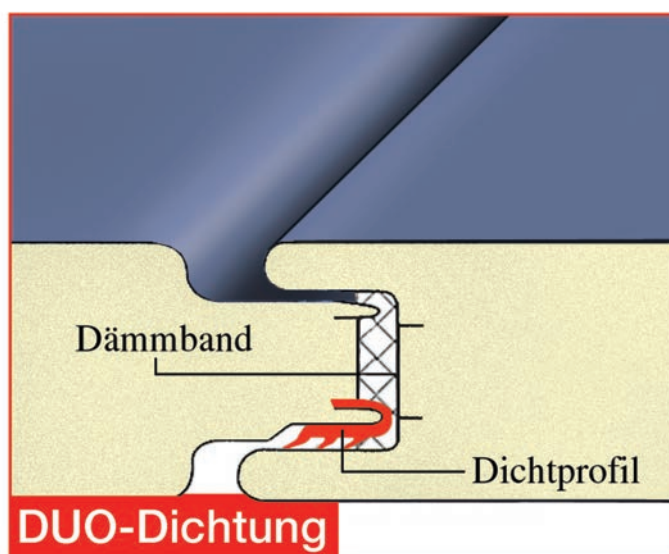
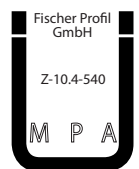
#### Product and quality assurance

Production is subject to independent and internal monitoring required by the building supervision licence.

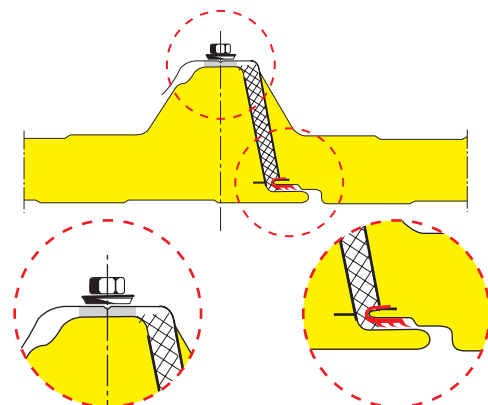
Internal testing during manufacturing and independent testing by a state material testing authority guarantee that the material, galvanization, sheet thickness, foam properties and dimensional accuracy of the quality assured sandwich elements fulfil the defined quality requirements.

The conformity procedure (ÜZ) must be carried out for sandwich elements. This means that the conformity of the product's properties together with the relevant technical specifications and the presence of effective internal production checking must be verified and

monitored by a recognised examining and monitoring authority for building supervision. Once the certifying authority has issued a certificate of conformity we are entitled to use the "U" symbol. The "U" symbol on the packing slip gives details of the manufacturer, the basis of the certificate of conformity, the licence number and the certifying authority.



The soft joint sealing strip with additional EPDM sealing profile (DUO sealant) ensures that FischerTHERM roof and wall elements are extremely airtight and offer good thermal insulation. FischerTHERM roof elements can be supplied with additional sealing tape in the longitudinal joint on request.



## FischerTHERM – Special features

FischerTHERM elements are factory-fitted with **DUO sealant**, a soft joint-filling sealant for thermal insulation. An additional EPDM sealing profile ensures a high level of joint sealing and prevents draughts.

Even where installation has been incorrectly carried out and the gap in the joint is too wide, a high level of airtightness is still achieved. 2 cut foam surfaces are set facing each other in the transverse joint.

The outer profiled skin of the higher element overlaps the lower element by 100 to 300 mm as required. It is particularly important with regard to the transverse joint that sufficient thermal insulation and airtightness are provided on the building site by applying sealing strips to the foam surfaces. Sealing strips must also be applied to the overlap area of the outer profiled skin to ensure adequate rain proofing.

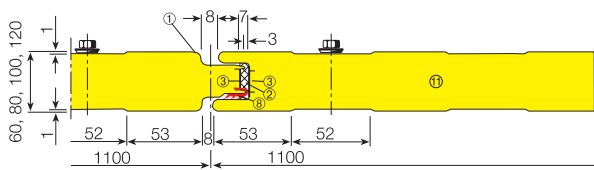
The formation of a damage-free transverse joint requires not only the correct choice of sealing materials, but above all very careful expert application.

For the layout of transverse joints and for openings – as the problems are the same in both cases – we recommend a roof pitch of  $\geq 7^\circ$  (approx. 12.3 %). Where the pitch of the roof is  $\leq 10^\circ$  it is essential to apply a suitable additional continuous sealant in the longitudinal joint.

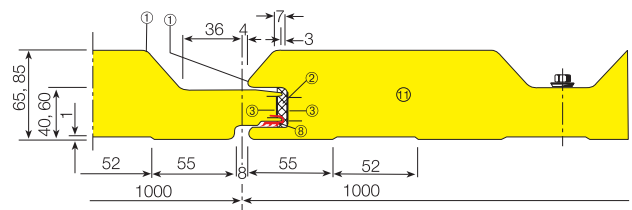
- ① Large bend radii for more reliability on 25  $\mu\text{m}$  coatings.
- ② A new kind of joint sealant with soft elastic sealing strip plus EPDM sealing profile for extremely tight sealing even with minimum pressure. Jointing conductivity coefficient  $a$  on wall element LL40 is  $< 0.02 \text{ m}^3/(\text{h}\cdot\text{m}\cdot(10\text{Pa})\text{n})$ , even with a longitudinal joint 11 mm rather than 8 mm wide. On the FischerTHERM DL 120 roof element an  $a$ -value of only  $< 0.004 \text{ m}^3/(\text{h}\cdot\text{m}\cdot(10\text{Pa})\text{n})$  was measured. State of the art is an  $a$ -value of  $\leq 0.1 \text{ m}^3/(\text{h}\cdot\text{m}\cdot(10\text{Pa})\text{n})$ .
- ③ Aluminium foil on both the tongue and on the sealing strip facing the foam core for long-term prevention of gas escape from the PU cells, thus ensuring good thermal insulation.
- ④ Concealed fastening for attractive façades.
- ⑤ Beading or microprofiling of the outer skin for a typically appealing appearance.
- ⑥ Fine drill grooves to assist neat placement of the fastening elements.
- ⑦ Load distributor
- ⑧ EPDM sealing profile for extremely airtight sealing.
- ⑨ Continuous sealing strip as thermal insulation.
- ⑩ Labyrinth profile prevents ingress of rainwater.
- ⑪ Rigid polyurethane foam, CFC- and HCFC-free. Not harmful to the environment and does not damage the ozone layer.



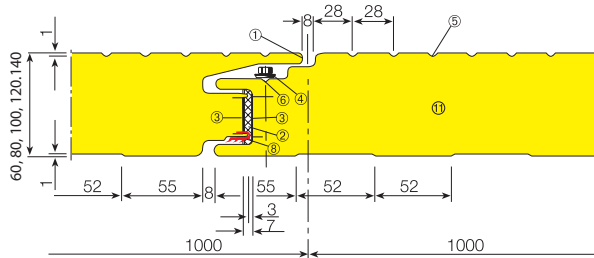
### FischerTHERM LL 40, 60, 80, 100, 120



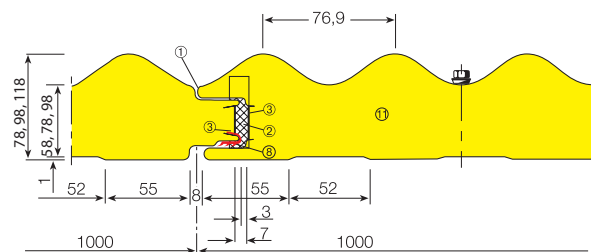
### FischerTHERM TL 85



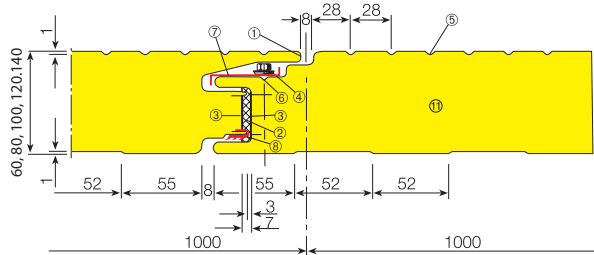
### FischerTHERM plus SL 60, 80, 100, 120, 140



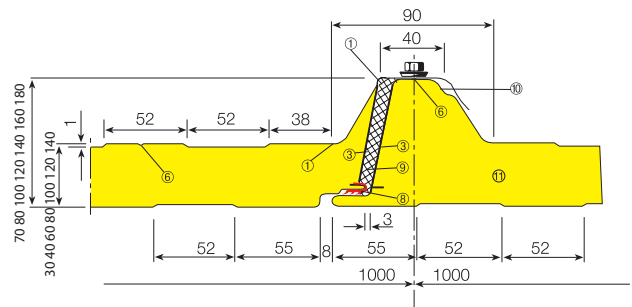
### FischerTHERM WL 100, 120



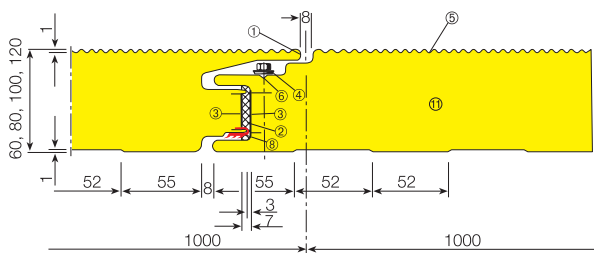
### FischerTHERM plus SL 60, 80, 100, 120, 140 with load distributor



### FischerTHERM DL 70, 80, 100, 120, 140, 160, 180

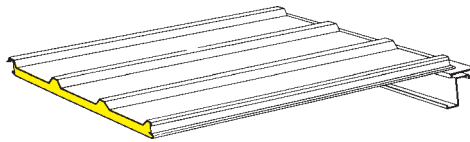


### FischerTHERM plus 60, 80, 100, 120, 140



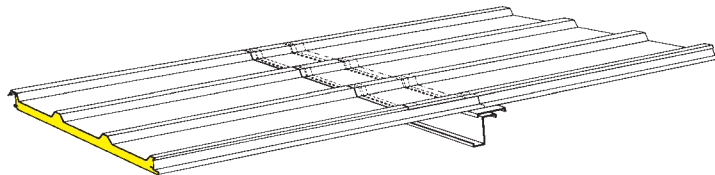
# FischerTHERM – roof pitch

## Recommended minimum roof pitch for FischerTHERM D roof elements



Without transverse joint  $\geq 5^\circ$  (8.8 %)

Additional sealing strip in the longitudinal joint recommended for roofs: Without transverse joint  $\leq 7^\circ$  pitch



With transverse joint and/or roof openings  $\geq 7^\circ$  (12.3 %)

Additional sealing strip in the longitudinal joint recommended for roofs: With transverse joint  $\leq 10^\circ$  pitch

## FischerTHERM - transverse joint

FischerTHERM D elements can be supplied with a foam-free area in order to create a clean transverse overlap on the roof or to leave eaves free from both physical and optical obstructions.

Internal bonding of the PU rigid polyurethane foam with the steel sheet is prevented by the application of a special separating agent.

The foam-free area can be produced in widths of between 100 mm and 300 mm in steps of 50 mm. Steeper roof pitches and/or bigger transverse overlaps reduce the risk of leaks where leaks are the result of incorrect sealing of the transverse joint.

Please note that there are **two different types of elements** which come with the foam-free area:

The element with the designation

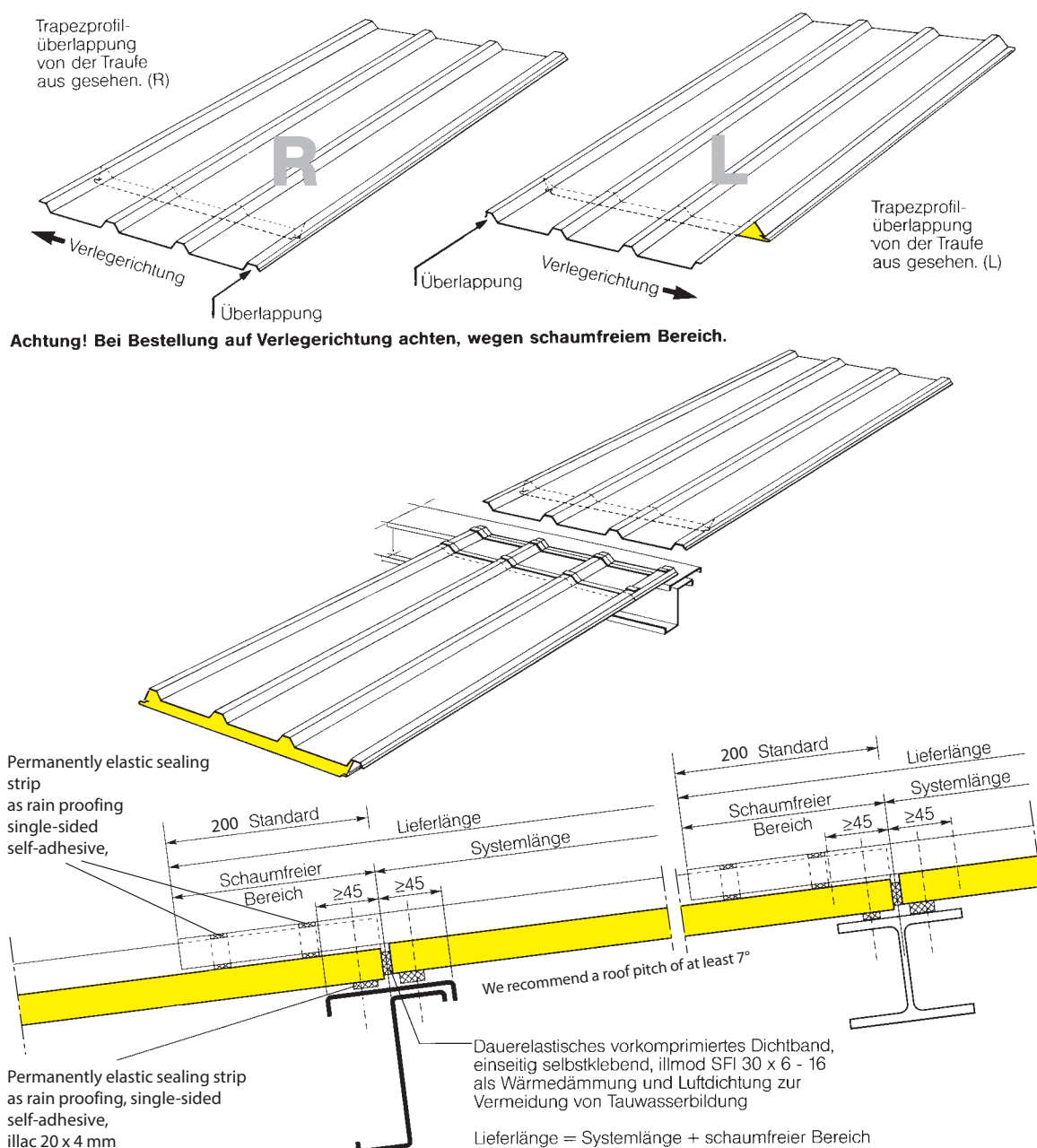
R = Right

and the element with the designation

L = Left

If the trapezoidal profile lap can be seen from the left side as viewed from the eaves, panel (L) should be ordered and if not, then panel (R) is required.

## FischerTHERM D with foam-free area



# FischerTHERM – Connecting elements

## Connecting elements

Sub-structure	Wall elements														
	FischerTHERM					FischerTHERM plus					FischerTHERM TL		FischerTHERM WL		
	40	60	80	100	120	60	80	100	120	140	65	85	80	100	120
	Non-rusting stainless steel screws														
Steel and Reinforced concrete substructure with steel core ≥ 2mm	JZ3-6.3x64 -E 16	JZ3-6.3x80 -E 16	JZ3-6.3x100 -E 16	JZ3-6.3x115 -E 16	JZ3-6.3x135 -E 16	JZ3-6.3x64 -E 19*	JZ3-6.3x80 -E 19*	JZ3-	JZ3-	JZ3-	JZ3-6.3x64 -E 16 (lower chord)	JZ3-6.3x80 -E 16 (lower chord)	JZ3-6.3x80 -E 14/3 (lower chord)	JZ3-6.3x100 -E 14/3 (lower chord)	JZ3-6.3x115 -E 14/3 (lower chord)
Wood	JA3-6.5x115 -E 16	JA3-6.5x125 -E 16	JA3-6.5x150 -E 16	JA3-6.5x175 -E 16	JA3-6.5x200 -E 16	JA3-	JA3-	JA3-	JA3-	JA3-	JA3-6.5x115 -E 16 (lower chord)	JA3-6.5x125 -E 16 (lower chord)	JA3-6.5x125 -E 14/3 (lower chord)	JA3-6.5x150 -E 14/3 (lower chord)	JA3-6.5x175 -E 14/3 (lower chord)
Joints and cover profile area						JA3-6.5x45 -E 16					JA3-6.5x45 -E 16		JA3-6.5x64 -E 16		
Flashings	Self-tapping screw JT3-3H-5.5 x 25-E16 (≤ 2 mm substructure) or Blind rivet Al/E 4.8 x 8.3 (clamping range 0.8-3.2 mm), max. sep. 500 mm (shell Al, stainless steel shank)														

\* If a load distributor is used additionally for fastening an E16 washer must also be used. Only fasteners complying with IFBS Z 14.4 – 407 standards may be used.  
For other screw types see "Flashings and Accessories"



## Connecting elements

Sub-structure	Roof elements						
	FischerTHERM DL						
	70	80	100	120	140	160	180
	Non-rusting stainless steel screws						
Steel and Reinforced concrete substructure with steel core $\geq 2\text{mm}$	JZ3-6.3 x 64 -E 22 (lower chord) JZ3-6.3 x 90 -E 22 (upper chord)	JZ3-6.3 x 64 -E 22 (lower chord) JZ3-6.3 x 100 -E 22 (upper chord)	JZ3-6.3 x 80 -E 22 (lower chord) JZ3-6.3 x 125 -E 22 (upper chord)	JZ3-6.3 x 100 -E 22 (lower chord) JZ3-6.3 x 150 -E 22 (upper chord)	JZ3-6.3 x 115 -E 22 (lower chord) JZ3-6.3 x 175 -E 22 (upper chord)	JZ3-6.3 x 135 -E 22 (lower chord) JZ3-6.3 x 200 -E 22 (upper chord)	JZ3-6.3 x 175 -E 22 (lower chord) JZ3-6.3 x 220 -E 22 (upper chord)
Wood	JA3-6.5 x 150 -E 22 Fastening only in upper chord	JA3-6.5 x 150 -E 22 Fastening only in upper chord	JA3-6.5 x 175 -E 22 Fastening only in upper chord	JA3-6.5 x 200 -E 22 Fastening only in upper chord	JA3-6.5 x 230 -E 22 Fastening only in upper chord	JA3-6.5 x 230 -E 22 Fastening only in upper chord	JA3-6.5 x 260 -E 22 Fastening only in upper chord
Longitudinal connection	JT3-2H-5.5 x 25 -E 19/2 (Max. spacing 500 mm)	JT3-2H-5.5 x 25 -E 19/2 (Max. spacing 500 mm)	JT3-2H-5.5 x 25 -E 19/2 (Max. spacing 500 mm)	JT3-2H-5.5 x 25 -E 19/2 (Max. spacing 500 mm)	JT3-2H-5.5 x 25 -E 19/2 (Max. spacing 500 mm)	JT3-2H-5.5 x 25 -E 19/2 (Max. spacing 500 mm)	JT3-2H-5.5 x 25 -E 19/2 (Max. spacing 500 mm)
Flashings	Self-tapping screw JT3-3H-5.5 x 25-E16 ( $\leq 2\text{ mm}$ substructure) or Blind rivet AI/E 4.8 x 8.3 (clamping range 0.8-3.2 mm), max. sep. 500 mm (shell AI, stainless steel shank)						

Only fasteners complying with IFBS Z 14.4 – 407 standards may be used.

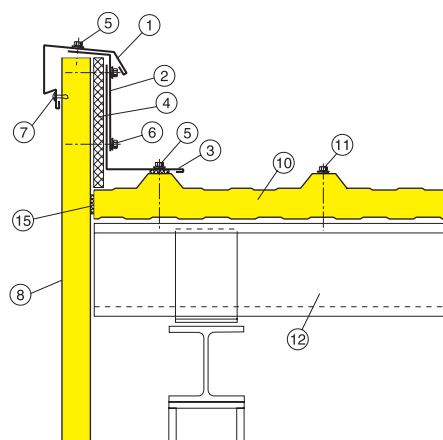
For other screw types see "Flashings and Accessories"

# FischerTHERM – Details

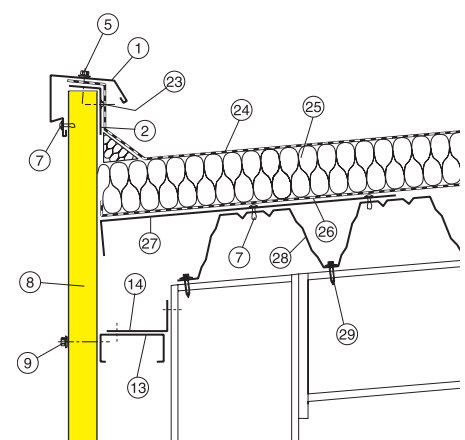
The non-binding suggestions for solutions illustrated below have been designed to keep connections as cost-effective as possible, easy to install, rain-proof, airtight, pleasing to the eye and durable. According to the energy conservation code (EnEV) the effects of thermal bridging on the connection details should be taken into account in the calculation of U-values

- 1 Fascia capping
- 2 Fascia capping support
- 3 Special profile
- 4 Insulating board, 20 mm thick
- 5 Self-sealing screw 6.5 x 19 - E 22
- 6 Self-sealing screw 6.5 x 40 - E 16
- 7 Blind rivet 4.8 Ø x 8.3
- 8 FischerTHERM
- 9 Self-sealing screw 6.3 x ... - E 16
- 10 FischerTHERM DL
- 11 Self-sealing screw 6.3 x ... - E 22
- 12 Purlin
- 13 Rail
- 14 Angle bracket
- 15 Pre-compressed, permanently elastic sealing strip, single-sided, self-adhesive, illmod SFI 30 x 6 - 16
- 16 Special flashing
- 17 Guttering profile, special guttering profile
- 18 Gutter heating
- 19 Thermal insulation (gutter)
- 20 Guttering profile, special guttering profile
- 21 Gutter inlet plate
- 22 Permanently elastic sealing strip, single-sided self-adhesive illmod 20 x 4
- 23 Self-tapping screw 5.5 x 25 - E 16
- 24 Roof waterproofing
- 25 Thermal insulation (roof)
- 26 Moisture barrier
- 27 Edge angle
- 28 FischerTRAPEZ
- 29 Hilti tacks ENP2 - 21 - L15
- 30 View enhancement shield
- 31 Gutter
- 32 Gutter support
- 33 Hard fibre strips between iron brackets
- 34 Eaves purlin
- 35 Spacer plate
- 36 Snow guard profile
- 37 Snow guard profile support

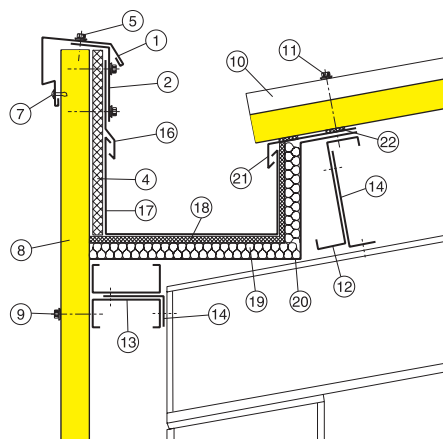
**Fascia**



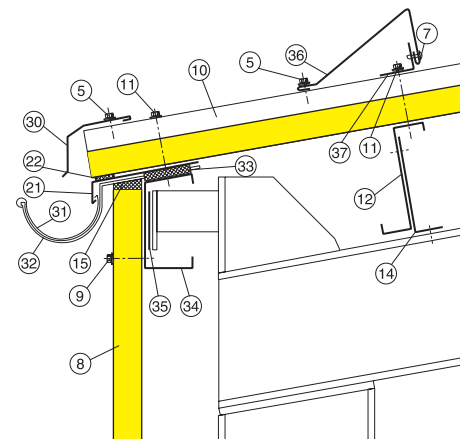
**Fascia**



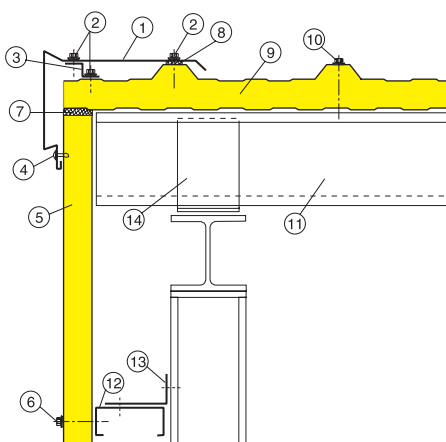
**Fascia with internal gutter**



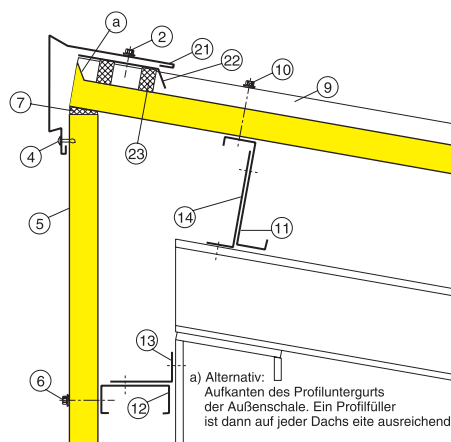
**Eaves with front-mounted gutter**



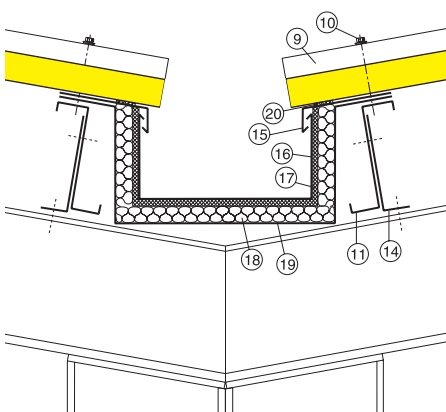
## Verge



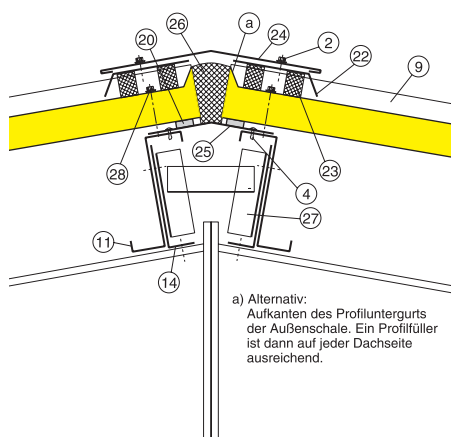
## Mono-pitch roof ridge



## Valley with gutter



## Ridge



The non-binding suggestions for solutions illustrated below have been designed to keep connections as cost-effective as possible, easy to install, rain-proof, airtight, pleasing to the eye and durable. According to the energy conservation code (EnEV) the effects of thermal bridging on the connection details should be taken into account in the calculation of U-values

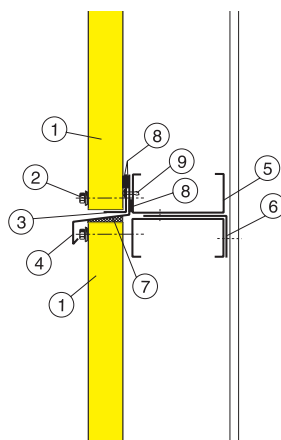
- 1 Verge profile
- 2 Self-sealing screw 6.5 x 19 - E 22
- 3 Z-profile
- 4 Blind rivet 4.8 Ø x 8.3
- 5 FischerTHERM
- 6 Self-sealing screw 6.3 x ... -E 16
- 7 Pre-compressed, permanently elastic sealing strip, single-sided, self-adhesive, illmod SFI 30 x 6 - 16
- 8 Permanently elastic sealing strip, single-sided self-adhesive illmod 20 x 4
- 9 FischerTHERM DL
- 10 Self-sealing screw 6.3 x ... -E 22
- 11 Purlin
- 12 Rail
- 13 Angle bracket
- 14 Angle bracket
- 15 Gutter inlet plate
- 16 Guttering profile, special guttering profile
- 17 Gutter heating
- 18 Thermal insulation (gutter)
- 19 Guttering profile, special guttering profile
- 20 Permanently elastic sealing strip, single-sided self-adhesive illac 20 x 4
- 21 Ridge profile for mono-pitch roof
- 22 Toothed sheeting
- 23 Profile filler strips
- 24 Ridge profile
- 25 Ridge profile interior
- 26 PUR-M installation foam (moisten the surface of each element)
- 27 Tie bolt
- 28 Self-sealing screw 6.3 x ... -E 22

# FischerTHERM – Details

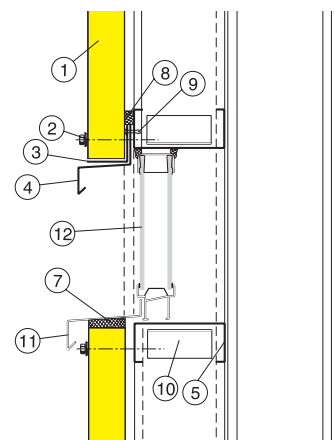
The non-binding suggestions for solutions illustrated below have been designed to keep connections as cost-effective as possible, easy to install, rain-proof, airtight, pleasing to the eye and durable. According to the energy conservation code (EnEV) the effects of thermal bridging on the connection details should be taken into account in the calculation of U-values

- 1 FischerTHERM
- 2 Self-sealing screw 6.3 x ... -E 16
- 3 Mounting support bracket
- 4 Drip flashing
- 5 Rail
- 6 Angle bracket
- 7 Pre-compressed, permanently elastic sealing strip, single-sided, self-adhesive, illmod SFI 30 x 6 - 16
- 8 Permanently elastic sealing strip, single-sided self-adhesive illmod 20 x 4
- 9 Blind rivet 4.8 Ø x 8.3
- 10 Angle
- 11 Windowsill (not supplied)
- 12 Window (not supplied)
- 13 Lateral cover profile

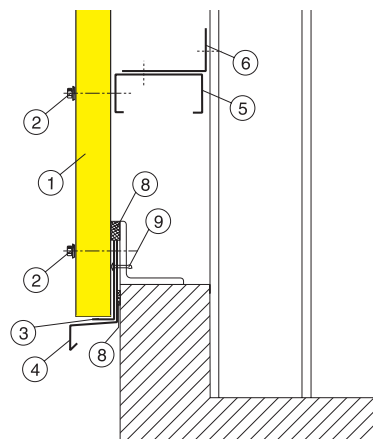
## Transverse joint



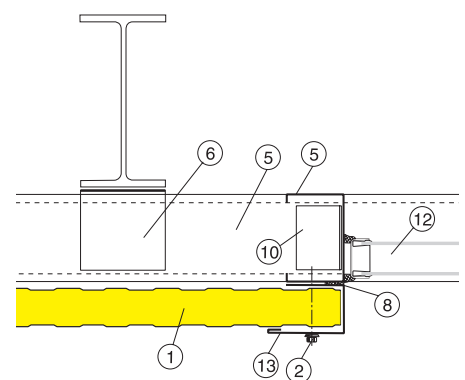
## Window connection



## Base point

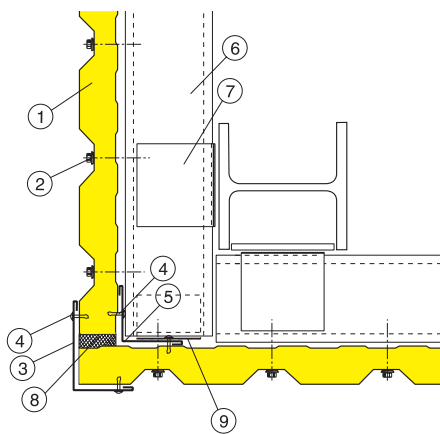


## Window connection, side

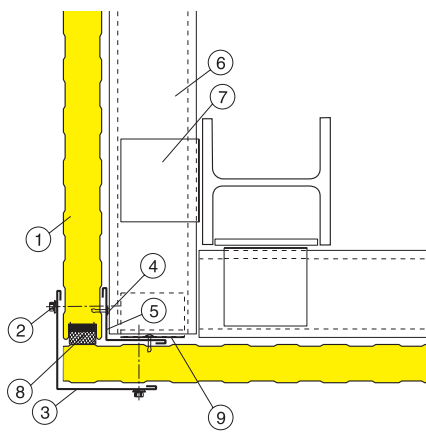




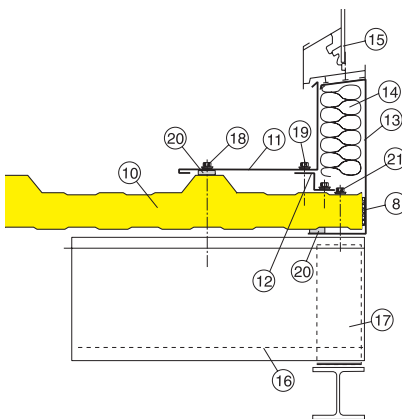
### External and internal corners



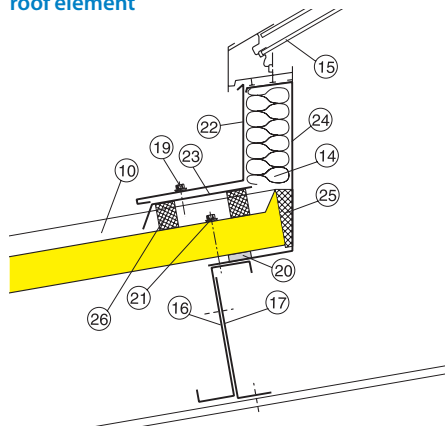
### External and internal corners



### Light strip connection along the roof element



### Light strip connection at right angles to the roof element



The non-binding suggestions for solutions illustrated below have been designed to keep connections as cost-effective as possible, easy to install, rain-proof, airtight, pleasing to the eye and durable. According to the energy conservation code (EnEV) the effects of thermal bridging on the connection details should be taken into account in the calculation of U-val-

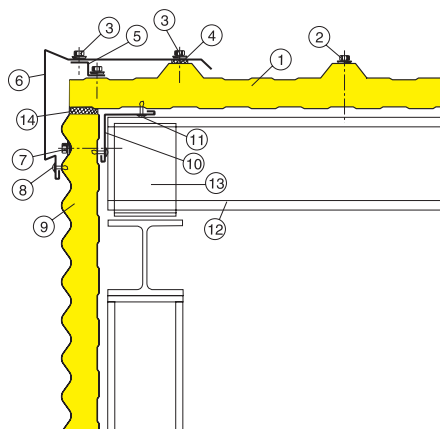
- 1 FischerTHERM
- 2 Self-sealing screw 6.3 x ... -E 16
- 3 External corner profile
- 4 Blind rivet 4.8 Ø x 8.3
- 5 Internal corner profile
- 6 Rail
- 7 Angle bracket
- 8 Pre-compressed, permanently elastic sealing strip, single-sided, self-adhesive, illmod SFI 30 x 6 - 16
- 9 Flat bar, weld in place on site
- 10 FischerTHERM DL
- 11 Connection profile, special flashing
- 12 Z-profile
- 13 Light strip frame, self-supporting, on site
- 14 Thermal insulation
- 15 Ridge light strip
- 16 Purlin
- 17 Angle bracket
- 18 Self-sealing screw 6.3 x ... -E 22
- 19 Self-sealing screw 6.5 x 19 - E 22
- 20 Permanently elastic sealing strip, single-sided self-adhesive illac 20 x 4
- 21 Self-sealing screw 6.3 x ... -E 22
- 22 Connection profile, special flashing
- 23 Toothed sheeting
- 24 Light strip frame, self-supporting, on site
- 25 PUR-M installation foam (moisten the surface of each element)
- 26 Profile filler

# FischerTHERM WL – Details

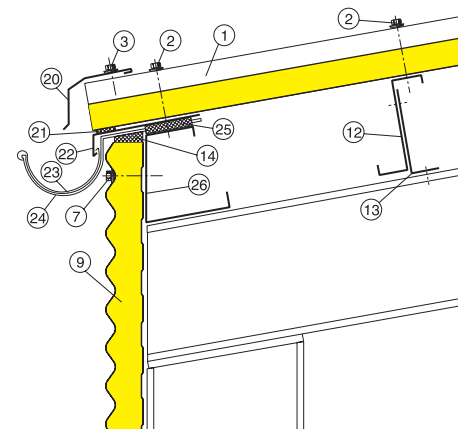
The non-binding suggestions for solutions illustrated below have been designed to keep connections as cost-effective as possible, easy to install, rain-proof, airtight, pleasing to the eye and durable. According to the energy conservation code (EnEV) the effects of thermal bridging on the connection details should be taken into account in the calculation of U-values

- 1 FischerTHERM D
- 2 Self-sealing screw 6.3 x L - E 22
- 3 Self-sealing screw 6.5 x 19 - E 22
- 4 Permanently elastic sealing strip, single-sided self-adhesive illac 20 x 4
- 5 Z-profile
- 6 Verge profile
- 7 Self-sealing screw „3 x L - E 14/3, verge and eaves flashing a ≤ 1.0 m
- 8 Blind rivet 4.8 Ø x 8.3
- 9 FischerTHERM WL, horizontal
- 10 Internal corner profile, t = 1.00 mm
- 11 Blind rivet 4.8 Ø x 8.3 a = 333 mm
- 12 Purlin
- 13 Angle bracket
- 14 Pre-compressed, permanently elastic sealing strip, single-sided, self-adhesive, illmod SFI 30 x 6 - 16
- 15 Ridge profile for mono-pitch roof
- 16 Toothed sheeting
- 17 Filler
- 18 Self-sealing screw 6.3 x ... - E 22
- 19 Ridge flashing as per stress analysis
- 20 View enhancement shield
- 21 Permanently elastic sealing strip, single-sided self-adhesive illmod 20 x 4
- 22 Gutter inlet plate
- 23 Gutter
- 24 Gutter support
- 25 Hard fibre strips between iron brackets
- 26 Eaves flashing as per stress analysis
- 27 Permanently elastic sealing strip, single-sided self-adhesive illmod 20 x 4
- 28 Blind rivet 4.8 Ø x 8.3
- 29 Mounting support bracket
- 30 Drip flashing
- 31 Self-sealing screw 6.3 x L - E 14/3, on base angle a ≤ 1.0 m

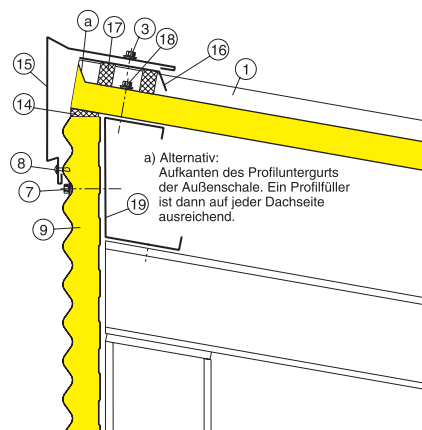
## Verge



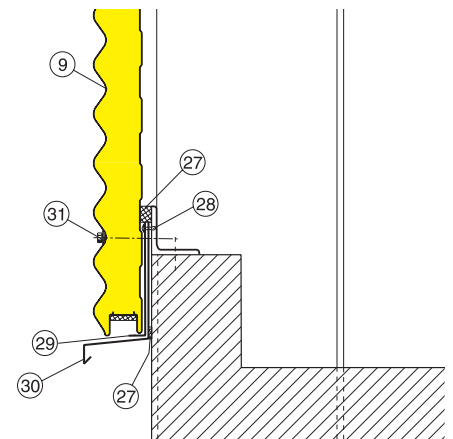
## Eaves with front-mounted gutter



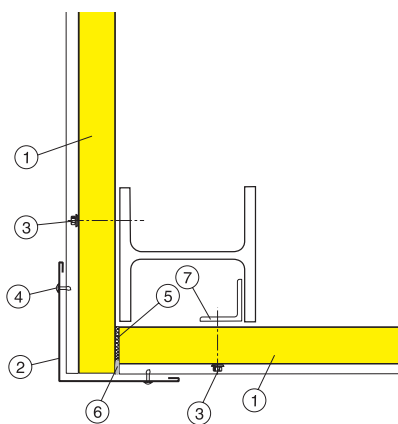
## Mono-pitch roof ridge



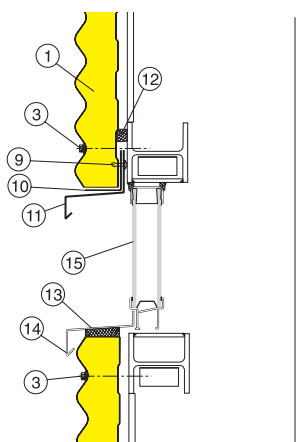
## Base point



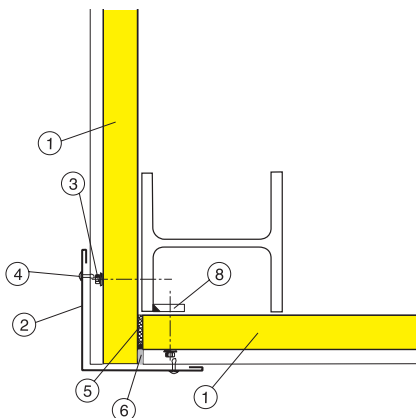
### External corner



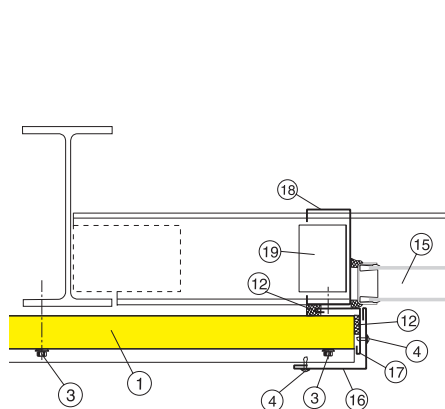
### Window connection



### External corner



### Window connection, side



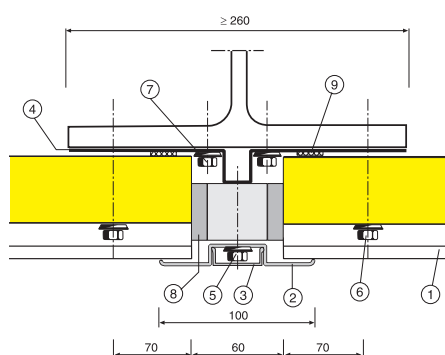
The non-binding suggestions for solutions illustrated below have been designed to keep connections as cost-effective as possible, easy to install, rain-proof, airtight, pleasing to the eye and durable. According to the energy conservation code (EnEV) the effects of thermal bridging on the connection details should be taken into account in the calculation of U-values

- 1 FischerTHERM WL
- 2 External corner profile
- 3 Self-sealing screw 6.3 x L - E 14/3 a ≤ 1 m
- 4 Blind rivet 4.8 Ø x 8.3 every 5th Wellenberg
- 5 Pre-compressed, permanently elastic sealing strip, single-sided, self-adhesive, illmod SFI 30 x 6 - 16
- 6 Permanently elastic sealing illseal N0 only on element's longitudinal joint
- 7 Angle as support
- 8 Flat bar as support
- 9 Blind rivet 4.8 Ø x 8.3 a ≤ 0.5 m
- 10 Mounting support bracket
- 11 Drip flashing
- 12 Permanently elastic sealing strip, single-sided self-adhesive illac 20 x 4
- 13 Pre-compressed, permanently elastic sealing strip, single-sided, self-adhesive, illmod SFI 30 x 6 - 16
- 14 Windowsill (not supplied)
- 15 Window (not supplied)
- 16 Side connection profile
- 17 Lateral cover profile
- 18 Rail
- 19 Angle

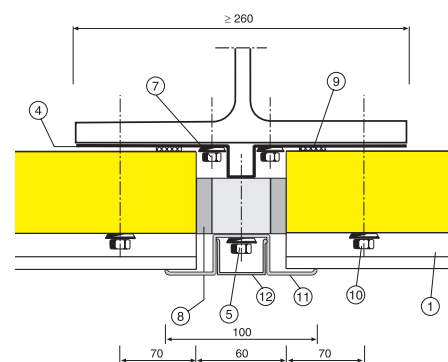
# FischerTHERM – Joint construction

According to the energy conservation code (EnEV) the effects of thermal bridging on the connection details should be taken into account in the calculation of U-values

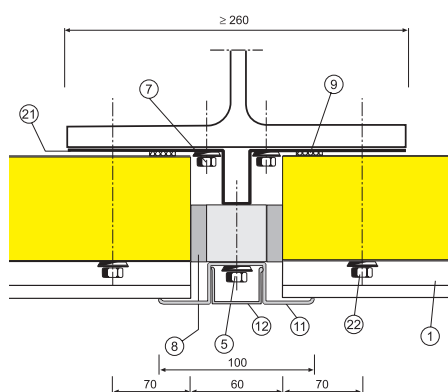
Joint construction, SL60/ML60 plus



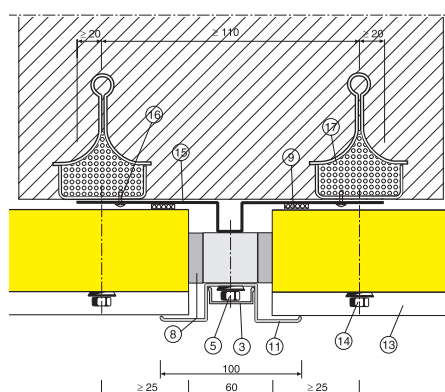
Joint construction, SL80/ML80 plus



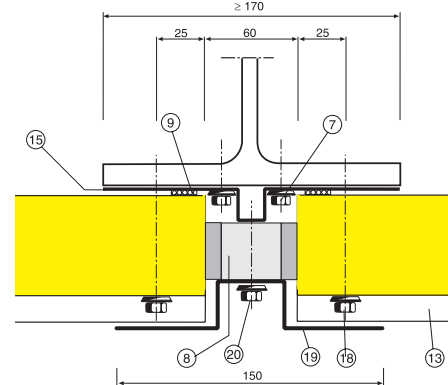
Joint construction, SL100/ML100 plus



Joint construction, WL 80



Joint construction, WL 100



- 1 FischerTHERM plus
- 2 Extruded aluminium joint profile (pILASTER STRIP 2)
- 3 Extruded aluminium cover profile (cover strip1)
- 4 Steel flashing (supporting profile1)
- 5 Self-sealing screw 6.5 x 45 - E 16, a ≤ 1.0 m
- 6 Self-sealing screw 6.3 x 64 - E 19
- 7 Self-sealing screw 6.3 x L - E 16, a ≤ 1.0 m
- 8 2K sealant
- 9 Permanently elastic sealing strip single-sided self-adhesive illac 20 x 4

- 10 Self-sealing screw 6.3 x 80-E19
- 11 Extruded aluminium joint profile (pILASTER STRIP1)
- 12 Extruded aluminium cover profile (cover strip2)
- 13 FischerTHERM WL
- 14 Self-sealing screw 6.3 x 80-E14/3
- 15 Steel flashing (supporting profile2)
- 16 Blind rivet Al/ 4.8 x 8,3, a ≤ 1.0 m
- 17 HTU rail with rigid foam filling
- 18 Self-sealing screw 6.3 x 100-E 14/3
- 19 Aluminium flashing (flashing pilaster strip)
- 20 Self-sealing screw 6.5 x 64-E 16, a ≤ 1.0 m
- 21 Steel flashing (supporting profile1)



# FischerTHERM – Installation instructions

## Delivery

The delivery must be inspected upon delivery for missing items and for any goods damaged in transit. All complaints must be registered immediately.

## Unloading

The pallets should be unloaded on site using an appropriate lifting device, usually a site crane. Strapping and not ropes or cables should be used. For pallets over 10 m in length, suitable cross-beams should be used. A fork lift can be used for pallets under 6 m in length. Place protective corners on the top side of the pack or place wooden spacers between the straps or roped (Fig. 1).

Care must be taken not to bend the pallets excessively. Pallets should be stacked in the order they will be needed. Do not stack more than two wooden pallets on top of one another (Fig. 2).

## Storage

Packs stored in the open air should not be stored directly on the ground but on sleepers running the length of the pack and rising slightly at one end.

Packs should be protected from sunlight, moisture and dirt, preferably with a tarpaulin. To prevent condensation and provide adequate ventilation, open the tarpaulin at the top and secure so that it cannot be blown off (Fig. 4).

Water must not be allowed to collect between the elements as this can cause corrosion.

## Protective foil

The protective foil wrapped round the elements should be removed immediately after installation, and no later than 4 weeks afterwards.

## Cutting to size

The necessary adjustments to size should be made using a compass saw or circular hand saw. The sawing blade should have extra fine teeth and should cut the material cold, so that the surface of the element is not damaged (Fig. 5).

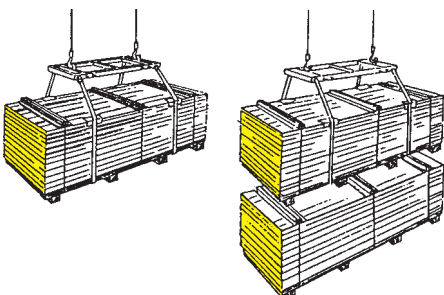
## Touch ups

Minor damage to Colorcoat HPS 200 Ultra® or polyester coatings resulting from installation should be repaired with a fine hair brush and air-drying touch-up paint on as small an area as possible. For wall elements, flaws should be repaired only if they extend down to the base material as the colour of the touch-up paint will vary from the coil coating in time as a result of ageing. Touch-up paint can be purchased from Fischer Profile.

## Airtightness

During installation, it should be ensured that all connections such as roof/wall, wall/wall or connections at openings or rows of windows are sealed, so that they are perfectly airtight, according to state of the art technology. Depending on the application, compressible open-cell polyurethane tape, PVC tape, plastic or elastic sealant or aluminium tape laminated with butyl rubber (repair tape) may be used. For larger apertures suitable PUR foam may also be used.

Figs. 1 and 2



Figs. 3 and 4

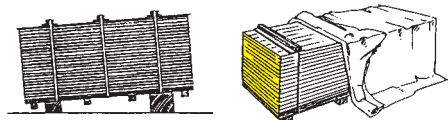
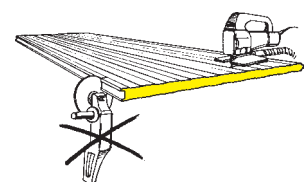


Fig. 5



### Installing FischerTHERM wall elements

All applicable accident prevention regulations as well as the "Guidelines for the assembly of profiled panels for roof, wall and decking construction" must be complied with during installation procedures.

Before commencing installation, the substructure should be checked for perpendicularity, surface flatness and necessary bearing widths. Inconsistencies should be reported to the supplier and rectification requested.

FischerTHERM wall elements are normally installed vertically, but they can also be placed horizontally. Before commencing installation, the elements should be sorted by marking the structural width on the substructure and applying single-sided self-adhesive sealing strip to seal the elements on the substructure, according to the installation drawing.

FischerTHERM elements should be handled with great care to prevent damage to the plastic coating on the outer skin. The elements must be carried upright to avoid bending them and the groove should not be used as a grip (Fig. 6).

The wall elements are raised behind the frame with a crane and installed. Manual installation is also usual, however, whereby the elements are manhandled onto the installation support and then brought into a vertical position using ropes (Fig. 7).

If the wall elements are to be installed horizontally, then both ends should be secured with screw clamps. The outer skin should be protected from damage by these clamps by the use of spacers.

During installation, the protective foil on the outer skin of the wall should be loosened at the top and bottom edges and in the area of the sealing screws. The elements should be set up between the drip flashing and the lower edge of the element and the element tongue pushed into the previously installed element

and pressed firmly (Fig. 8).

The wall elements must be exactly perpendicular, drilled and fixed to the rail with self-sealing screws. Electric screwdrivers with travel and torque controls should be used.

To ensure fault-free attachment of the sandwich elements the connecting element must be screwed in so far that the seal under the screw head appears slightly distorted. This in turn creates a slight depression in the upper skin of the sandwich element. This means that any slight distortion of the upper skin of the sandwich elements in the area of the screws is system-related and is not a flaw.

FischerTHERM plus elements must be fastened using the drill grooves provided. Lastly, the tongue of the next FischerTHERM plus element is pushed over the sealing screw into the groove of the previously-installed element, leaving an outer joint space of about 8 mm. Drilling swarf must be cleared from horizontal surfaces so as to prevent rust marks. A correctly installed wall should be perfectly straight along the lower edge of the element.

Fig. 6

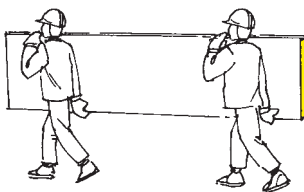


Fig. 7

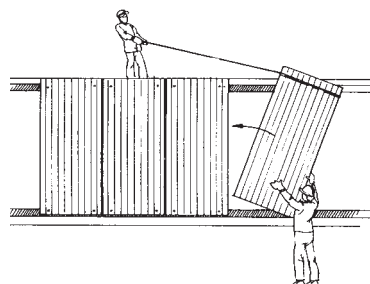
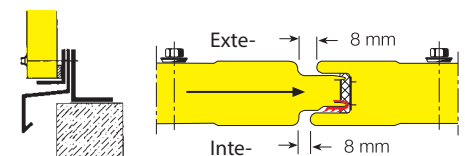


Fig. 8



Where long and short FischerTHERM elements are to be mounted one above the other, e.g. around a window frame, the longer panel should be fixed first, taking care to push the tongue and groove jointing together correctly. The short wall elements should then be installed to form a continuous line with the other elements.

#### Installing FischerTHERM DL roof elements

A crane should be used to lay the packs on the purlins of the roof structure. The pallets should be arranged so that the load is distributed evenly over the roof structure, preferably close to supports or trusses. The pallets must be prevented from slipping on inclined roof structures onto the substructure. Opened packs must be protected against adverse weather conditions.

When sorting the packs, consideration should be given as to the laying direction of the FischerTHERM DL roof elements.

It has in the past proved practicable and cost-effective to use a crane to lay the individual elements. Care must, however, be taken to ensure that the individual elements

are not subjected to undue bending during the craning operation. If a site crane is not used the roof elements should be carried from the pack to the installation site and not pushed or slid over roof sections that have already been laid.

Before commencing installation, at least one element should be laid next to the pack to act as a working platform. This element should be fixed temporarily using screw clamps. From this working platform the first element to be laid can be measured up and correctly positioned (Fig. 9).

Then the next element with the foam-free longitudinal overlap is positioned on the end rib of the previously installed element such that the longitudinal joint is closed. The joint spacing should be approx. 8 mm (Fig. 9).

In the case of horizontal installation, two elements are first laid out in the area of the eaves and then one in the ridge area so that they can overlap. It is important to follow the correct installation order in order to prevent tension (Fig. 10).

Prior to this, the vertical edge of the metal sheet must be cut with plate shears where the PUR rigid foam begins. Then the metal sheet is bent upwards into a horizontal position using broad crimping pliers (Figs. 10.1 and 2).

The roof elements are first fastened longitudinally to the substructure. They should be secured completely at the end of each working day.

For transverse overlaps two sealing strips should be applied to the element to be overlapped (Fig. 10).

A pre-compressed, permanently elastic sealing strip should be applied between the two foam areas in the area of the transverse joint in order to achieve thermal insulation and airtightness (see Detail page 12–13).

The roof elements should be fixed with self-sealing screws and the longitudinal joints fixed a maximum of 500 mm apart using self-drilling screws. Drilling swarf must be cleared away immediately so that it does not get into the coating on the roof elements and compromise the corrosion protection.

#### Tolerances

All components are subject to certain manufacturing tolerances. The sandwich elements shown here are subject to DIN EN 14509.

Fig. 9

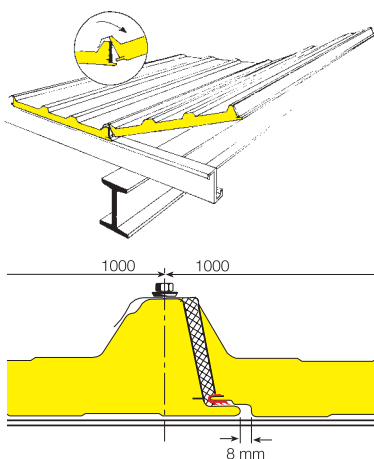
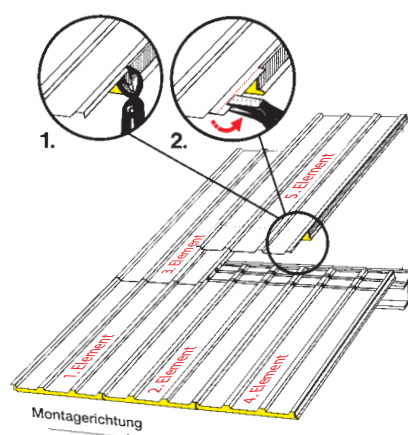


Fig. 10









# Sports hall, Burg Stargat

Coating:

25 µm RAL 1015, 9002, 9010

FischerTHERM plus 80







# Logistics and Management Centre IronMaxx® Nutrition GmbH, Hürth

Coating:

25 µm RAL 9007

FischerTHERM plus ML100



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Fischer Profil GmbH  
Part of the Tata Steel Group

## **Contact:**

### **Fischer Profil GmbH**

Waldstraße 67  
57250 Netphen-Deuz  
Germany

T +49 (0) 2737 508-0

F +49 (0) 2737 508-118

E [info@fischerprofil.de](mailto:info@fischerprofil.de)

Fischer Profil GmbH, owned in Germany, District Court Siegen HRB 3038.  
Company headquarters: Waldstrasse 67, 57250 Netphen-Deuz, Germany

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