SINTEF Technical Approval

TG 20624

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Amended: 11.11.2026
Valid until 01.06.2031
Provided listed on
www.sintefcertification.no

SINTEF confirms that

BauderPIR insulation boards

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document

1. Holder of the approval

Bauder AS
Lindebergsvegen 1
2016 Frogner
Norway
www.bauder.no

2. Product description

BauderPIR are insulation boards made of rigid polyisocyanurate (PIR), see Fig. 1.

BauderPIR FA (Fig. 1a) has black aluminium facing on both sides and rebate edges. It is available in thicknesses 60-240 mm.

BauderPIR FA TE (Fig. 1b) has the same core as BauderPIR FA and comes with straight edges. It has an aluminium facing on both sides, with a grit pattern printed in on the top facing. BauderPIR FA TE is available in thicknesses 20-240 mm.

BauderPIR FA Takfall (Fig. 1c) has the same core as BauderPIR FA and comes with 2 % or 1.6 % gradient and thicknesses $30 \leq t \leq 190$ mm.

BauderPIR T (Fig. 1d) has straight edges, no facing and is available in thicknesses 20-400 mm with or without gradient.

BauderPIR KOMPAKT (Fig. 1e) has straight edges, no facing and is available in thicknesses 100-160 mm, with or without gradient.

The boards are normally supplied with dimensions shown in Table 1.

3. Fields of application

BauderPIR insulation boards can be used thermal insulation in compact roofs with or without pedestrian traffic and terraces. An overview of the application area for the different types of BauderPIR insulation boards is given in Table 3.

BauderPIR insulation boards can be used as thermal insulation in compact roofs and terraces of buildings in Risk class 1-6 in Fire class 1, 2 and 3 with deviations from pre-accepted solutions in regulations on technical requirements for building works (TEK17) regarding covering and limitations to the insulated area as shown in Fig. 2-12, and described in Chapter 6 *Special conditions for use and installation* based on documentation given in Chapter 8 *Basis for the approval*.

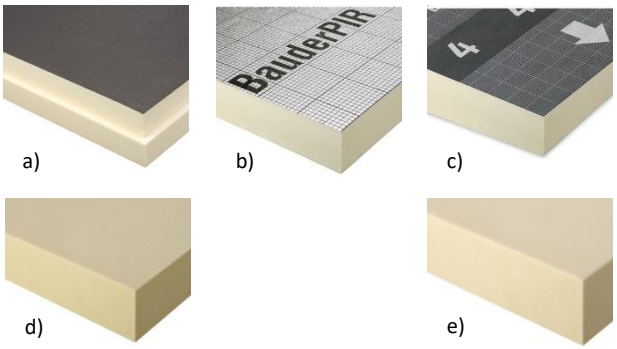


Fig. 1
Polyisocyanurate (PIR) insulation boards.
Figure: Bauder AS

Table 1
Dimensions and tolerances of BauderPIR insulation boards

Property	Test method EN	Value	Tolerance	Unit
Length				
- BauderPIR FA	822	2400	± 10	mm
- BauderPIR FA TE		1200	± 7,5	
- BauderPIR FA Takfall		1200	± 7,5	
- BauderPIR T		1200	± 7,5	
- BauderPIR Kompakt		600	± 5	
Width				
- BauderPIR FA	822	1200	± 7,5	mm
- BauderPIR FA TE		600	± 5	
- BauderPIR FA Takfall		1200	± 7,5	
- BauderPIR T		800	± 5	
- BauderPIR Kompakt		600	± 5	
Thickness				
- BauderPIR FA	823	60-240	Class T2 acc. EN 13165	mm
- BauderPIR FA TE		20-240		
- BauderPIR FA Takfall		30-190		
- BauderPIR T		Project	< 50 / ± 2	
- BauderPIR Kompakt		100-160	> 75 / +5, -3	
Squareness	824	≤ 5		mm/m
Flatness	825	≤ 10		mm
Density	-	ca. 30	-	kg/m³

The solutions with BauderPIR insulation boards on load-bearing steel sheets or concrete decks are shown in Fig. 2-11. BauderPIR insulation boards can be used as insulation on load-bearing wood-based structures (including cross laminated timber elements) in compact roofs and terraces, see fig. 12

The load-bearing structure itself must have documented fire resistance (R) according to regulations on technical requirements for building works (TEK17) §11-4. Load-bearing wood based structures must also have documented fire resistance EI for fire exposure from below where the fire resistance EI is at least as good as the fire resistance R.

When using BauderPIR on roofs and terraces with risk of fire spread between fire compartments, for example less than 8 m distance between buildings, or buildings with terraces and roofs at different height levels, the fire safety must be documented by the responsible enterprise for the project. Exception for small buildings with only one fire compartment where there is no risk of spread to or from other fire compartments.

For other applications than stated above, the safety in case of fire must be documented by specific analytical fire design.

4. Properties

Material properties

The product characteristics of BauderPIR insulation boards are shown in Table 2.

Table 3
BauderPIR insulation boards for flat roofs

Product name	Area of application
BauderPIR FA	Lightweight industrial roofs, residential buildings
BauderPIR FA Takfall	Lightweight industrial roofs, residential buildings and terrace insulation
BauderPIR FA TE	Terrace insulation
BauderPIR T	Insulation for flat roofs with or without slope
BauderPIR KOMPAKT	Infiltration-proof insulation with or without slope

Reaction to fire

BauderPIR insulation boards have class E according to EN 13501-1.

Fire resistance

Fire resistance of the structures shown in Fig. 2-12 is not part of this approval.

Documentation of fire resistance for specific structures can be requested Bauder AS.

Spread of fire

Several fire assessments to evaluate fire spread in compact roofs have been performed for BauderPIR. Results from fire tests and analyses of the results document that there is low risk of unacceptable escalating fire due to the BauderPIR insulation, and low risk of unacceptable horizontal and vertical flame spread in the insulation material.

Table 2
Product properties of BauderPIR insulation boards for flat roofs

Property	Test method EN	Class / level EN 13165		Unit
		Declaration of performance[1)]	Control limit[2)]	
Compressive strength - BauderPIR FA - BauderPIR FA TE - BauderPIR FA Takfall - BauderPIR T - BauderPIR Kompakt	826	 CS (10/Y)120 CS (10/Y)120 CS (10/Y)120 CS (10/Y)120 CS (10/Y)150	 CS (10/Y)120 CS (10/Y)120 CS (10/Y)120 CS (10/Y)120 CS (10/Y)150	-
Dimensional stability at specified temperature and humidity	1604	DS(70,90)3 DS(-20,-)2	DS(70,90)3 DS(-20,-)2	-
Tensile strength - BauderPIR FA - BauderPIR FA TE - BauderPIR FA Takfall - BauderPIR T - BauderPIR Kompakt	1607	 TR40 TR40 TR40 TR100 TR100	 TR40 TR40 TR40 TR100 TR100	-
Thermal conductivity λD - BauderPIR FA - BauderPIR FA TE - BauderPIR FA Takfall	12667	0,022	0,022	W/(mK)
Thermal conductivity λD - BauderPIR T - BauderPIR Kompakt	12667	20 ≤ t ≤ 79 = 0,027 80 ≤ t ≤ 119 = 0,026 120 ≤ t = 0,025	20 ≤ t ≤ 79 = 0,027 80 ≤ t ≤ 119 = 0,026 120 ≤ t = 0,025	W/(mK)
Reaction to fire	13501-1	E	E	-

1) Manufacturers Declaration of Performance, DoP
2) Control limit show values product has to satisfy during internal factory production control and audit testing.

5. Environmental aspects

Substances hazardous to health and environment

BauderPIR insulation boards contains no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

Effect on indoor environment

BauderPIR insulation boards are evaluated according to SINTEF Technical Approval – Health and Environmental Requirements version 09.09.2024. The products are not regarded as emitting any particles, gases or radiation that have a perceptible impact on the indoor climate, or to have any significant impact on health.

Waste treatment/recycling

BauderPIR insulation boards shall be sorted as residual waste. The product shall be delivered to an authorized waste treatment plant for energy recovery.

Environmental declaration

An environmental declaration (EPD) has been worked out according to EN 15804 for Bauder PIR insulation. For complete documentation see EPD no. EPD-IVP-20220220-IBE1-EN, EPD-IVP-20240424-IBE1-EN, EPD-IVP-20210003-IBE1-EN, Institut Bauen und Umwelt e.V. (IBU).

6. Special conditions for use and installation

Design

Structures with BauderPIR insulation boards must be designed with regards to sound properties, heat resistance, moisture safety, wind loads, load-bearing capacity and safety in case of fire.

Documentation of the fastening capacity for wind loads is not part of this approval. See Building Research Series 544.206.

Fire safety conditions

Fig. 2-12 show examples of approved use of BauderPIR in compact roofs and terraces.

For all solutions shown in figures 2-12, the fire resistance, and the load-bearing capacity during fire for the roof or terrace must be part of the structural design, including necessary protection of the load-bearing steel sheets (Fig. 2-5). The required fire resistance for building elements with load bearing and/or fire separating function in case of fire shall be determined according to the current building regulations (TEK) for each building project.

The use of products named BauderPIR in this approval includes all type of boards specified in Table 1.

Preconditions:

- The roof covering on top of BauderPIR must have fire classification B_{ROOF}(t2) based on fire testing according to CEN/TS 1187 test 2 with the relevant variant of BauderPIR insulation as underlay.
- Observations from fire tests have shown that the risk of horizontal fire spread in BauderPIR is small. A slow and limited horizontal fire spread should still be taken into account.
- BauderPIR can be laid as a single layer of minimum 50 mm thickness, or as a multilayer with a minimum combined thickness of 100 mm. There is no upper limit for thickness or number of layers. Each layer must be minimum 50 mm. In limited extent smaller thicknesses are allowed where it is necessary to achieve adequate inclination.
- BauderPIR with straight or rebate edges can be used both as single layer and multilayer. When laid as multilayer the joints must be staggered.
- On roof structures with profiled steel sheets, concrete elements (hollow block core or DT elements) or in-situ concrete, BauderPIR may be used without having to protect the underside with insulation of minimum A2-s1,d0. See the examples shown in Fig. 2, 6 and 8.
- On roof structures with profiled steel sheets, concrete elements (hollow block core or DT elements) or in-situ concrete, BauderPIR may be used without having to protect the top side with insulation of minimum A2-s1,d0 and without dividing the insulation into smaller areas of max. 400 m² with insulation of minimum A2-s1,d0 between. See the examples shown in Fig. 2, 6 and 8. Protection of top or bottom side or dividing of the insulation into smaller areas, is also not necessary when used on wood-based structures, see fig. 12.
- BauderPIR on steel sheets, wooden and concrete structures, can be used towards and around roof openings (as well as smoke ventilators and entrance of daylight) without the need to replace the insulation with insulation of minimum A2-s1,d0. See Fig. 7.
- In cases where a roof structure of load-bearing steel sheets has parapets or adjacent walls/facades with combustible materials, a 0,6 m wide barrier of 30 mm stone wool insulation with a minimum density of 150 kg/m^3 must be placed under the BauderPIR insulation towards the wall. Parapet with combustible materials must be protected on the roof side with minimum 30 mm stone wool insulation with a minimum density of 110 kg/m^3, mounted on a plate of plywood with a minimum thickness of 15 mm. See Fig. 4.
- In cases where a concrete roof structure has parapets made or adjacent walls/facades with combustible materials, the side facing the roof must be protected on the roof side with 50 mm stone wool insulation with a minimum density of 110 kg/m^3, mounted on a plate of plywood with a minimum thickness of 15 mm. It is not necessary to install a 0,6 m wide barrier of 30 mm stone wool insulation with a minimum density of 150 kg/m^3 under the BauderPIR insulation towards the wall. See Fig. 9.
- An alternative to protecting the walls/parapets is to replace the BauderPIR insulation with insulation with insulation of minimum A2-s1,d0 in a width of 0,6 m along the wall/parapet.
- In cases where adjacent walls/facades made with combustible materials, the roof side must be protected with non-combustible external cladding and two layers of Type GU gypsum boards with thickness 9 mm or similar as under-cladding/wind barrier on the wall. See Fig. 9.
- Gaps between concrete elements must be filled with for example concrete if they are over 50 mm wide. Gaps narrower than 50 mm do not need to be sealed or covered, see Fig. 8.
- Above fire separating walls the BauderPIR insulation must be replaced with insulation with insulation of minimum A2-s1,d0 in a width of 0,6 m on each side of the wall, see Fig. 5a and 5b.
- Above fire separating walls the profiles of load-bearing profiled steel sheets must be filled with insulation of minimum A2-s1,d0 on both sides of fire separating walls. See Fig. 5a and 5b. If the profiles of the steel sheets are perpendicular to the wall, the insulation of minimum A2-s1,d0 must extend 0,6 m out from the wall on each side to prevent leakage of smoke and gas.
- When fire walls or section walls project at least 0,5 m above roofs with load-bearing profiled steel sheets or concrete slabs, and the wall is made of or covered with non-combustible materials, BauderPIR can be used on the roof. BauderPIR does not have to be replaced with insulation of minimum A2-s1,d0 along the wall. See Fig. 10.

- In roofs where other combustible insulation materials are used (e.g. partially renovated roofs), combustible insulation must be separated from BauderPIR with minimum 0,6 m wide insulation of minimum A2-s1,d0.
- Penetrations in the roof construction and junctions between building elements must be designed such that the protection of the insulation and the fire resistance of the element, is not reduced. For more information on penetrations see SINTEF Building Research Design Guide 520.342 *Branntetting av gjennomføringer.*

Construction details
Construction details must follow the principles shown in Fig. 2-5 for roofs with load-bearing profiled steel sheets, in Fig. 6-10 for concrete structures, and in Fig. 11-12 for terraces.

For use in apartment buildings with covered terraces a specific fire safety design is required for each building to prevent fire spread to neighbouring apartments.

For other details and area of use not described in this document, see SINTEF Building Research Design Guide 520.339 *Bruk av brennbar isolasjon i bygninger*.

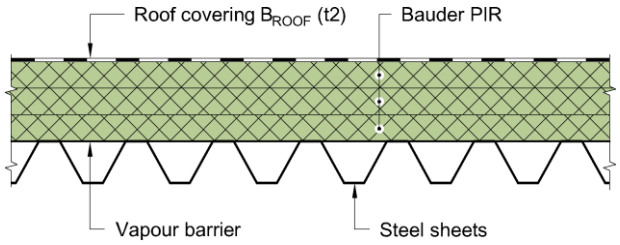


Fig. 2
BauderPIR insulation boards on load-bearing steel sheet roofs.
- No requirement for protection of the insulation on top or below.
- No requirement for dividing the insulation into smaller areas.
- The roof structure can be used in Fire class 1 and 2 provided the roof has documentation for the required fire resistance (R).

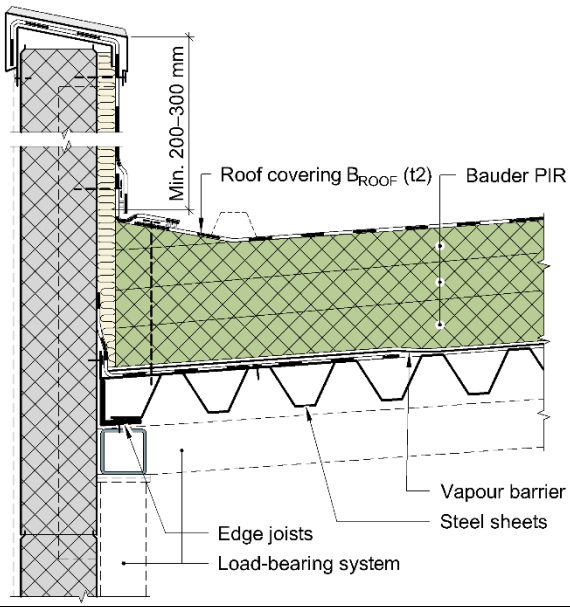


Fig. 3
BauderPIR insulation boards on load-bearing steel sheet roofs towards walls or parapets of sandwich elements with stone wool insulation (non-combustible materials) core or PIR elements approved for this field of application (e.g. FM-Global 4880).
- No requirement for protection of the insulation on top or below.
- No requirement for replacement with insulation of minimum A2-s1,d0 towards non-combustible walls and parapets.
- The structure can be used in Fire class 1 and 2 provided the roof has documentation for the required fire resistance (R).

NB!
The vertically installed mineral wool sheet on the parapet shall absorb temperature movement in the sandwich element and reduce thermal bridges. See more details on connections between steel sheet roofs and sandwich wall panels in TPF Informerer nr. 12 at www.tpf-info.org.

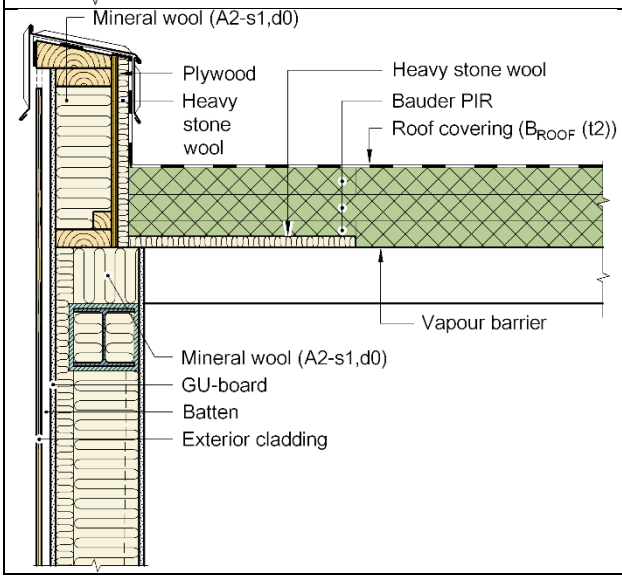


Fig. 4
Roof structure with load-bearing profiled steel sheets, insulated with BauderPIR insulation towards parapets and walls/ facades with combustible materials, such as wood.
- BauderPIR insulation boards must be protected on the underside towards the wall with a 0,6 m wide barrier of 30 mm stone wool insulation with minimum density 150 kg/m3.
- No requirement for protection of the insulation on top.
- Parapets consisting of or with combustible materials must on the side facing the roof be protected with minimum 50 mm stone wool insulation with minimum density 110 kg/m3, mounted on a plywood board with minimum thickness of 15 mm.
- As an alternative to protection of wall/parapet the insulation can be replaced with insulation of minimum A2-s1,d0 in width 0,6 m along the walls/parapet.
- The structure can be used in Fire class 1 and 2 provided the roof has documentation for the required fire resistance (R).

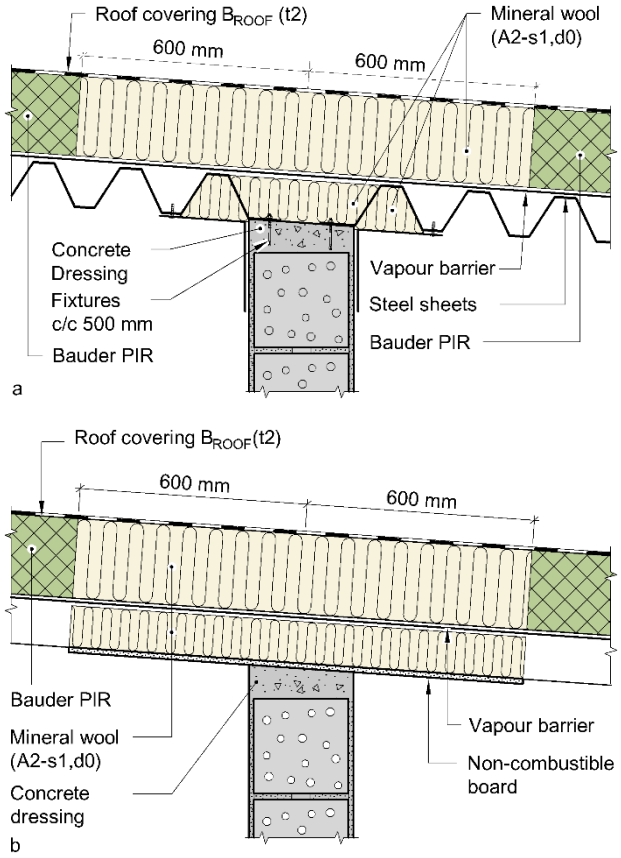


Fig. 5a and 5b
Fire cell limiting wall terminated under roof with load-bearing profiled steel plates insulated with BauderPIR insulation boards.

- The slab ceiling must be broken over the wall, i.e. slabs should not be continuously passed over the scheme.
- Requirement to use insulation of minimum A2-s1,d0 in a width of 0,6 m on each side of the wall.
- No requirement to cover the insulation on the upper or lower side.
- The profiles on both the top and bottom sides of the plate must be filled with insulation of minimum A2-s1,d0 (A2, s1,d0) on both sides of fire separating walls.
- If the steel plate profiles are perpendicular to the wall, insulation of minimum A2-s1,d0 must be mounted 0,6 m wide out from the wall on both sides of the profiles to prevent leakage of smoke and fire gases.
- The structure can be used in fire classes 1 and 2 provided that the roof structure has documented fire resistance (R).

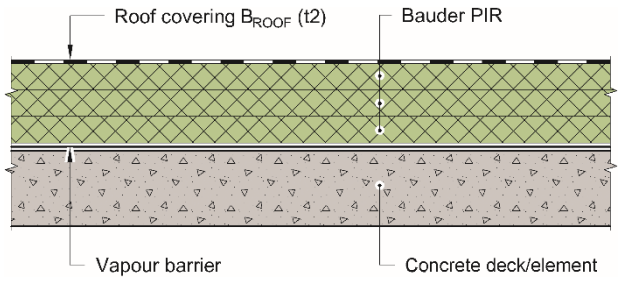


Fig. 6
BauderPIR insulation boards on concrete decks.

- No requirement for protection of the insulation on top or below.
- No requirement for dividing the insulation into smaller areas.
- No requirement for special sealing of joints ≤ 50 mm to protect the insulation.
- The structure can be used in Fire class 1, 2 and 3 provided the roof has documentation for the required fire resistance (R).

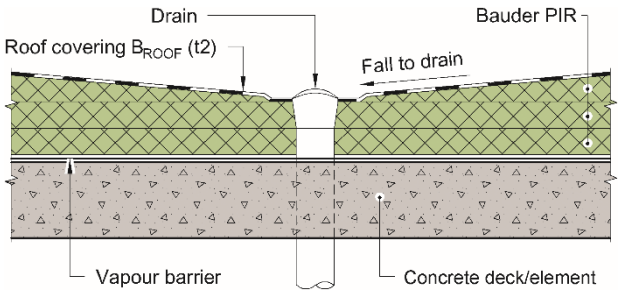


Fig. 7
BauderPIR insulation boards on concrete decks, with penetrations.

- No requirement for protection of the insulation on top or below.
- No requirement for dividing the insulation into smaller areas.
- No requirement for special sealing of joints ≤ 50 mm to protect the insulation.
- No requirement to replace the insulation with insulation of minimum A2-s1,d0 around drains or openings. In Fire class 1 and 2 this applies also to steel sheet and wooden constructions.
- The structure can be used in Fire class 1, 2 and 3 provided the roof has documentation for the required fire resistance (R).

Penetrations in the roof must not reduce the fire resistance of the roof or damage the protection of the insulation, and solutions with documentation for the use must be chosen.

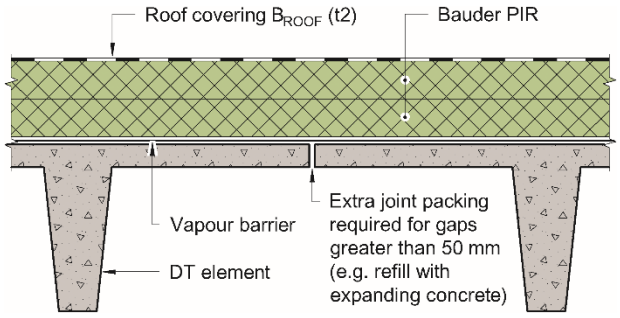


Fig. 8
BauderPIR insulation boards on concrete elements with small open joints.

- No requirement for protection of the insulation on top or below.
- No requirement for dividing the insulation into smaller areas.
- No requirement for special sealing of joints ≤ 50 mm to protect the insulation.
- The structure can be used in Fire class 1, 2 and 3 provided the roof has documentation for the required fire resistance (R).

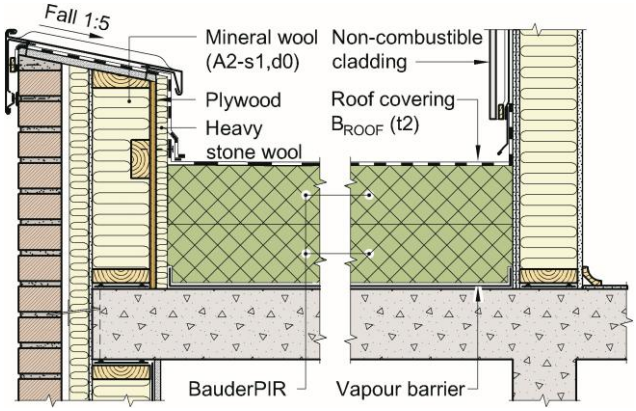


Fig. 9
BauderPIR insulation boards on concrete decks adjacent to parapets or walls/facades with combustible materials.

- No requirement to protect BauderPIR insulation boards on the underside towards the wall with 600 mm plate of stone wool insulation with minimum thickness 30 mm and minimum density 150 kg/m3.
- No requirement for protection of the insulation on top.
- Parapets must be protected on the side facing the roof with stone wool with minimum thickness 50 mm and minimum density 110 kg/m3, mounted on a plywood board with minimum thickness 15 mm.
- Adjacent external walls with combustible materials must be protected with 2 layers 9 mm GU plasterboards or equivalent as under cladding/wind barrier on the wall and with non-combustible external cladding.
- The structure can be used in Fire class 1 and 2 provided the roof has documentation for the required fire resistance (R).
- If the deck structure is made of concrete and runs continuously past the wall as shown to the right in the figure, the solution can also be used in fire class 3. It is assumed that the load bearing structure has documented fire resistance (R). Use of the solutions in Fire class 3 requires an analytical fire design of the entire structure, because it is constructed of, or includes, combustible materials.

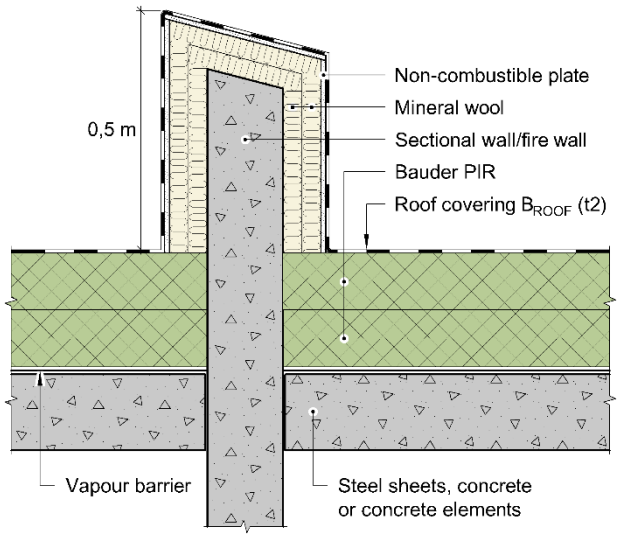


Fig. 10
BauderPIR insulation boards on concrete decks, with section or fire walls projecting 0,5 m above roofs. Walls made of or covered with non-combustible materials.

- No requirement for protection of the insulation on the top or below.
- No requirement for replacing the insulation with insulation of minimum A2-s1,d0 600 mm along the walls.
- The structure can be used in Fire class 1, 2 and 3 provided the roof has documentation for the required fire resistance (R).

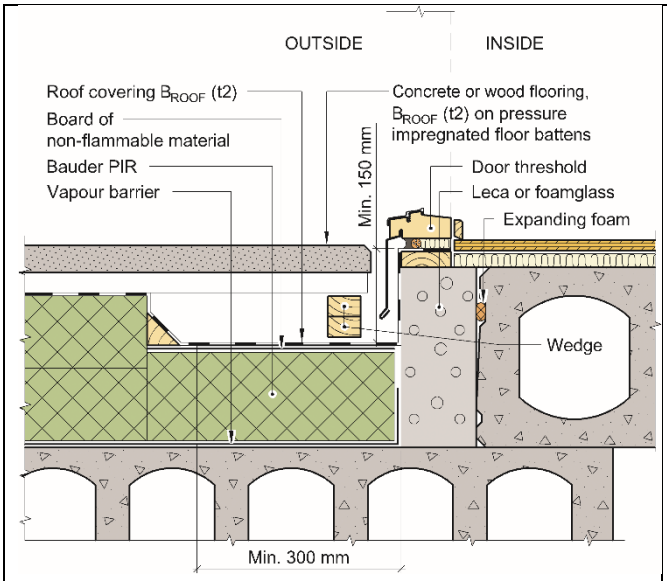


Fig. 11
Roof terraces with load-bearing hollow core concrete elements insulated with BauderPIR insulation boards, adjacent to walls/parapets with combustible materials and with terrace door.

- No requirement for protection of the insulation on top or below.
- No requirement for protection of BauderPIR insulation boards on the underside towards the wall with a 0,6 m wide stone wool board with a thickness of minimum 30 mm and density minimum 150 kg/m³.
- Regarding parapets or walls/facades, see Fig. 9.
- The structure can be used in fire class 1, 2 and 3 provided the roof has documentation for the required fire resistance (R).

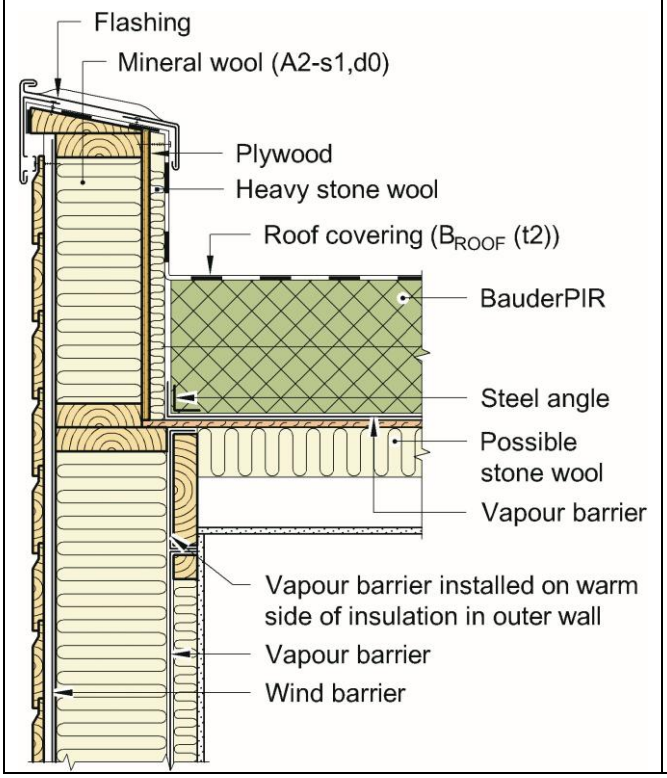


Fig. 12
Roof and terrace of wood structure or cross laminated timber with wooden board sheathing insulated with BauderPIR insulation boards, against adjacent parapet or wall/facade with combustible materials.

- No requirement for protection of the insulation on top. The fire resistance EI of the load-bearing structure must prevent exposure of heat on BauderPIR from below.
- No requirement to protect BauderPIR insulation boards on the underside towards the wall with 600 mm plate of stone wool insulation with minimum thickness 30 mm and minimum density 150 kg/m3.
- No requirement for dividing the insulation into smaller areas.
- Parapets must be protected on the side facing the roof with stone wool with minimum thickness 50 mm and minimum density 110 kg/m3, mounted on a plywood board with minimum thickness 15 mm.
- The structure can be used in fire class 1 and 2 provided the roof structure has documentation for the required fire resistance (R) and the supporting structure has fire resistance EI for fire load from below. Fire resistance EI must be at least as good as the fire resistance R of the supporting structure.

Installation
The insulation boards should be cut and installed in a way to avoid cavities in the insulation layer.

The slope of the finished roof surface shall be designed so rain and melt water are drained from the roof surface.

A vapour barrier must be installed at the inside of the insulation. Some insulation can also be installed on the inside of the vapour barrier. The thickness of the insulation on the inside of the vapour barrier should then be a maximum of 1/4 of the total insulation thickness.

See SINTEF Building Research Design Guide 525.207 *Kompakte tak* for further information on installation.

Furthermore, the installation guidelines from the manufacturer must be followed.

Transport and storage
BauderPIR insulation boards should be stored and transported protected from moisture, open flames, and direct solar radiation. The insulation boards should not be subjected to loading.

7. Factory production control

BauderPIR insulation boards are produced by Paul Bauder GmbH & Co. KG in Germany at the following manufacturing plants:

- Werk Landsberg/Halle; Brehnaer Straße 10, 06188 Landsberg b. Halle
- Werk Stuttgart; Korntaler Landstraße 63, 70499 Stuttgart
- Werk Herten; Im Emscherbruch 15, 45699 Herten

The holder of the approval is responsible for maintaining the factory production control to ensure that BauderPIR insulation boards are manufactured in compliance with the preconditions upon which this approval is based.

The manufacturing of BauderPIR insulation boards is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

The manufacturers have a quality management system is certified according to EN ISO 9001, EN ISO 14001 and EN ISO 50001.

8. Basis for the approval

The evaluation of BauderPIR insulation boards is based on reports owned by the holder of the approval.

Use of BauderPIR insulation boards deviates from pre accepted solutions given in the Norwegian Building Regulations (TEK17) with corresponding guidance document (VTEK17) and TPF informerer nr 6 with regards to covering flammable insulation. Approval is given on basis of fire testing and assessment of results given in report 2025:01186 dated 19.12.2025, issued by SINTEF.

9. Marking

BauderPIR insulation boards are labelled with product name, article number, a code for the manufacturing plant and the date of manufacture. The manufacturers name is printed on the packaging.

BauderPIR insulation boards are CE-marked in accordance with EN 13165.

The approval mark for SINTEF Technical Approval TG 20624 may also be used.

10. Liability

The holder/manufacturer has sole product liability according to current law. Claims can only be made against SINTEF under general law or other special grounds.

for SINTEF



Ola Asphaug
Godkjenningsleder