

A man with short brown hair, wearing a blue zip-up jacket over a plaid shirt, and grey and black work gloves, is standing next to large, vertical timber logs. He is smiling at the camera. The background is a blurred outdoor setting with trees and a cloudy sky.

INSPIRATIONS
CLOSE TO YOU

TIMBER CONSTRUCTION

PRODUCTS AND
TECHNICAL INFORMATION

**INSPIRATIONS
CLOSE TO YOU**

ONE PFLEIDERER: INSPIRATIONS CLOSE TO YOU – FOR YOUR WORK AND YOUR REQUIREMENTS.

The Pfleiderer brand has reorganised itself. A new, international and powerful brand has emerged from the amalgamation of Pfleiderer Grajewo and Pfleiderer GmbH.

In the course of this process we have been able to harmonise all the production locations, simplify the processes and optimise our product range and services. Thus, you now have access to a range of decors, surface textures and sizes that are identical throughout the world and unique in its breadth and depth.

For you, One Pfleiderer means: a strong partner for high-quality wood-based panels with outstanding decorative surface expertise, customer-oriented service and a consistent focus on sustainability. And last but not least, countless creative and practice-oriented “inspirations close to you”.

SOPHISTICATED, SUSTAINABLE AND ROBUST: TIMBER CONSTRUCTION WITH PFLEIDERER.

Contemporary timber construction materials that are safe to use in living spaces must meet a range of high standards. Stability, properties related to building physics and the emissions of the materials used are decisive parameters in this respect.

Pfleiderer sells high-quality solutions for contemporary timber construction applications. The extensive choice of high-quality and ecological wood-based material panels with various properties covers the wide range of areas where timber construction materials are used and guarantees optimum results.

Robust, moisture resistant and low on emissions, the products are also available with PEFC™ or FSC® certification on request.

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PRODUCTS FOR USE IN TIMBER CONSTRUCTION



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LivingBoard

Formaldehyde-free glued particleboard for healthy living in modern timber construction.



Areas of application

- ideal as bracing in timber frame and timber panel construction
- roof and wall sheathing, roof boarding
- available as tongue-and-groove panel for high-quality floor constructions

Properties

- formaldehyde-free and moisture-resistant PU-gluing
- isotropic strengths in longitudinal and transversal directions
- low thickness and edge swelling
- available as PEFC™ or FSC® certified panel upon request

Advantages

- low VOC emissions due to the use of low-resin wood
- user-safe thanks to uniform product properties
- isotropic strength properties in all panel directions ensure optimised cut-to-size
- low risk of mould growth in humid areas thanks to moisture-resistant PU bonding.
- also suitable for lamination

Materials used

- made only from fresh-cut roundwood and sawmill residues, no use of recycled material
- formaldehyde-free PU bonding agent



FSC® license code: FSC-C011773

LivingBoard P4

dry area, load-bearing, 100 % formaldehyde-free gluing

For those who need a true all-rounder in ecological timber construction and appreciate healthy living products, there is nothing like LivingBoard P4. This panel keeps its promises and is recommended as an ecological construction product for healthy living. Pure nature for greater quality of life.

Mechanical and physical properties LivingBoard P4

Properties	Thickness in mm			
	> 10 to 13	> 13 to 20	> 20 to 25	> 25 to 32
Medium raw density (EN 323) in kg/m³	730–660	680–650	650–630	640–620
Bending strength (EN 310) in N/mm²	16	15	13	11
Transverse dimensional stability (EN 319) in N/mm²	0,40	0,35	0,30	0,25
Modulus of elasticity in bending (EN 310) in N/mm²	2.300	2.300	2.050	1.850
Thickness swelling (EN 317) in %	16	15	15	15
Reaction to fire class (DIN 4102 / EN 13986)	B2 / D-s2, d0			
Thermal conductivity λ (EN 13986)	0,13 W/mK			
Formaldehyde emission (EN 717-1)	≤ 0,03 ppm			
Service class (DIN 1052)	1 + 2			
Water vapour diffusion resistance (μ-value) humid / dry (DIN 20000-1): 50/100				

LivingBoard P4 is produced in conformity with DIN EN 312 P4, subject to external testing and approved by German building authorities according to CE EN 13986-P4. All values are guide values and reflect our current production conditions. Subject to modifications.

Dimensions LivingBoard P4: Formats and thicknesses upon request, from a minimum order quantity of 70 m³ per order, per thickness..

Further information and technical data at www.pfleiderer.com

LivingBoard P5

humid area, load-bearing, 100 % formaldehyde-free gluing

Pure nature for greater quality of life: As a recommended ecological construction product for healthy living, LivingBoard P5 is the first choice in ecological timber construction. An all-round panel that keeps its promises.

Mechanical and physical properties LivingBoard P5

Properties	Thickness in mm			
	> 10 to 13	> 13 to 20	> 20 to 25	> 25 to 32
Medium raw density (EN 323) in kg/m³	750–680	700–660	670–650	660–640
Bending strength (EN 310) in N/mm²	18	16	14	12
Transverse dimensional stability (EN 319) in N/mm²	0,45	0,45	0,40	0,35
Modulus of elasticity in bending (EN 310) in N/mm²	2.550	2.400	2.150	1.900
Thickness swelling (EN 317) in %	11	10	10	10
Transversal internal bond after boil-test (EN 1087-1) in N/mm²	0,15	0,14	0,12	0,11
Reaction to fire class (DIN 4102 / EN 13986)	B2 / D-s2, d0			
Thermal conductivity λ (EN 13986)	0,13 W/mK			
Formaldehyde emission (EN 717-1)	≤ 0,03 ppm			
Service class (DIN 1052)	1 + 2			
Water vapour diffusion resistance (μ-value) humid / dry (EN 12572): 100/100				

LivingBoard P5 is produced in conformity with DIN EN 312 P5, subject to external testing and approved by German building authorities according to CE EN 13986-P5. All values are guide values and reflect our current production conditions. Subject to modifications.

Dimensions LivingBoard P5 square-edged – Dimensions

Format in mm	Thickness in mm				
	13	16	19	22	25
2.500 x 1.250	72	56	48	40	32
5.040 x 2.580	18	14	12	10	8
Other formats and thicknesses on request					

Dimensions LivingBoard P5 floor panels – Dimensions

Format in mm	Format in mm	Thickness in mm			
Overall dimension	Laid measure	13	16	19	25
2.510 x 635*	2.500 x 625		50	40	35

* The format data refer to the overall dimensions incl. tongue.

LivingBoard P7

dry area, heavy-duty, load-bearing, 100 % formaldehyde-free gluing

The heavy-duty board: LivingBoard P7 is particularly suitable for load-bearing purposes. Designed for ecological timber construction, it is distinguished by the best biological and ecological building properties.

Mechanical and physical properties LivingBoard P7

Properties	Thickness in mm		
	>10 to 13	>13 to 20	>20 to 25
Medium raw density (EN 323) in kg/m³	750–720	730–710	720–690
Bending strength (EN 310) in N/mm²	22	20	18,5
Transverse dimensional stability (EN 319) in N/mm²	0,75	0,70	0,65
Modulus of elasticity in bending (EN 310) in N/mm²	3.350	3.100	2.900
Thickness swelling (EN 317) in %	10	10	10
Transversal internal bond after boil-test (EN 1087-1) in N/mm²	0,25	0,23	0,20
Reaction to fire class (DIN 4102 / EN 13986)	B2 / D-s2, d0		
Thermal conductivity λ (EN 13986)	0,14 W/mK		
Formaldehyde emission (EN 717-1)	≤ 0,03 ppm		
Service class (DIN 1052)	1 + 2		
Water vapour diffusion resistance (μ-value) humid / dry (EN 12572): 100/100			

LivingBoard P7 is produced in conformity with DIN EN 312 P7, subject to external testing and approved by German building authorities according to CE EN 13986-P7. All values are guide values and reflect our current production conditions. Subject to modifications.

Dimensions LivingBoard P7: Formats and thicknesses upon request, from a minimum order quantity of 70 m³ per order, per thickness.

LivingBoard face, LivingBoard face contiprotect

Boards with coarse surface layer and with a sanded or contiprotect face. The low-emission and natural solution for modern timber construction.



Areas of application

- ideal as bracing in timber frame and timber panel construction
- roof and wall cladding; interior and exterior roof boarding
- available as tongue-and-groove panel for high-quality floor structures

Properties

- coarse surface layer, natural wood look
- formaldehyde-free and moisture-resistant PU-gluing
- isotropic strengths in longitudinal and transversal directions
- low thickness and edge swelling
- available as PEFC™ or FSC® certified panel upon request

Advantages

- low VOC emissions due to the use of low-resin wood
- isotropic strength properties in all panel directions ensure optimised cut-to-size
- thanks to its heat-treated contiprotect surface, LivingBoard face contiprotect provides short-term protection against driving-rain.
- low risk of mould growth in humid areas thanks to moisture-resistant PU bonding.

Materials used

- made only from fresh-cut roundwood and sawmill residues, no use of recycled material
- formaldehyde-free PU bonding agent



FSC® license code: FSC-C011773

LivingBoard face P5, LivingBoard face contiprotect P5

humid area, load-bearing, 100 % formaldehyde-free gluing

LivingBoard face P5 (sanded) and LivingBoard face P5 contiprotect (unsanded) are suited for all applications where high loads, moisture resistance and formaldehyde-free gluing play an important role. Due to the unsanded contiprotect surface of LivingBoard faceP5, the absorption of moisture is considerably delayed.

Mechanical and physical properties LivingBoard face P5 and LivingBoard face P5 contiprotect

Properties	Thickness in mm			
	>10 to 13	>13 to 20	> 20 to 25	> 25 to 32
Medium raw density (EN 323) in kg/m³	750–680	700–660	670–650	660–640
Bending strength (EN 310) in N/mm²	18	16	14	12
Transverse dimensional stability (EN 319) in N/mm²	0,45	0,45	0,40	0,35
Modulus of elasticity in bending (EN 310) in N/mm²	2.550	2.400	2.150	1.900
Thickness swelling (EN 317) in %	11	10	10	10
Transversal internal bond after boil-test (EN 1087-1) in N/mm2	0,15	0,14	0,12	0,11
Reaction to fire class (DIN 4102 / EN 13986)	B2 / D-s2, d0			
Thermal conductivity λ (EN 13986)	0,13 W/mK			
Formaldehyde emission (EN 717-1)	< 0,03 ppm			
Service class (DIN 1052)	1 + 2			
Water vapour diffusion resistance (μ-value) humid / dry (EN 12572): 100/100				

LivingBoard face P5 and LivingBoard face P5 contiprotect are produced in conformity with DIN EN 312 P5, subject to external testing and approved by German building authorities according to CE EN 13986-P5. Contiprotect = unsanded. All values are guide values and reflect our current production conditions. Subject to modifications.

Dimensions LivingBoard face P5 contiprotect square-edged – items per pack

Format in mm	Thickness in mm				
	12	15	18	22	25
2.500 x 1.250	72	56	48	40	32
5.040 x 2.580	18	14	12	10	8
2.800 x 1.250		56			
3.000 x 1.250		56			

Dimensions LivingBoard face P5 contiprotect floor panels – items per pack

Format in mm	Format in mm	Thickness in mm				
Overall dimension	Laid measure	12	15	18	22	25
2.510 x 635*	2.500 x 625	60	50	40	35	32

Dimensions LivingBoard face P5: Formats and thicknesses upon request, from a minimum order quantity of 70 m³ per order, per thickness.

Further information and technical data at www.pfleiderer.com

LivingBoard face P7, LivingBoard face contiprotect P7

humid area, heavy-duty, load-bearing, 100 % formaldehyde-free gluing

LivingBoard face P7 (sanded) and LivingBoard face P7 contiprotect (unsanded) are suited for all applications where high loads, moisture resistance and formaldehyde-free gluing play an important role. Due to the unsanded contiprotect surface of LivingBoard face P7, the absorption of moisture is considerably delayed.

Mechanical and physical properties LivingBoard face P7 and LivingBoard face P7 contiprotect

Properties	Thickness in mm		
	>10 to 13	>13 to 20	>20 to 25
Medium raw density (EN 323) in kg/m³	750–720	730–710	720–690
Bending strength (EN 310) in N/mm²	22	20	18,5
Transverse dimensional stability (EN 319) in N/mm²	0,75	0,70	0,65
Modulus of elasticity in bending (EN 310) in N/mm²	3.350	3.100	2.900
Thickness swelling (EN 317) in %	10	10	10
Transversal internal bond after boil-test (EN 1087-1) in N/mm²	0,25	0,23	0,20
Reaction to fire class (DIN 4102 / EN 13986)	B2 / D-s2, d0		
Thermal conductivity λ (EN 13986)	0,13 W/mK		
Formaldehyde emission (EN 717-1)	≤ 0,03 ppm		
Service class (DIN 1052)	1 + 2		
Water vapour diffusion resistance (μ-value) humid / dry (EN 12572): 100/100			

LivingBoard face P7 and LivingBoard face P7 contiprotect are produced in conformity with DIN EN 312 P7, subject to external testing and approved by German building authorities according to CE EN 13986-P7.
All values are guide values and reflect our current production conditions. Subject to modifications.

Dimensions LivingBoard face P7: Formats and thicknesses upon request, from a minimum order quantity of 70 m³ per order, per thickness.

Dimensions LivingBoard face contiprotect P7: Formats and thicknesses upon request, from a minimum order quantity of 70 m³ per order, per thickness.





LIVINGBOARD

OPTIMUM TECHNOLOGY AND ECOLOGY, AND VERY EASY TO WORK WITH

Advantages over standard OSB

Product advantages

- 80 % higher bending strength perpendicular to the grain than standard OSB/3
- thickness swelling down by 33 % compared with standard OSB/3

Environmental advantages

- formaldehyde emissions 70 % below the legal E1 threshold
- lower VOC emissions than standard OSB
- more resource-saving than standard OSB

Advantages for processors

- charring rate 8 % lower than standard OSB
- airborne sound insulation 5 % lower than standard OSB
- unlike standard OSB, the panel is suited for non-directional use
- user-safe quality since 1978

PremiumBoard MFP P5

The versatile multi-purpose panel for timber construction.

Areas of application

- wall bracing
- roof cladding
- floor structure
- packaging
- site fencing

Properties

- moisture-resistant
- attractive natural wood look
- isotropic strengths in longitudinal and transversal directions
- approved building certification in accordance with CE EN 13986 – P5
- sanded surface
- available as PEFC™ or FSC® certified panel upon request

Advantages

- low VOC emissions due to the use of low-resin wood
- isotropic strength properties in all panel directions ensure optimised cut-to-size
- quick and precise laying thanks to symmetric tongue-and-groove profile
- problem-free nailing, screwing and stapling even on edges

Materials used

- made only from fresh-cut roundwood and sawmill residues, no use of recycled material
- moisture-resistant aminoplast resin



FSC® license code: FSC-C011773

PremiumBoard MFP P5

humid area, load-bearing

From wall sheathing to roof decking to floor construction: This multi-purpose panel is suited for a great variety of applications. It combines good strength values and moisture resistance with sturdiness, high load-bearing capacity and a decorative appearance. Given its uniform strength values both in longitudinal and transversal directions, PremiumBoard MFP P5 is suited for non-directional use.

Mechanical and physical properties PremiumBoard MFP P5

Properties	Thickness in mm		
	>10 to 13	>13 to 20	> 20 to 25
Medium raw density (EN 323) in kg/m³	730–680	700–660	670–650
Bending strength (EN 310) in N/mm²	18	16	14
Transverse dimensional stability (EN 319) in N/mm²	0,45	0,45	0,40
Modulus of elasticity in bending (EN 310) in N/mm²	2.550	2.400	2.150
Thickness swelling (EN 317) in %	11	10	10
Transversal internal bond after boil-test (EN 1087-1) in N/mm²	0,15	0,12	0,12
Reaction to fire class (DIN 4102 / EN 13986)	B2 / D-s2, d0		
Thermal conductivity λ (EN 13986)	0,13 W/mK		
Formaldehyde emission (EN 717-1)	< 0,1 ppm		
Service class (DIN 1052)	1 + 2		
Water vapour diffusion resistance (μ-value) humid / dry (DIN 20000-1): 50/100			

PremiumBoard MFP P5 is produced in conformity with DIN EN 312 P5.
All values are guide values and reflect our current production conditions. Subject to modifications.

Dimensions PremiumBoard MFP P5 – items per parcel

Product	Format in mm	Format in mm	Edge	Thickness in mm					
	Overall dimension	Laid measure		10	12	15	18	22	25
PremiumBoard MFP-floor panel	2.500 x 615*	2.490 x 605	Tongue and groove –	60	50	40	35	32	
PremiumBoard MFP blunt	2.500 x 1.250		square-edged	80	72	56	48	40	32
	2.800 x 1.196		square-edged	–	72	–	–	–	–
	5.030 x 1.250		square-edged	20	18	14	12	10	8
	5.030 x 2.500		square-edged	20	18	14	12	10	8

*The format data refer to the overall dimensions incl. tongue.

Further information and technical data at www.pfleiderer.com

CHARACTERISTIC VALUES

For structural design

	Strength values in N/mm²						Rigidity values in N/mm²		
Thickness t _{nom}	Deflection f _m	Pulling f _t	Pressure f _c	Shear perpendicular to the grain f _v	Shear parallel to the grain f _r		Deflection E _m	Pulling and pressure E _t , E _c	Shear perpendicular G _v
PremiumBoard MFP P5									
> 6 – 13 mm	15,0	9,4	12,7	7,0	1,9		3.500	2.000	960
> 13 – 20 mm	13,3	8,5	11,8	6,5	1,7		3.300	1.900	930
> 20 – 25 mm	11,7	7,4	10,3	5,9	1,5		3.000	1.800	860
LivingBoard P4									
> 6 – 13 mm	14,2	8,9	12	6,6	1,8		3.200	1.800	860
> 13 – 20 mm	12,5	7,9	11,1	6,1	1,6		2.900	1.700	830
> 20 – 25 mm	10,8	6,9	9,6	5,5	1,4		2.700	1.600	770
LivingBoard P5 / LivingBoard face P5 / LivingBoard face contiprotect P5									
> 6 – 13 mm	15	9,4	12,7	7	1,9		3.500	2.000	960
> 13 – 20 mm	13,3	8,5	11,8	6,5	1,7		3.300	1.900	930
> 20 – 25 mm	11,7	7,4	10,3	5,9	1,5		3.000	1.800	860
LivingBoard P7 / LivingBoard face P7 / LivingBoard face contiprotect P7									
> 6 – 13 mm	18,3	11,5	15,5	8,6	2,4		4.600	2.600	1.250
> 13 – 20 mm	16,7	10,6	14,7	8,1	2,2		4.200	2.500	1.200
> 20 – 25 mm	15,4	9,8	13,7	7,9	2		4.000	2.400	1.150

Characteristic values are taken from DIN EN 12369-1 and apply to load-bearing applications relevant to type P4 in service class 1 conditions, and relevant to types P5 and P7 in service class 2 conditions.

StyleBoard MDF.RWH

The natural, diffusion-permeable fibreboard for wall and roof.

Areas of application

- ideal as roofing underlay and second water-repellent layer
- external, diffusion-permeable wall bracing

Properties

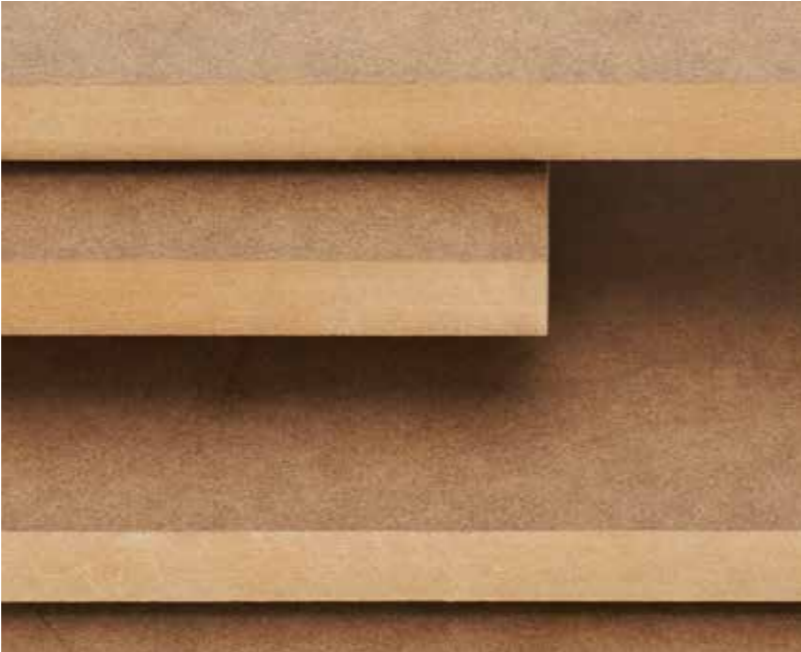
- 100 % formaldehyde-free and moisture-resistant gluing
- diffusion-permeable
- isotropic strengths in longitudinal and transversal directions

Advantages

- optimum water drainage through specially designed tongue-and-groove profile
- can be used as temporary roof for a short period
- wind- und waterproof tongue-and-groove joint
- approved building certification in accordance with CE EN 13986 – MDF.RWH
- low risk of mould growth in humid areas thanks to hydrophobic moisture-resistant PU bonding

Materials used

- made only from fresh-cut roundwood and sawmill residues
- formaldehyde-free PU bonding agent



FSC® license code: FSC-C011773

StyleBoard MDF.RWH

humid area, 100 % formaldehyde-free gluing

StyleBoard MDF.RWH is a dry-process fibreboard produced in accordance with EN 622-5, suited as underlay support for wall and roof in line with EN 14964 and the German Roofers Association (ZVDH) regulations.

Mechanical and physical properties StyleBoard MDF.RWH

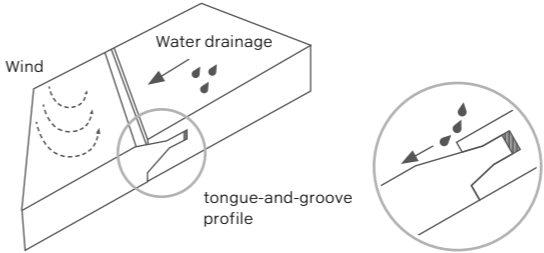
Properties	Thickness in mm 16
Medium raw density (EN 323) in kg/m³	> 600
Bending strength (EN 310) in N/mm²	14
Transverse dimensional stability (EN 319) in N/mm²	0,3
Modulus of elasticity in bending (EN 310) in N/mm²	1.600
Thickness swelling (EN 317) in %	10
Transversal internal bond after boil-test (EN 1087-1) in N/mm2	0,06
Reaction to fire class (DIN 4102 / EN 13986)	B2 / D-s2, d0
Thermal conductivity λ (EN 13986)	0,10 W/mK
Formaldehyde emission (EN 717-1)	< 0,1 ppm
Service class (DIN 1052)	1 + 2
Water vapour diffusion resistance (μ-value) humid / dry: 10/10	

Style Board MDF.RWH is produced in conformity with DIN 622-5 MDF.RWH, subject to external testing and approved by German building authorities according to CE EN 13986 MDF.RWH. All values are guide values and reflect our current production conditions. Subject to modifications. This type of panel is also suited for very short (e.g. wind) or short load duration periods (e.g. snow) if used as underlay support for roofs and walls.

Dimensions StyleBoard MDF.RWH, items per pack

Product	Format in mm Overall dimension	Format in mm Laid measure	Edge	Thickness in mm 16
StyleBoard MDF.RWH – Tongue and groove	2.510 x 1.260*	2.500 x 1.250	4-sided tongue & groove	–
	2.510 x 635*	2.500 x 625	4-sided tongue & groove	
StyleBoard MDF.RWH	5.050 x 2.580		blunt	on request

*The format data refer to the overall dimensions incl. tongue.



Further information and technical data at www.pfleiderer.com



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BUILDING PHYSICS –
HEAT PROTECTION

We distinguish between heat protection in summer and in winter. Relevant specifications are contained in DIN 4108; the relevant requirements are laid down in the German Energy Savings Ordinance (EnEV).

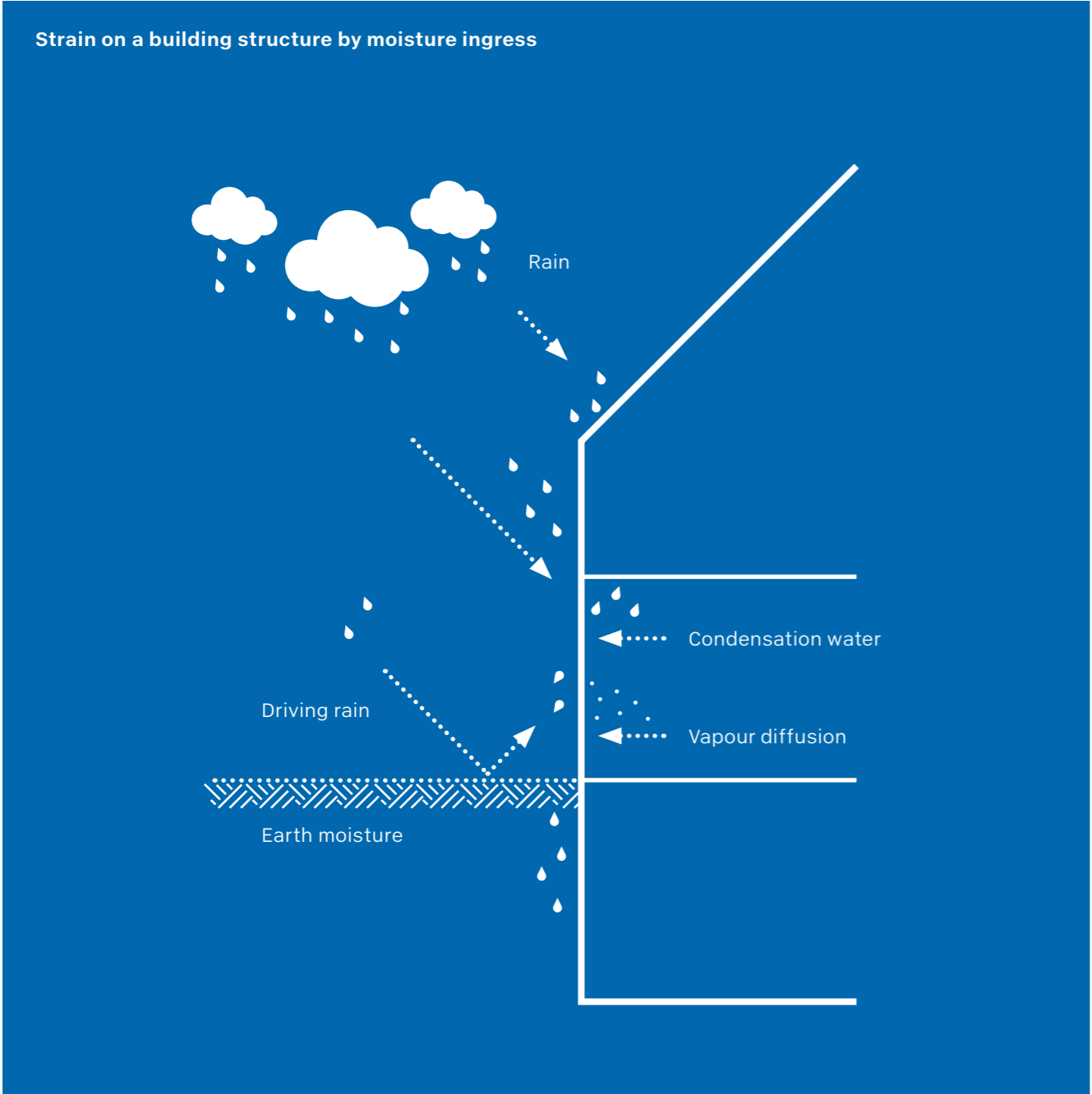
Heat protection in winter	Heat protection in summer
<p>Heat protection in winter aims at reducing heat losses in buildings, ensuring comfortable indoor climate conditions and providing a permanent protection against climate-related moisture ingress. Heat losses are to be optimised to comply with the thresholds of the German Energy Savings Ordinance (EnEV). This reduces heating costs, CO2 emissions and the consumption of fossil fuels and prevents condensation. Heat protection in winter is to safeguard sufficiently high surface temperatures of structural components in interiors to prevent condensation at normal room temperature.</p> <p>Tips</p> <ul style="list-style-type: none">● Use structural components with a high level of thermal insulation; this raises the surface temperature of structural components in the interior and allows the room temperature to be lowered.● Use solar radiation as a source of energy (e.g. solar energy or electricity generated by photovoltaic systems)● Take measures to form an airtight building shell	<p>Heat protection in summer serves to limit the heating of rooms by solar radiation, in order to create a comfortable room climate without using technical devices like airconditioning. Summer heat protection refers to all measures performed to reduce heat from solar radiation. These are preferably shading devices, such as balconies, rolling shutters, awnings etc. The requirements for heat protection in summer are regulated by the DIN 4108 (thermal insulation in buildings) standard. The heat storage capacity of the construction products used can contribute to good heat protection in summer.</p> <p>Tips</p> <ul style="list-style-type: none">● Use construction products with a low thermal conductivity.● The shading of windows, e.g. through balconies, rolling shutters and awnings is recommended.● Take measures to form an airtight building shell.



Air tightness is essential for adequate heat protection in the building. Air tightness is measured using the Blower Door Test. A pressure differential is created in the building in order to test the air exchange rate and loss of air and thereby the air tightness of a building. Due to its high raw density and uniform structure, LivingBoard offers a very high degree of air tightness*.

* The air tightness of our products is tested by an independent research institute in conformity to DIN EN 1026.

**BUILDING PHYSICS –
MOISTURE PROTECTION**



Moisture protection is designed to protect the building structure against moisture ingress due to weathering and wear and tear and their consequential damages, and thus safeguard the durability of the building components. Air moisture has a significant influence on a comfortable and healthy room climate.

In order to prevent damage from moisture, wall structures should allow vapour diffusion from the inside to the outside. In this way, humidity from building components (e.g. from solid structural timber) or from the incoming air is dissipated to the outside. To this effect, exterior walls should be built using a bracing e.g. LivingBoard on the interior side and a diffusion-permeable bracing e.g. StyleBoard MDF.RWH on the exterior side of the wall. For calculating moisture protection, we recommend stationary methods, such as the WUFI® program. This tool

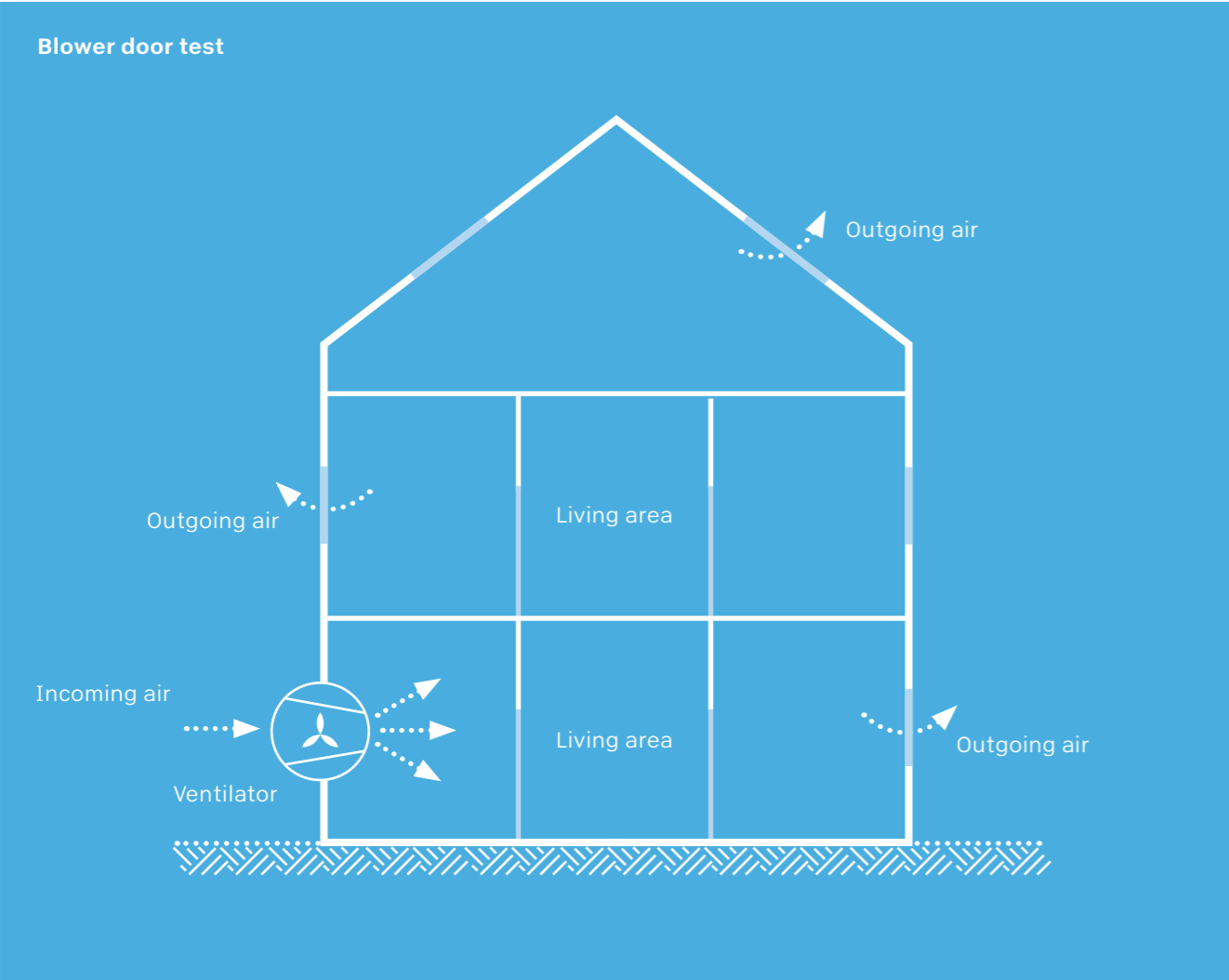
takes into account moisture-related material specifications of construction products – such as moistening and drying –, and thus allows a realistic calculation of the expected condensation.

The Glaser method refers to stationary conditions. If this method is used, make sure the most unfavourable conditions for a given installation situation are considered.



- The water vapor resistance factor of our products is determined by independent testing institutes according to DIN ISO 12572.
- The airtightness of our products is determined by independent testing institutes in conformity with DIN EN 1026.
- Wood-based panels from Pfleiderer stand out from other bracing panels and offer a high level of user safety due to their uniform raw density distribution across the panel and their consistent airtightness and μ -values.

BUILDING PHYSICS –
AIRTIGHTNESS



- Pfleiderer's wood-based material panels guarantee safety: even and high airtightness due to the high density of the raw materials and an even raw material density across the entire panel.
- The airtightness of our products is tested by independent test institutes on the basis of EN 1026.
- Optimum subsurface for sealing with approved adhesive tapes.

An airtight building envelope is important to prevent moisture damage to the structure and heat loss due to unwanted air exchange. DIN 4108 specifies airtight building envelopes to prevent a flow of air that would carry some of the indoor air humidity with it, which can lead to condensation in the structural elements.

The airtightness of a building envelope is tested with the "blower door test", which consists of a ventilator generating a differential pressure of +/- 50 Pa inside the building. This determines the air exchange rate and therefore the air loss. DIN 4108 and the energy saving regulations specify airtightness threshold values when a differential pressure of 50 Pa is applied that must not be exceeded.

As wood-based material panels account for a large proportion of the area of a building envelope, they have a significant influence on airtightness. Wood-based panels with homogeneous structure and high raw density are advantageous for a dense building envelope. Compared to standard-OSB/3 and standard-OSB/4, LivingBoard has a considerably higher density and a

raw material density that is more even across the entire panel. LivingBoard is therefore considerably more airtight than Standard-OSB/3- or Standard-OSB/4. The raw material density of OSB is also uneven, which in turn leads to considerable fluctuations in airtightness.

In order to ensure that the specifications of the blower door test are met, wood-based material panel joints must be sealed. LivingBoard offers yet another advantage in this respect, as it can be sealed with standard adhesive tapes without the prior application of primer, which saves time and effort during the installation process.

Airtightness (q_{50})

The airtightness of a layer or a building component defines how many cubic metres of air flow through one square metre of the building material/component when it is exposed to a differential pressure of 50 Pa – measurement unit: $m^3/(m^2 \times h)$.

Board type	Pressure level [Pa]		Air loss [$m^3/h/m^2$]	
	Pressure	Suction	Pressure	Suction
LivingBoard P5 Thickness: 13 mm	50	-50	0,0*	0,0*
	200	-200	0,28	0,16

* No air loss with DIN EN 1026 compliant measuring devices

BUILDING PHYSICS –
SOUND INSULATION

Sound insulation aims at reducing sound transmission in a building and improving healthy living by low sound emissions.

Sound absorption	Sound absorption is defined as the ratio between the unreflected and the incident sound energy. Sound absorption indicates how much incident sound energy is absorbed by a specific material. It may be increased, for example, by perforations or slots in the material.
Airborne sound insulation	Sound produced by music or voices is referred to as airborne sound. Airborne sound insulation is the capacity of a structural element, e.g. a wall or a ceiling, to reflect the sound to its source. The higher the airborne sound insulation (sound reduction index), the lower the level of air-borne sound passing through the structural element.
Sound reduction index R [dB]	This describes the capacity of a material or building component to prevent sound transmission. The sound reduction index rises if the mass per unit area increases. Wood-based panels with a higher mass per unit area have a higher sound reduction index than light wood-based panels.
Computation of weighted sound reduction index R'w,R [dB]	Computation of a sufficient sound insulation level is based on the value R'w,R. This value is lower than the laborarotory test value for a wall, as a 2 db allowance is deducted (provided for in DIN 4109).
Weighted sound reduction index R'w [dB]	This describes a sound reduction curve for a building component, taking into account the frequency range and sensitivity of the human ear.
Standard impact sound level Ln,w [dB]	This describes the sound impact insulation capacity of a building component, not only through the separating building component, but also through flanking building components. The lower the impact sound level, the better the impact sound insulation (provided for in DIN 4109).

Tips

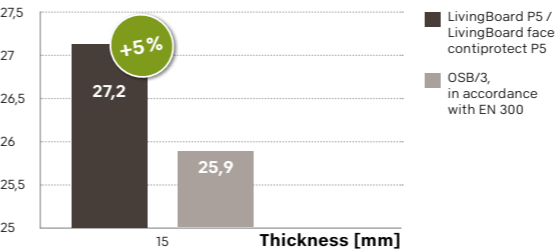
- Sound insulation is improved by using construction elements with a higher weight per unit area, e.g. LivingBoard
- To minimize sound transmission, construction elements should be separated.
- A suspended ceiling minimizes sound transmission through the ceiling.

Pfleiderer wood-based panels – sound absorption coefficient (The sound absorption coefficient can be taken from EN 13986.)

Panel type	Sound absorption frequency range from 250 Hz to 500 Hz	Sound absorption frequency range from 1,000 Hz bis 2,000 Hz
PremiumBoard MFP P5	0,10	0,25
LivingBoard P4 / P5 / P7	0,10	0,25
LivingBoard face P5 / P7	0,10	0,25
LivingBoard face contiprotect P5 / P7	0,10	0,25
StyleBoard MDF.RWH	0,10	0,20

Comparison of LivingBoard to Standard OSB

Airborne sound insulation in R [dB]



Panel type	Thickness in mm	Surface density mA [kg/m²]	Airborne sound insulation* R [dB]
PremiumBoard MFP P5	12	ca. 8,5	ca. 26,1
	15	ca. 10,4	ca. 27,2
	18	ca. 12,1	ca. 28,1
	22	ca. 14,5	ca. 29,1
	25	ca. 16,3	ca. 29,7
LivingBoard face P5 / LivingBoard face contiprotect P5	12	ca. 8,6	ca. 26,1
	15	ca. 10,4	ca. 27,2
	18	ca. 12,1	ca. 28,1
	22	ca. 15,5	ca. 29,1
	25	ca. 16,3	ca. 29,7
LivingBoard face P7 / LivingBoard face contiprotect P7	12	ca. 8,8	ca. 26,3
	15	ca. 10,8	ca. 27,4
	18	ca. 12,9	ca. 28,4
	22	ca. 15,6	ca. 29,5
	25	ca. 17,3	ca. 30,1
StyleBoard MDF.RWH	16	ca. 9,6	ca. 26,8

*Frequency range from 1kHz to 3 kHz.

BUILDING PHYSICS –
WOOD PRESERVATION

Wood preservation aims at protecting wood against weathering, insects and fungi, preventing natural degradation processes and changing the mechanical and physical properties of wood as well as enhancing its natural durability.

There are 4 different types of wood preservation:



Structural wood preservation

Structural wood preservation measures allow long-term protection of wood without using chemical wood preservatives. Examples of structural wood preservation measures can be taken from DIN 68800-2 (structural wood preservation in building construction).

Physical treatment of wood

Physical treatment of wood refers to methods of modifying wood, for example by heat treatment (so-called thermally modified timber), protecting it against weathering.

Natural wood preservatives

Woods have different natural durabilities with regard to their resistance against fungi, insects and decay etc. Wood species are classified in durability categories (DIN EN 350-2) from 1 (highly durable) to 5 (non durable). Durable wood species have constituents acting as natural wood preservatives

Chemical wood preservatives

Chemical wood preservation is a preventive treatment against insect attacks and fungal decay. Wood preserv-atives are applied on to the panel surface, or the panel is impregnated with a chemical preservative. In general, chemical wood preservatives should not be used for interior applications.

Tips

- Take measures to form an airtight building shell
- Diffusion-permeable structures with a high drying potential
- Provide special protection for the weather exposed side
- Use dried woods for installation
- Wood preservation is regulated by DIN EN 335 and DIN 68800.
- Structural wood preservation measures should be preferred over other types of wood preservation.

FIRE PREVENTION

Fire prevention is of great importance for any timber building. Fire prevention requirements are laid down in national building regulations. As from a thickness of ≥ 9 mm and a raw density of ≥ 600 kg/m3 Pfleiderer panels PremiumBoard, LivingBoard and StyleBoard MDF.RWH are classified in Euro class D-s2, d01) in accordance with EN 13986.

As laid down in EN 13501-2, timber construction elements are classified in so-called fire resistance classes. The fire resistance class indicates the period of time during which a building component retains its functionality (loadbearing capacity, no fire spreading, smoke tightness) in case of fire. Harmonized fire protection requirements apply all over Europe. The EN 13501 classification

system is based on different testing methods and a so-called reference scenario and replaces the former national test standards for the reaction to fire of materials. The core of the new system is the SBI (Single Burning Item) Test, which Euro class A1 to D construction products have to undergo. The test consists of setting fire in the corner of a room, simulating a burning litter bin. The “flash-over point” defines different classes by determining the period of time until the full development of a fire. Reactions of A1, A2 and B construction products do not result in a flash-over point.

Under EN 13501-2, fire resistance grading has the following protection objectives.

R	E	I	K	Resistance period
Load-bearing capacity	Protective barrier	Thermal insulation	Heat insulation	30, 60, 90, 120 ... minutes

Example – REI 60:
The construction element must resist the exposure to fire for 60 minutes R (load-bearing capacity) and meet the criteria E (protective barrier) and I (heat insulation).

Euro class	Former national standards			
	Germany	France	Italy	England (Wales)
A1	A1		0	
A2	A2	M0 /1	I / II	
B	B1	M1	I / II	0
C	B1	M2	II / III	1
D	B2	M3 / M4	III	3
E	B2			
F	B3			

¹⁾ D = normally flammable, s2 = limited smoke emission, d0 = no flaming droplets/particles

Product	Minimum raw density [kg/m³]	Minimum board thickness [mm]	Euro class [EN 13501-1]
Particleboard	600	9	D-s2, d0
Medium density fibreboard (MDF)	600	9	ca. 27,2

Charring rates

Pfleiderer wood-based panels have the following charring rates under Eurocode EN 1995-1-2:

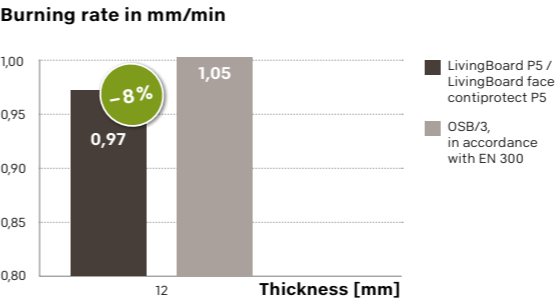
$\beta_o = 0,9 \cdot k_p \cdot k_t$

$k_p = \sqrt{\frac{450}{\rho_K}} \quad k_t = \sqrt{\frac{20}{h_t}}$

ρk: characteristic raw density [kg/m³]*, ht: material thickness [mm]

	Calculated charring rate in in mm/min							
	Thickness in mm							
	12	13	15	16	18	19	22	25
LivingBoard face P5 / P7 LivingBoard face contiprotect P5 / P7 PremiumBoard MFP P5	0,97		0,90		0,82		0,78	0,73
LivingBoard P4 / P5 / P7		0,93		0,87		0,8	0,78	0,73

Comparison of LivingBoard to Standard OSB



STANDARDS

Timber constructions should be standardised in compliance with national and European standards and relevant building regulations. In Europe, constructions are standardised according to Eurocode 5. In EU countries, observance of a so-called national application document (NAD) may also be required. Pfleiderer

products are governed by the Construction Products Regulation and approved by the German building authorities according to the European Standard EN 13986. The characteristic values for measuring timber constructions using Pfleiderer wood-based panels can be taken from EN 12369-1.

Wood-based materials for structural use from Pfleiderer – Approvals

PremiumBoard MFP P5	approved in accordance with CE EN 13986 – P5 / EN 312
LivingBoard P4 /P5 / P7	approved in accordance with CE EN 13986 – P4, P5, P7 / EN 312
LivingBoard face P5 / P7	approved in accordance with CE EN 13986 – P5, P7 / EN 312
LivingBoard face contiprotect P5 / P7	approved in accordance with CE EN 13986 – P5, P7 / EN 312
StyleBoard MDF.RWH	approved in accordance with CE EN 13986 – MDF.RWH / EN 622-5

- Pfleiderer wood-based panels are produced to suit a module of 62.5 cm.
- Pfleiderer wood-based panels are suited for non-directional use (optimised cut-to-size).
- Panel joints should be placed on a beam.

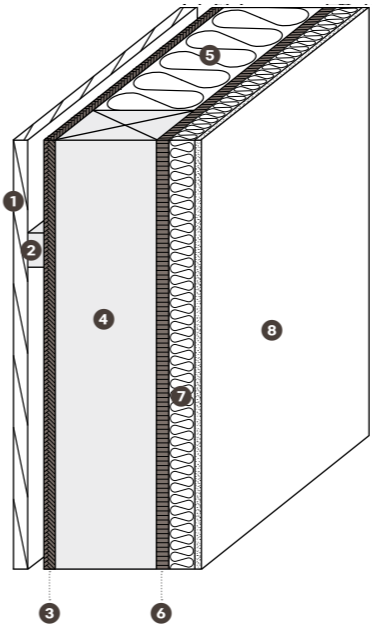


TIMBER CONSTRUCTION EXAMPLES

Examples of timberframe construction using wood-based panels from Pfleiderer are shown on the following pages.

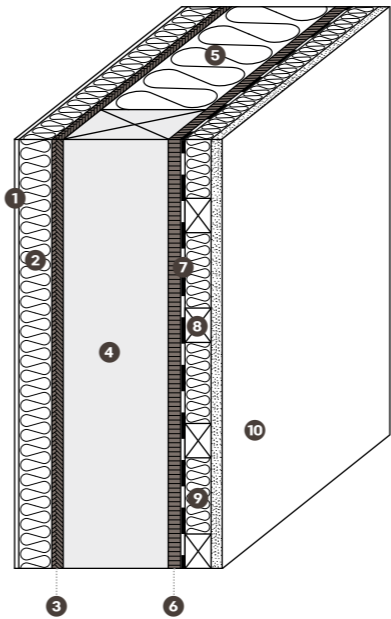


Constructions



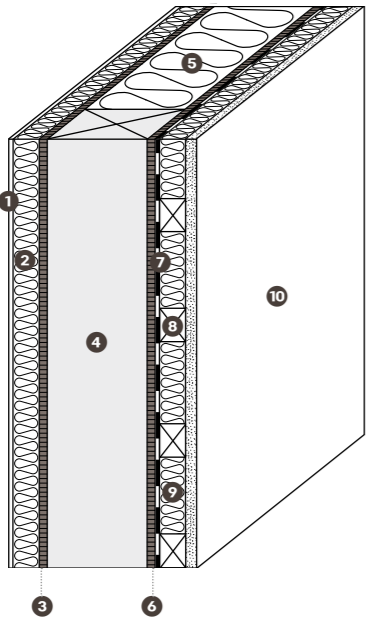
Exterior wall
ventilated, incl. installation level, shuttered

- 1 larch exterior wall cladding
- 2 spruce battens, staggered – ventilated
- 3 StyleBoard MDF.RWH
- 4 structural timber
- 5 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 6 LivingBoard P4 / P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 7 spruce counter battens (a = 400) or battens
- insulating material: e.g. wood wool, glass wool, rock wool etc. or air layer
- 8 fire protection plaster board or fibrous plaster panel



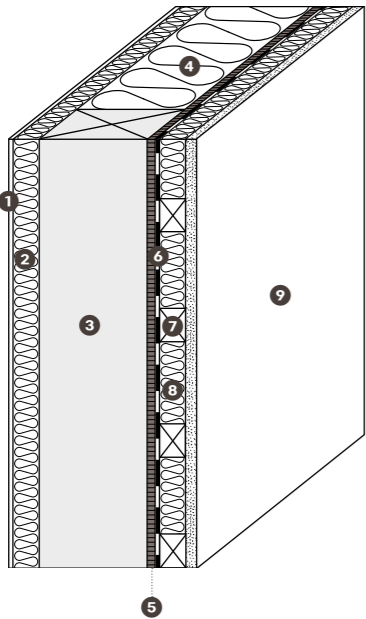
Exterior wall
non-ventilated, incl. installation level, plastered

- 1 plastered facade
- 2 Polystyrol EPS-F
- 3 StyleBoard MDF.RWH
- 4 structural timber (e = 625)
- 5 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 6 LivingBoard P4 / P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 7 vapour barrier sd ≥ 9 m
- 8 spruce counter battens (a = 400) or battens
- 9 insulating material: e.g. wood wool, glass wool, rock wool etc. or air layer
- 10 fire protection plaster board or fibrous plaster panel



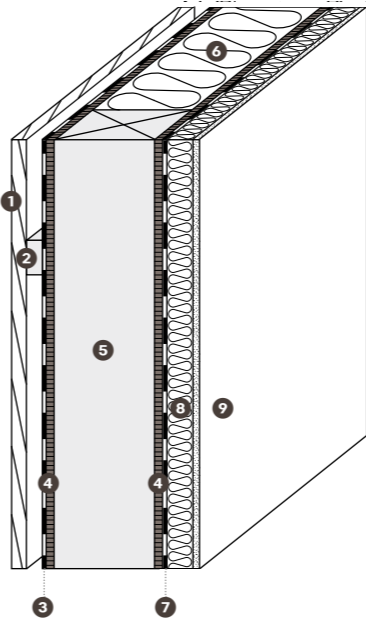
**Exterior wall
non-ventilated, incl. installation level, plastered**

- 1 plastered facade
- 2 wood fibre insulating board
- 3 LivingBoard P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 4 structural timber (e = 625)
- 5 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 6 LivingBoard P4 / P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 7 vapour barrier $s_d \geq 7 \text{ m}$
- 8 spruce counter battens (a = 400) or battens
- 9 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 10 fire protection plaster board or fibrous plaster panel



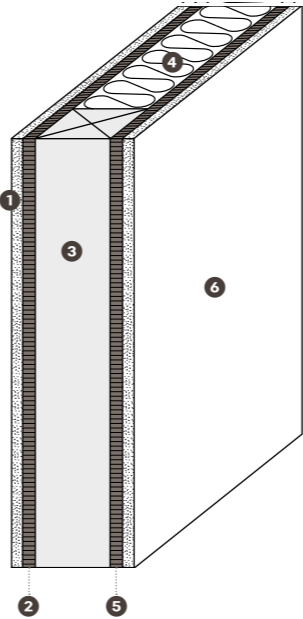
**Exterior wall
non-ventilated, incl. installation level, plastered**

- 1 plastered facade
- 2 wood fibre insulating board
- 3 structural timber (e = 625)
- 4 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 5 LivingBoard P4 / P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 6 vapour barrier $s_d \geq 2 \text{ m}$
- 7 spruce counter battens (a = 400) or battens
- 8 insulating material: e.g. wood wool, glass wool, rock wool etc. or air layer
- 9 fire protection plaster board or fibrous plaster panel



**Exterior wall
ventilated, incl. installation level, shuttered**

- 1 larch exterior wall cladding
- 2 spruce battens, staggered – ventilated
- 3 Wind barrier $s_d \leq 0,3 \text{ m}$
- 4 LivingBoard P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 5 structural timber
- 6 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 7 vapour barrier $s_d \geq 5 \text{ m}$
- 8 spruce counter battens
- 9 fire protection plaster board or fibrous plaster panel



**Interior wall
without installation level**

- 1 fire protection plaster board or fibrous plaster panel
- 2 LivingBoard P4 / P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 3 structural timber (e = 625)
- 4 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 5 LivingBoard P4 / P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 6 fire protection plaster board or fibrous plaster panel

**Storey floor
non-suspended, wet**

- 1 cement screed or anhydride screed
- 2 plastic separation layer
- 3 impact sound insulation MW-T
- 4 LivingBoard P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 5 structural timber (e = 625)
- 6 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 7 spruce open boarding (a = 400)
- 8 fire protection plaster board or fibrous plaster panel

**Storey floor
non-suspended, dry**

- 1 dry screed
- 2 impact sound insulation MW-T
- 3 insulation filling
- 4 trickling protection
- 5 LivingBoard P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 6 structural timber (e = 625)
- 7 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 8 spruce open boarding (a = 400)
- 9 fire protection plaster board or fibrous plaster panel

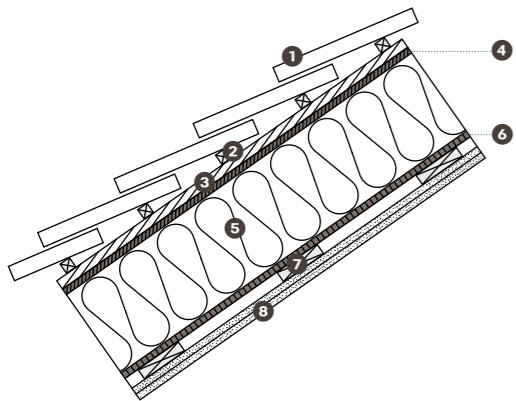
**Storey floor
suspended, dry**

- 1 dry screed
- 2 impact sound insulation MW-T
- 3 LivingBoard P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 4 structural timber (e = 625)
- 5 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 6 spruce open boarding (a = 400)
- 7 spring clip (installed in between open boarding)
- 8 fire protection plaster board or fibrous plaster panel

**Flat roof
ventilated, incl. installation level**

- 1 metal sheet roofing $d \geq 0,4$ or plastic roofing
- 2 spruce boarding
- 3 spruce counter battens (ventilated)
- 4 StyleBoard MDF,RWH
- 5 structural timber (e = 800)
- 6 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 7 LivingBoard P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 8 spruce counter battens (a = 400)
- 9 insulating material: e.g. wood wool, glass wool, rock wool etc.
- 10 fire protection plaster board or fibrous plaster panel

**Raised roof
ventilated, incl. installation level**

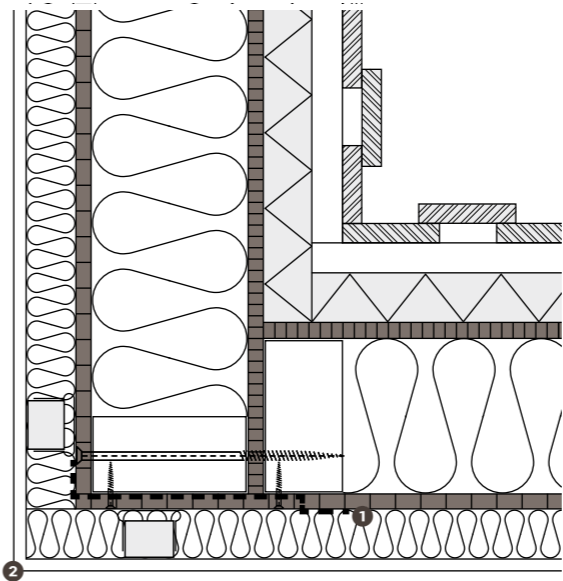


- 1 concrete roofing tiles or tiled roof
- 2 spruce battens (30/50)
- 3 spruce counter battens (minimum height 50 mm)
- 4 StyleBoard MDF.RWH
- 5 structural timber (e = 800) and insulation e.g. wood wool, glass wool, rock wool etc.
- 6 LivingBoard P5 / P7, LivingBoard face contiprotect P5 / P7, PremiumBoard MFP P5
- 7 spruce open boarding (a = 400)
- 8 fire protection plaster board or fibrous plaster panel



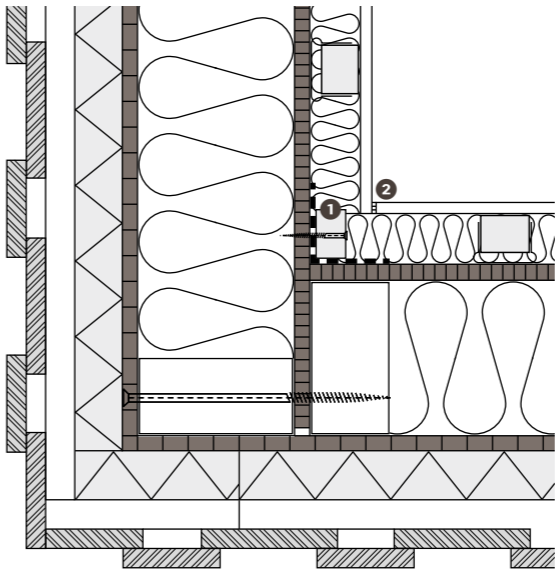
Design details

**Horizontal section of an exterior wall /
exterior wall corner**



- 1 butt joints sealed with vapour resistant tape and mechanically secured
- 2 edge details according to processing guidelines

**Horizontal section of an exterior wall /
exterior wall corner**



- 1 butt joints sealed with vapour resistant tape and mechanically secured
- 2 joint details according to processing guidelines

GLOSSARY

Surface soundness

Surface soundness means the force that it takes to detach the top layer of a chipboard. In the test process a steel stamp is glued on to a ring-grooved panel. The steel stamp is pulled upwards with increasing force until the panel surface breaks. The panels must reach a value of at least 0.8 N/mm². This applies to all thicknesses.

Bending strength

Bending strength indicates the bending behavior of a chipboard under load and is measured in N/mm². Testing consists of a defined weight pressing vertically midspan on to a chipboard that rests on supports to the left and right only. The load is increased during the testing, whereby the bending of the board at each position is measured and recorded. The value stated in the tables indicates the minimum load that can be applied to a panel without breaking it. The bending strength is also dependent on the panel thickness whereby the following rule applies: the thinner the panel the higher its bending strength. This apparent contradiction is related to the point load applied or to the higher stiffness of thicker panels respectively.

Blower door test

Airtightness measurement of a building with a DIN 13829 compliant differential pressure test. The test is used for quality assurance and provides information about a building's airtightness. It reveals any leaks in the building envelope that can then be systematically rectified.

CE marking

CE stands for Communauté Européenne, French for European Union. The CE marking is a product labelling under EU law related to product safety. CE marking has been mandatory since 01.04.2004 for chipboard used as construction product. With the CE marking the manufacturer confirms the conformity of a product to the relevant EU regulations and the compliance with the “essential requirements” laid down therein.

Vapour retarder

One speaks of a vapour retarder if the diffusion-equivalent air layer thickness (sd) is bigger than 10 m.

Vapour barrier

One speaks of a vapour barrier if the diffusion-equivalent air layer thickness (sd) is infinite (according to DIN 4108-3:2001-07 sd ≥ 1500 m).

DGNB

The German Society for Sustainable Buildings e.V. (DGNB), is a non-profit and non-governmental organisation, whose duty it is to develop and promote ways and solutions for sustainable planning, construction and use of buildings. The focus of its work is the establishment and expansion of a certification system for sustainable buildings as well as the award of a certificate in quality levels gold, silver and bronze.



DIN

DIN stands for Deutsches Institut für Normung e.V., which is Germany's national standardisation organisation based in Berlin. Standards serve the purposes of rationalisation, communication, suitability for use, quality assurance, compatibility, exchangeability, health, safety and environmental protection. Examples of standards relating to wood-based panel production:

- a. DIN EN 312 (chipboard)
- b. DIN EN 622 (MDF)
- c. DIN EN 14322 (melamine-faced panels)

E1

All wood-based panels produced or sold in Germany must comply with class E1 emission limits. E1 means that the maximum emission of formaldehyde is 0.1 ppm (part per million). No other wood-based panels are permitted in Germany.

Modulus of elasticity

The modulus of elasticity in bending indicates the relation between tension and expansion of a material within the elastic range and is measured in N/mm². The value relates to the maximum force applied to stretch a panel which after removal of the force will return to its original shape.

HPL

High pressure laminate

HPL compact

Compact laminates consisting of several core papers.

ISO

The International Organisation for Standardisation – (ISO) – is the international association of standardisation organisations and develops international standards in all areas with the exception of the electrics and electronics sectors.

ISO 9001

The ISO 9001 quality management standard determines minimum requirements for a quality management system which a company must comply with prior to certification.

ISO 14001

ISO 14001 defines the minimum requirements for an environmental management system. The aim is to promote environmental protection and prevent negative impacts on the environment in line with economic, social and political factors.



Kelvin

Kelvin (K) is the unit for thermo-dynamic temperature (T). The divisions of the Kelvin scale correspond to those of the Celsius scale. However, these scales are shifted by the constant value 273.15, with the zeropoint defined as the freezing point of water for the Celsius scale and absolute zero (-273.15 °C) defined as the reference point for the Kelvin scale.

LEED

The American LEED quality seal (Leadership in Energy and Environmental Design) is a globally recognised method to assess the sustainability of buildings. The certification system was developed by the U.S. Building Council (USGBC) and is based on requirements listing 6 different topics in which score points can be collected.

Air exchange rate

Indicates the multiple of the room/building volume that is introduced as additional air. The unit is $n = 1/h$. For example: $n = 8/h$ means that eight times the room/building volume is exchanged in one hour.

MDF

Medium density fibreboard

Melamine faced board

DecoBoard Resin-impregnated papers are directly applied on to a raw panel.

Use class

Use class 1: For use in dry areas
Use class 2: For use in humid areas
Use class 3: For exterior use

Pa

Pascal is a pressure measurement unit. A Pascal is the pressure that one Newton of force applies to an area of one square metre $[N/m^2]$.

ppm

The term parts per million (ppm) stands for 10^{-6} and is used in science for one millionth, analogous to one percent meaning one hundredth (10-2). In Germany, this unit is used in connection with formaldehyde measure and the definition of emission classes. All wood-based panels produced and sold in Germany must at least meet the requirements of emission class 1 (E1). The formaldehyde content in the test chamber may not exceed 0.1 ppm.

Tensile strength

Tensile strength is a measure of the panel's capacity to withstand a vertical force perpendicular to the surface until rupture. It is measured in N/mm^2 . Tensile strength is also dependent on the panel thickness. This value expresses the minimum load a panel can be exposed to before breaking. Here, too, it is valid: The thinner a panel, the higher the value. This is due to the higher raw density and therefore higher compression of thin panels.

RAL UZ 76 – “Blauer Engel” (Blue Angel)

In Germany, the “Blauer Engel” eco-label may also be awarded to environmentally-friendly wood-based panels. For chipboards, formaldehyde emission is an important criterium in this process. Panels that emit approx. 50% less formaldehyde than standard panels due to the use of so-called formaldehyde scavengers may obtain the eco-label RAL UZ 76 – “Blauer Engel” due to their low-emission rate. The eco-label is awarded subject to certification by the German RAL institute.

Relative air humidity

In most cases the air contains less water vapour than the corresponding degree of saturation. The relative air humidity π (pronounced phi) is a value that states the water content of the air. The relative air humidity results from the relation of the actual water vapour content to the degree of saturation (corresponding to a relative air humidity of 100 %).

Raw density

Raw density is the volume weight of a panel. It is measured in kg/m^3 . The raw density varies dependent on the panel thickness whereby it applies that the thicker the panel, the lighter the volume weight.

Degree of saturation

In most cases the air is not dry, it contains water in gaseous form. Water in gaseous form is invisible water vapour. The air cannot absorb an unlimited amount of water vapour, its absorption capacity is limited. The capacity of the air to absorb water vapour is dependent on its temperature. Warm air can absorb more water vapour than cold air. The maximum water absorption capacity of the air is the degree of saturation with water vapour.

Flat bonded element

Wood-based panels laminated on both sides with HPL.

Thermal transmission coefficient, U-Wert

The thermal transmission coefficient indicates the amount of heat transmitted per hour through $1 m^2$ of a base material board with a thickness of 1 m when the temperature difference between the adjacent air on both sides is 1 Kelvin. The unit of the thermal transmission coefficient U is Watts per square metre times Kelvin ($W/m^2 \times K$).

Thermal conductivity λ

Thermal conductivity λ (pronounced lambda) indicates the amount of heat transmitted per hour through $1 m^2$ of a 1 m thick layer of a base material board when the temperature difference between the two surfaces is 1 Kelvin. The unit of thermal conductivity λ is Watts per metre times Kelvin (unit symbol: $W/m \times K$).



Water vapour diffusion

Building materials that are waterproof are by no means water vapour-tight. The size of a water molecule is 1/100000 mm, a water vapour molecule conversely only 1/100000000 mm. A water vapour molecule can therefore still diffuse through pores through which a water molecule can no longer diffuse. This process is called water vapour diffusion (from Latin diffundere = flow through).

Vapour diffusion thickness sd

The vapour diffusion thickness [sd] of a base material board expresses its diffusion resistance as the thickness of a notional resting air layer with the same resistance. It is calculated from the thickness of the base material board (d) and the associated water vapour diffusion resistance factor μ of the building material, $sd = \mu \times d$ (sd and d in mm).
Example: PremiumBoard MFP, LivingBoard in 18 mm = $100 \times 0.018 \text{ m} = 1,8 \text{ m}$.

Water vapour diffusion resistance (μ -value)

Each material has a particular resistance to the diffusion of water vapour. The typical resistance of this material is expressed by the water vapour diffusion resistance factor μ (pronounced mu). The μ -values of the building materials can be determined by means of diffusion measurements. The resistance factor μ indicates how much higher the resistance of the respective material to water vapour diffusion is in comparison with air of the same layer thickness. μ is thus a ratio. The resistance of a 1 m thick air layer is taken to be 1. In diffusion calculations the least favourable value is taken as the μ -value (as a rule the lower value is taken in the case of interior applications and the higher value in the case of exterior applications).

Water vapour pressure

The surface of the earth is surrounded by a mantle of air. This air is heavy; it weighs on every body with its mass (with its weight). That is the air pressure. It is about 1 bar. The mass (the weight) of the water vapour in the air creates an additional pressure. This pressure is the partial water vapour pressure; it overlays the air pressure. The partial water vapour pressure is usually referred to in practice simply as the "water vapour pressure". The higher the water vapour pressure, the more moist the air is. It is dependent on the temperature and the relative humidity of the air; it reaches the maximum value with vapour-saturated air. That is the water vapour saturation pressure.

YOU CAN HAVE A CLEAR
CONSCIENCE WHEN YOU
WORK WITH US.



Sustainable thinking and action is essential for all of our futures. Especially amongst your customers, the awareness of sustainably produced products that are suitable for a healthy living environment is constantly growing.

Pfleiderer pays attention to the absolute sustainability of all the company's activities. On all levels – economic, ecological and social: we not only manufacture our products with the utmost care, but also within the framework of a certified environment management system. In the production process, Pfleiderer pays attention to absolute ecology, e.g. in the formaldehyde-free glued panel LivingBoard, which has been synonymous with sustainable construction for almost four decades.

We also have a special responsibility as an employer: for this reason, a culture of trust focused on autonomous action is fostered in our company. Sustainability from which you benefit – through environmentally friendly products, dedicated employees and maximum satisfaction.

ANY QUESTIONS?
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Fax: +49 (0) 9181 / 28 482

samples@pfleiderer.com

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Pfleiderer UK Limited · Greenway House · Larkwood Way · Tytherington Business Park · Macclesfield · Cheshire SK10 2XR
England · Tel.: +44 (0) 16 25 660 410 · Fax: +44 (0) 16 25 617 301 · info@pfleiderer.co.uk · www.pfleiderer.co.uk

Pfleiderer Deutschland GmbH · Ingolstädter Straße 51 · 92318 Neumarkt · Germany

Tel.: +49 (0) 9181/28 480 · Fax: +49 (0) 9181/28 482 · info@pfleiderer.com · www.pfleiderer.com