



FAST. ECONOMICAL. MONTANATHERM®.



SANDWICH ELEMENTS IN STEEL AND ALUMINIUM

EXCELLENT CONSTRUCTION PROPERTIES

The outstanding qualities of MONTANATHERM® sandwich elements – low weight combined with high rigidity – enable substantial bearing widths and easy fitting.

The corrosion-protected and weatherproof outer shells absorb the tensile and compressive forces that occur during load transfer.

ECONOMIC EFFICIENCY

MONTANATHERM® is the predestined construction system for industrial and commercial buildings where rapid building progress, economic efficiency and high insulation value are required.

CREATIVE DESIGN POSSIBILITIES

MONTACOLOR® colours, different surface textures and the elegant wall element with hidden fastening offer diverse creative design possibilities.

MONTANATHERM® is compatible with SP27 corrugated profile and the SP44 trapezoidal profile, which presents planners and architects with possibilities for new buildings and extensions.

Gebrüder Meier AG, Regensdorf (CH)



Montana Bausysteme AG, Villmergen (CH)



CONTENTS



MONTANATHERM®

PAGE

● PRODUCTION Everything you need to know about the quality of MONTANATHERM® elements	4–5 ●
● MONTANATHERM® WALL ELEMENTS Wall elements with visible and hidden fastening	6–7 ●
● MONTANATHERM® ROOF ELEMENTS Roof elements with CFC and HCFC-free PIR high-resistance foam	8 ●
● TECHNOLOGY Technical information	9 ●
● ACCESSORIES Useful accessories to match the MONTANATHERM® product range	10–11 ●
● MONTANA REFERENCES	Back page ●

Goods railway depot, Basle (CH)



PRODUCTION, QUALITY

PRODUCTION

Montana Bausysteme AG has been producing sandwich elements for roofs, façades and interior walls on the first continuous production plant in Switzerland since 1998. The cooling line, installed in 2002, ensures gentle cooling of the elements to enable a constantly high quality level.

CFC and HCFC-free foaming agents are used on the 270 m long, highly modern plant. This enables Montana Bausysteme AG to offer environmentally friendly sandwich elements for roofs and walls.



PACKAGING AND TRANSPORT

Preparation for transport is carried out by way of professional (de)stacking. To provide protection against effects of the weather, wind and moisture, the MONTANATHERM® sandwich elements are packed using a special stretch foil. The individual sandwich elements are always delivered with a protective film, which has to be removed directly after fitting. The goods are transported by well-trained contract drivers.

ECONOMIC EFFICIENCY AND FUNCTIONALITY

The outstanding features of MONTANATHERM® sandwich elements, which are ready to fit, include their lightweight property combined with high rigidity. This enables substantial bearing widths and easy fitting. The outer shells absorb the tensile and compressive forces that occur and are resistant to outside influences such as weather, temperature and mechanical loading. The polyisocyanurate (PIR) high-resistance foam with a bulk den-

sity of approx. 40 kg/m³ fixes the outer shells at the desired intervals and absorbs the shearing and transverse forces during stress on the element. MONTANATHERM® sandwich elements achieve excellent heat transition coefficients thanks to their large surface areas.

AESTHETICS IN STEEL AND ALUMINIUM

All MONTANATHERM® sandwich elements are produced using steel or





aluminium shells from the MONTANACOLOR® colour collection. The outer shells are provided with a 25 µm thick polyester coil coating. The different surface textures and the optically very elegant wall element with hidden fasteners provide architects, planners and building owners with diverse creative design possibilities.

AREAS OF APPLICATION

MONTANATHERM® sandwich elements are suitable for the most var-

ied construction projects in which fast installation and excellent heat insulation properties are important. The elements can be used as exterior walls, roof or partition walls.

LATERAL JOINT OVERLAPPING

The Montana Bausysteme AG can produce the roof elements with a notched finish for lateral joint overlapping and – for an additional charge on request – deliver the elements on site with foam-free overlapping following a post-production process (see page 9).

SOUND INSULATION

Despite the low weight of the MONTANATHERM® sandwich elements, they produce an adequate airborne sound insulation value for most cases. This is due to the combination of the two roof shells through a core with low dynamic flexural strength. An R_w noise insulation value of approx. 25 dB is achieved without any additional structural measures and irrespective of the element thicknesses of 80–160 mm.

FIRE CLASSIFICATION

All MONTANATHERM® sandwich elements are supplied with fire classification category 5.3 for Switzerland and B1 or B2 in accordance with DIN 4102-1 for Germany. The elements also satis-

fy the fire class B-s2-d0 according to DIN EN 13501-01.

QUALITY ASSURANCE

Production undergoes the third-party and internal plant monitoring required by the state construction supervision regulations. Compliance with the tolerances set under the quality and test provisions of the RAL-GZ 617 quality protection standard by the “Quality Association for Sheet Steel Construction Elements” is also monitored. Continuous internal plant production controls during the manufacturing process and third-party inspections by a state materials testing agency guarantee that the materials, galvanising, sheet thickness, foam properties and dimensional accuracy of the quality-protected MONTANATHERM® sandwich elements meet the specified quality requirements.

The MONTANATHERM® sandwich elements are designated according to DIN EN 14509 with the CE mark.

MINERGIE®

Building in line with SWISS MINERGIE® standards offers real advantages! Heat insulation in summer and winter helps to achieve a higher level of comfort. Rising energy costs ensure that MINERGIE® structures provide high maintenance of financial value and future suitability. Im-

mediate benefits: the MONTANATHERM® sandwich elements with SWISS MINERGIE®-certificate are worthwhile from the very first day through energy cost savings!

MONTANA QUALITY

Montana Bausysteme AG fulfils the most varied customer wishes: from consultation and customer care to excellent production and prompt delivery.

Customer satisfaction is our quality standard!

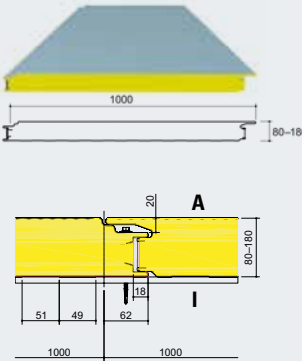
Talk to us if you are looking for an economically and qualitatively perfect solution for your construction project!



MONTANATHERM®

SANDWICH ELEMENTS IN STEEL AND ALUMINIUM

Wall elements with CFC and HCFC-free PIR high-resistance foam with concealed fasteners

TYPE	PROFILE	TECHNICAL DATA							SURFACES			SHEET THICKNESS			
		M kg/m ²	d mm	L max m	U ₁ W/(m ² K)	U ₂ W/(m ² K)	λ ₀ W/(m K)	S P items/pack	LL	ML	NL	WL	A mm	I mm	
WALL ELEMENTS WITH HIDDEN FASTENING 	MTW V ML 80/1000	STEEL	13.34	80	17	0.29	0.31	0.024	13	●	●	●		0.63	0.45
		ALUMINIUM	7.68	80	12	0.29	0.31	0.024	13	●	●	●		0.70	0.70
	MTW V ML 100/1000 on request	STEEL	14.15	100	17	0.23	0.25	0.024	11	●	●	●		0.63	0.45
		ALUMINIUM	8.49	100	12	0.23	0.25	0.024	11	●	●	●		0.70	0.70
	MTW V ML 120/1000	STEEL	14.96	120	17	0.19	0.20	0.024	9	●	●	●		0.63	0.45
		ALUMINIUM	9.30	120	12	0.19	0.20	0.024	9	●	●	●		0.70	0.70
	MTW V ML 140/1000	STEEL	15.75	140	17	0.17	0.18	0.024	8	●	●	●		0.63	0.45
		ALUMINIUM	10.10	140	12	0.17	0.18	0.024	8	●	●	●		0.70	0.70
	MTW V ML 160/1000	STEEL	16.56	160	17	0.15	0.15	0.024	7	●	●	●		0.63	0.45
		ALUMINIUM	10.91	160	12	0.15	0.15	0.024	7	●	●	●		0.70	0.70
	MTW V ML 180/1000 on request	STEEL	17.37	180	17	0.13	0.14	0.024	6	●	●	●		0.63	0.45
		ALUMINIUM	11.71	180	12	0.13	0.14	0.024	6	●	●	●		0.70	0.70



Homepage
www.montana-ag.ch
 With additional product information and references.



CAD files
 You can it download.
www.montana-ag.ch
 > Products > CAD



Load tables
 You can it download.
www.montana-ag.ch
 > Products > Statics
 or telephone +41 0 56 619 85 85



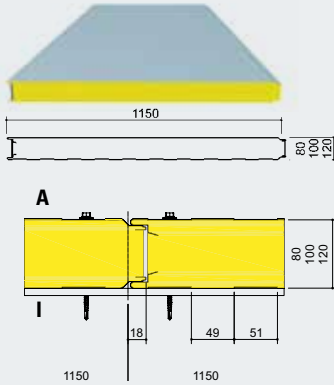
Fitting recommendation
 You can it download.
www.montana-ag.ch
 > Products > Fitting
 recommendations
 or telephone +41 0 56 619 85 85

SANDWICH ELEMENTS IN STEEL AND ALUMINIUM

Wall elements with CFC and HCFC-free PIR high-resistance foam with visible fasteners

TYPE

WALL ELEMENTS WITH VISIBLE FASTENERS



PROFILE

● MTW LL 80/1150 on request

● MTW LL 100/1150 on request

● MTW LL 120/1150 on request



TECHNICAL DATA

M kg/m²
d mm
L max m
U₁ W/(m² K)
U₂ W/(m² K)
λ_D W/(m K)
S P items/pack

SURFACES

LL

ML

NL

WL

SHEET THICKNESS

A mm

I mm

TECHNICAL DATA	M kg/m ²	d mm	L max m	U ₁ W/(m ² K)	U ₂ W/(m ² K)	λ _D W/(m K)	S P items/pack	SURFACES	LL	ML	NL	WL	SHEET THICKNESS	A mm	I mm
STEEL	12.48	80	17	0.29	0.30	0.024	13		●	●				0.63	0.45
ALUMINIUM	7.35	80	12	0.29	0.30	0.024	13		●	●				0.70	0.70
STEEL	13.29	100	17	0.23	0.24	0.024	11		●	●				0.63	0.45
ALUMINIUM	8.15	100	12	0.23	0.24	0.024	11		●	●				0.70	0.70
STEEL	14.10	120	17	0.19	0.20	0.024	9		●	●				0.63	0.45
ALUMINIUM	8.96	120	12	0.19	0.20	0.024	9		●	●				0.70	0.70

TECHNICAL DATA

M Element weight
d Element thickness
L Max. element length
U₁ Heat transition coefficient **without** factor of the joint
U₂ Heat transition coefficient **with** factor of the joint
λ_D declared and certified lambda value
S Standard packaging

SHEET THICKNESS

A Outer shell
I Inner shell

SURFACE FINISHES

L Lining (nominal depth: 1 mm)
M Microprofilation (nominal depth: 0.70 mm)
N Grooving with microlining (nominal depth: 1.6 mm/0.70 mm)

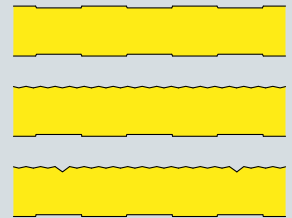
1st letter = outer shell
2nd letter = inner shell

LL

ML

NL

WL



Colour chart

Request by sending an email to: info@montana-ag.ch or telephone +41 0 56 619 85 85 or write to Montana Bausysteme AG, Durisolstr. 11, CH-5612 Villmergen



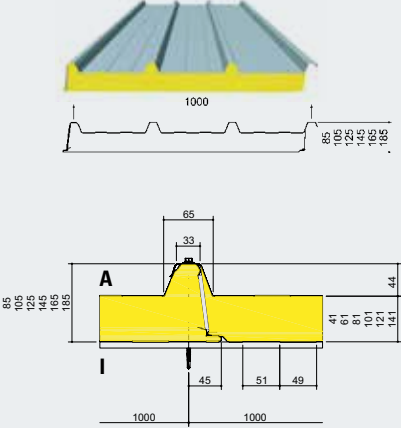

Certificates and approvals

You can it download. www.montana-ag.ch
> Services > Download > Certificates
or www.montana-ag.ch
> Products > approvals
or telephone +41 0 56 619 85 85

MONTANATHERM®

SANDWICH ELEMENTS IN STEEL AND ALUMINIUM

Roof elements with CFC and HCFC-free PIR high-resistance foam

TYPE	PROFILE	TECHNICAL DATA								SURFACES	SHEET THICKNESS	
		M kg/m ²	d mm	L max m	U ₁ W/(m ² K)	U ₂ W/(m ² K)	λ ₀ W/(m K)	S Pitems/pack	TL		A mm	I mm
● ROOF ELEMENTS 	● MTD TL 85/1000	STEEL	12.26	44/85	10	0.53	0.55	0.024	16	●	0.63	0.45
		ALUMINIUM	6.61	44/85	10	0.53	0.55	0.024	16	●	0.70	0.70
	● MTD TL 105/1000 on request	STEEL	13.19	44/105	17	0.37	0.38	0.024	12	●	0.63	0.45
		ALUMINIUM	7.54	44/105	12	0.37	0.38	0.024	12	●	0.70	0.70
	● MTD TL 125/1000 on request	STEEL	14.12	44/125	17	0.28	0.29	0.024	10	●	0.63	0.45
		ALUMINIUM	8.47	44/125	12	0.28	0.29	0.024	10	●	0.70	0.70
	● MTD TL 145/1000	STEEL	15.05	44/145	17	0.23	0.24	0.024	8	●	0.63	0.45
		ALUMINIUM	9.39	44/145	12	0.23	0.24	0.024	8	●	0.70	0.70
	● MTD TL 165/1000	STEEL	15.98	44/165	17	0.19	0.20	0.024	7	●	0.63	0.45
		ALUMINIUM	10.32	44/165	12	0.19	0.20	0.024	7	●	0.70	0.70
	● MTD TL 185/1000	STEEL	16.90	44/185	17	0.17	0.17	0.024	6	●	0.63	0.45
		ALUMINIUM	11.25	44/185	12	0.17	0.17	0.024	6	●	0.70	0.70
		MINERGIE MODUL										
		TECHNICAL DATA M Element weight d Element thickness L Max. element length U₁ Heat transition coefficient without factor of the joint U₂ Heat transition coefficient with factor of the joint λ₀ declared and certified lambda value S Standard packaging				SURFACE FINISHES L Lining (nominal depth: 1 mm) T Trapezoidal profiling (height: 44 mm) 1st letter = outer shell 2nd letter = inner shell SHEET THICKNESS A Outer shell I Inner shell						
												

● SANDWICH ELEMENTS NB (non-inflammable)

Core layer made of mineral fibre boards.

On request



Homepage
www.montana-ag.ch
 With additional product information and references.



CAD files
 You can download these.
www.montana-ag.ch
 > Products > CAD



Load tables
 You can it download.
www.montana-ag.ch
 > Products > Statics
 or telephone +41 0 56 619 85 85



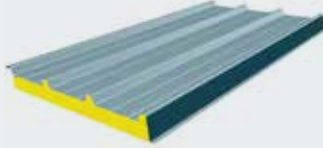
Fitting recommendation
 You can it download.
www.montana-ag.ch
 > Products > Fitting recommendations
 or telephone +41 0 56 619 85 85

TECHNOLOGY

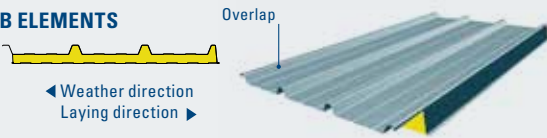
TECHNICAL INFORMATION

DESCRIPTION

● A ELEMENTS



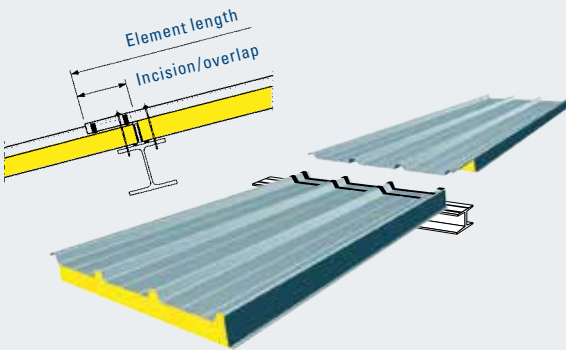
● B ELEMENTS



● C ELEMENTS



● OVERLAP, MINIMUM ROOF PITCH AND TOLERANCES



FINISH	OVERLAP
Standard	left
Foam core incision	right

Remove foam core and notch the internal end rib in the overlap area.

RECOMMENDED MINIMUM ROOF PITCH

Roof without lateral joint and recess: 6%/3.4°

Roof with lateral joint or recess: 10%/5.7°

Support widths: min. 40 mm

Foam core incisions: min. 50 mm to max. 300 mm, with min. 3000 mm element length

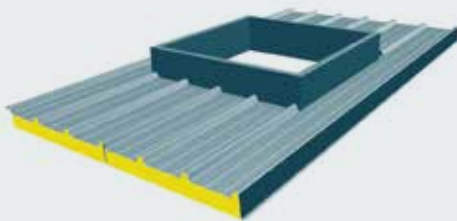
Removal of foam core: on request

Sealing strips are to be provided on the substructure and between the elements for the overlaps.

TOLERANCES

Length	≤ 6 m	± 4 mm	Thickness 60–80 mm	± 2 mm
Length	≤ 12 m	± 6 mm	Thickness > 80 mm	+ 3 mm/–2 mm
Length	> 12 m	± 8 mm	Transversal camber:	
Width	± 4 mm		Wall elements	max. 8 mm
			Roof elements	max. 10 mm

● CURB



To avoid colour deviations, the same basic material is used for the special production of the curbing as for the manufacture of the sandwich elements. Taking account of the structural engineering conditions, the length of the clear dimension of the curb can vary between 1300 mm and 2800 mm. The maximum clearance width of the curb, on the other hand, is 1300 mm. The height of the curb is 350 mm. The side walls are 60 mm thick and insulated with mineral wool.

ADVANTAGES

The curb is completely pre-fitted ex works. Special transport and storage devices guarantee problem-free delivery and handling on site (delivery of curbs only within Switzerland).

INSTALLATION INSTRUCTIONS

Under the laws and regulations currently in force, appropriate fall protection devices must be fitted when carrying out roof works. Skylights (dome lights, light elements, etc.) must be guaranteed shatter-proof through suitable collective measures such as protective grids or mesh inserts.



Colour chart

Request by sending an email to: info@montana-ag.ch or telephone +41 0 56 619 85 85 or write to Montana Bausysteme AG, Durisolstr. 11, CH-5612 Villmergen



Certificates and approvals

You can it download. www.montana-ag.ch
> Services > Download > Certificates
or www.montana-ag.ch
> Products > approvals
or telephone +41 0 56 619 85 85

ACCESSORIES

DESCRIPTION

FINISH

● FITTING EQUIPMENT



Fitting equipment for the installation of MONTANATHERM® wall elements. Easy handling thanks to the telescopic tube and clamping mechanism. 2 fitting equipments including accessories packaged in a handy plastic box. Weight approx. 16 kg

Please ask for our detailed brochure!

Suitable to all MONTANATHERM® wall elements

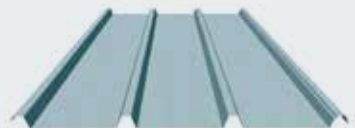
● LOAD DISTRIBUTION BOARD



Load distribution boards, matching MONTANATHERM® wall elements with concealed fasteners

- For the safe discharge of high bolt forces resulting from wind suction into the sandwich joint
- Material S320GD + AZ185 according to DIN EN 10346
- Thickness 1.5 mm

● MONTANA SLIDING PLATE



SWISS PANEL® SP 44/1000
Overall width 1000 mm
Steel or aluminium coil-coated polyester 25 µm
Lengths 2000 to 15,000 mm

suitable for all MONTANATHERM® roof elements

● MONTANA LIGHT ELEMENTS



Double-walled thermo elements made of glass fibre reinforced polyester. Montana light elements are delivered ready for installation and can be fitted in one operation together with the sandwich elements. Under the laws and regulations currently in force, appropriate fall protection devices must be fitted when carrying out roof works. Skylights must be guaranteed shatter-proof through suitable collective measures such as protective grids or mesh inserts.

U value approx. 2.4 W/m²K
max. L = 8500 mm
Weight 600 g/m²

Fire code 4.3 according to VKF guidelines
Construction material classification B2 according to DIN 4102-1

suitable for MONTANATHERM® roof elements TL 85–145

● SNOW AND ICE GUARD IN ALUMINIUM



T-profile Aluminium polished 60 x 40 x 4-3000 mm
 Securing holes ø 10 mm pre-punched
 powder-coated on request

Sealant PVC 40 x 60 x 4 mm

suitable for all MONTANATHERM® roof elements

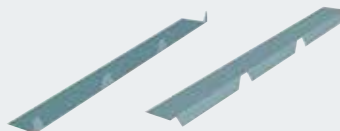
● PLASTIC PROFILE FILLER



Polyethylene PE, anthracite/white
B2 according to DIN 4102, normal inflammability

suitable for all MONTANATHERM® roof elements

● METAL FILLERS



Steel or aluminium
Straight or canted

suitable for all MONTANATHERM® roof elements

● CROWNS



Aluminium with EPDM seal

suitable for all MONTANATHERM® roof elements

● MONTANA DOMELIGHTS



Montana domelight



Mechanical opening
Telescopic spindle operation with hook-on crank handle
Aluminium tube with plastic handle
Delivery lengths 1.50 m, 2 m, 3 m



Electric opening
With electric motor for individual and multiple series switching
Activation via rotary switch
Surface or flush mounting

Two or three-layered domelights made of acrylic glass, opalescent outer shell, clear inner shell.

The curbing comprises glass fibre reinforced polyester and has HCFC-free polyurethane foam insulation. The underside insulation corresponds to the thickness of the MONTANATHERM® roof elements. The outside of the curbing is protected with Gelcoat. The inside has a foam-free zone in the lower area and is provided with a free profile rib on the left and right-hand side depending on the laying direction. The water channel integrated on the top provides for problem-free water drainage.

Suitable for all MONTANATHERM® roof elements

The domelights are delivered ready for installation and can be fitted in one operation together with the sandwich elements.

Under the laws and regulations currently in force, appropriate fall protection devices must be fitted when carrying out roof works. Skylights must be guaranteed shatter-proof through suitable collective measures such as protective grids or mesh inserts.

FUNCTION

Daylight inlet
Smoke extractor
Ventilation (according to the operation used)
Roof hatch

ADVANTAGES

The domelight is supplied ready for fitting ex works. It is secured on the interchange point according to the drawing and laid in one operation together with the sandwich elements.

TECHNICAL DATA

Heat transition value according to DIN 4108	
Double-layered domelight	2.85 W/m ² K
Three-layered domelight	1.86 W/m ² K
Curbing	1.18 W/m ² K
Height of curb	30 cm
Light transmission	85 %
Fire category	B2 according DIN 4102-1

OPENING SYSTEMS

The domelights are fitted to a white, reinforced PVC frame and provided with stainless steel hinges. Deliveries with different opening systems are possible.

Daytime ventilation through telescopic spindle operation via a hook-on crank handle.

Opening 30 cm, for rooms with clearance height of < 4.50 m

Daytime ventilation with electric drive, 230 volts, frequency 50/60 Hz

Lift height 30 or 50 cm, with separate switch

Lifting power 500 N, rated input 23W/0.1 A

Protection type IP 54 according to DIN 40050 (not for wet rooms) secured against overload via thermal protection.

Wind and rain detectors and temperature control are also available on request.

Smoke extractor according to DIN 18232, model DIN-AUF, 165° opening with pneumatic cylinder, only opening, with CO₂ thermal activator, set at 70 °C or 90 °C.

Daytime ventilation is possible via an electric motor.

COLOURS

The colours of the curbing correspond outside and inside to the colours of the MONTANATHERM® roof elements according to the order.



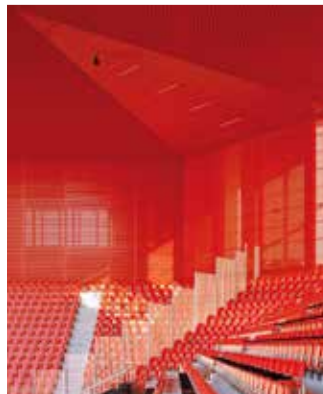
**MONTANA BAUSYSTEME AG – THE SWISS
COMPANY WITH INTERNATIONAL REFER-
ENCES IN INDUSTRIAL, COMMERCIAL,
ADMINISTRATIVE AND RESIDENTIAL
CONSTRUCTION**

Montana Bausysteme AG has become a byword for innovative construction solutions among planners and architects. Years of experience, a broad product range, high flexibility and the resources of a multi-national group make Montana a top supplier of international calibre. Architects acknowledged worldwide use products from Montana Bausysteme AG to match visual creativity with technical requirements. In addition to the products presented in this brochure, we can also offer you other attractive product lines such as SWISS PANEL®, MONTAFORM®, MONTAWALL®, MONTALINE®, MONTATWIN®, MONTASTEP® and HOLORIB/SUPERHOLORIB®. Please ask for further information!

Every construction project is a challenge. A well-rehearsed, highly competent Montana team ensures the smooth progress of consultation, planning and production, right up to punctual delivery on site.



MONTAFORM® Residential development, Olten (CH)



PERFORATION Stade de la Maladière, Neuenburg (CH)



SWISS PANEL® Paul Klee Centre, Berne (CH)



MONTAWALL® Stade de Suisse, Berne (CH)



MONTATWIN® Kaufland, Dingolfing (D)



MONTALINE® Lehner Versand AG, Schenkon (CH)



SUPERHOLORIB® Technology Museum, Berlin (D)



MONTASTEP® Connect GmbH, Freiburg (D)

We reserve the right to make changes to our products in the course of further technical and technological development. For this reason, the information given in our brochures is to be regarded as non-binding recommendations. The illustrated designs, details and shapes are non-binding solution suggestions that have to be checked for correctness depending on the structure and associated requirements. Technical details shall only form the subject of a contractual agreement following mutual consultation and our written confirmation accordingly. Reproduction and reprinting prohibited.

MONTANA BAUSYSTEME AG
Durisolstrasse 11
CH-5612 Villmergen
Tel. + 41 0 56 619 85 85
Fax + 41 0 56 619 86 10
www.montana-ag.ch
info@montana-ag.ch

**MONTANA SYSTÈMES
DE CONSTRUCTION SA**
CH-1028 Préverenges
Tél. + 41 0 21 801 92 92
Fax + 41 0 21 801 92 93
www.montana-ag.ch
info@montana-ag.ch

MONTANA BAUSYSTEME AG
Zweigniederlassung
D-86845 Grossaitingen
Tel. +49 0 8203 95 90 555
Fax +49 0 8203 95 90 556
www.montana-ag.ch
info@montana-ag.ch