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BUILDING SYSTEMS AND ASSEMBLIES

The construction of building elements within the internal spaces of the buildings is often performed using drywall technology. In Europe and around the world, it has been developed by observing all engineering and architectural rules of the construction science and meeting all guiding regulations and standard requirements as well.

Based on that major producers create building systems and assemblies, which are to be applied by designers and builders when satisfying the investor's requirements, and meeting the legislation in force. **TECHNOGIPS** building systems and assemblies are developed in compliance with the established European standards for drywall such as EN 13964, the German standard DIN 18181 and the Austrian standard ÖNORM 3415. The latter are recognized rules by both the European countries and the industrial organizations of the builders employing drywall construction. At the same time, the achieved technical indices comply with the requirements of the legislative documents in force and the best building practices.

Our main objective is to provide the most comprehensive information possible to each participant in the building and investment process depending on his/her tasks:

- **To the designer** – data and details needed to prepare quality design documentation including drawings and precise specifications of the building and installation works;
- **To the contractor** – full details and peculiarities of the technology process;
- **To the investor and the project manager** – construction and physical properties of the ready construction materials.

We hope that this information will enable you to prepare clear bidding documentation so that at this stage anyone who applies for a contractor to be guided by explicit conditions regarding materials, quantity and quality of the specified building and installation works. The application of TECHNOGIPS building systems and assemblies enables you to exercise efficient control when performing any installation works.

The major construction and physical parameters of the systems are determined based on the specifications for the substantial requirements to the building sites in relation to the following:

- **Fire safety – fire protection of the systems**
- **Noise protection – noise insulation**
- **Power saving and heat conservation – heat insulation**
- **Hygiene, health and environment protection**
- **Mechanical resistance and stability**

The partition walls with plasterboards are non-bearing for the main loads of the buildings. Only in certain cases they might have bearing functions for horizontal loads but the bearing capacity depending on the loads has to be checked then.

The designer has to pay special attention to the connections for drywall with the other elements of the building especially to the ones that are susceptible to deformations. The elements have to be separated with a separation strip if deformations smaller than 10 mm are envisioned and expansion joints are made if larger deformations are anticipated since the drywall systems cannot take up the same deformations as, for example, the concrete elements of the buildings would do it. It is mandatory that the deformation joints in the buildings structure be transferred to the elements with plasterboards.

The designer must take also take into consideration the necessity for additional waterproofing depending on the specific capabilities of the drywall systems. Details how to form extension joints, openings, etc. are developed for the systems.

The parameters of **TECHNOGIPS** building systems and assemblies are identical with the ones pertaining to the respective standards or tested at notified institutes:

- Construction Research Institute, Sofia, Construction Physics Laboratory certified according to EN ISO/IEC 17025:2006
  Method: EN ISO 140-3 "Acoustics, Measurement of sound insulation in buildings and of construction elements"
  Reports No. No. 988 – 992 and 1101 – 1102 from 2009

- Institute for Research and Applied Activities in Fire Safety and Rescue at the Fire Safety and Rescue Administration – Ministry of Interior
  Method: EN 1364-1
  Classification in accordance to EN 13501-2
  Classification protocols for dry walls N 8/09.02.2010, N 56 and N 57/11.10.2010
  Classification protocols for ceiling N 2/16.02.2011

The information and the types of TECHNOGIPS systems are subject to permanent updating and further supplements.

In systems and construction-sets for dry construction are applied plasterboards and dry gypsum mixtures TECHNOGIPS. The parameters of the plasterboards, which affect the properties of the systems are – type and thickness.

They determined the levels of:

- water resistance
- fire resistance
- sound insulation

By installation of the cladding must achieve work together between the single plasterboards. With the joint filler TEHNOFUGA is achieved equal-strenght assembly of single plasterboards.

When making cladding of vertical surfaces of concrete, brick and other materials is applied gluing of plasterboards. In the wall-cladding system is included gypsum adhesive for plasterboards TECHNOFIX.

The TECHNOGIPS elements – building systems and assemblies are products in accordance with the following product standards:	
EN 520	Gypsum Plasterboards. Definitions, requirements and test methods.
EN 14195	Metal profiles for systems with gypsum plasterboards. Definitions, requirements and test methods.
EN 13963	Jointing Materials for gypsum plasterboards. Definitions, requirements and test methods.
EN 14496	Gypsum based adhesives for plasterboards. Definitions, requirements and test methods.
EN 13162	Heatproof products for buildings. Mineral wool products fabricated under industrial conditions.
EN 14566	Mechanical fastening elements for systems with gypsum plasterboards.

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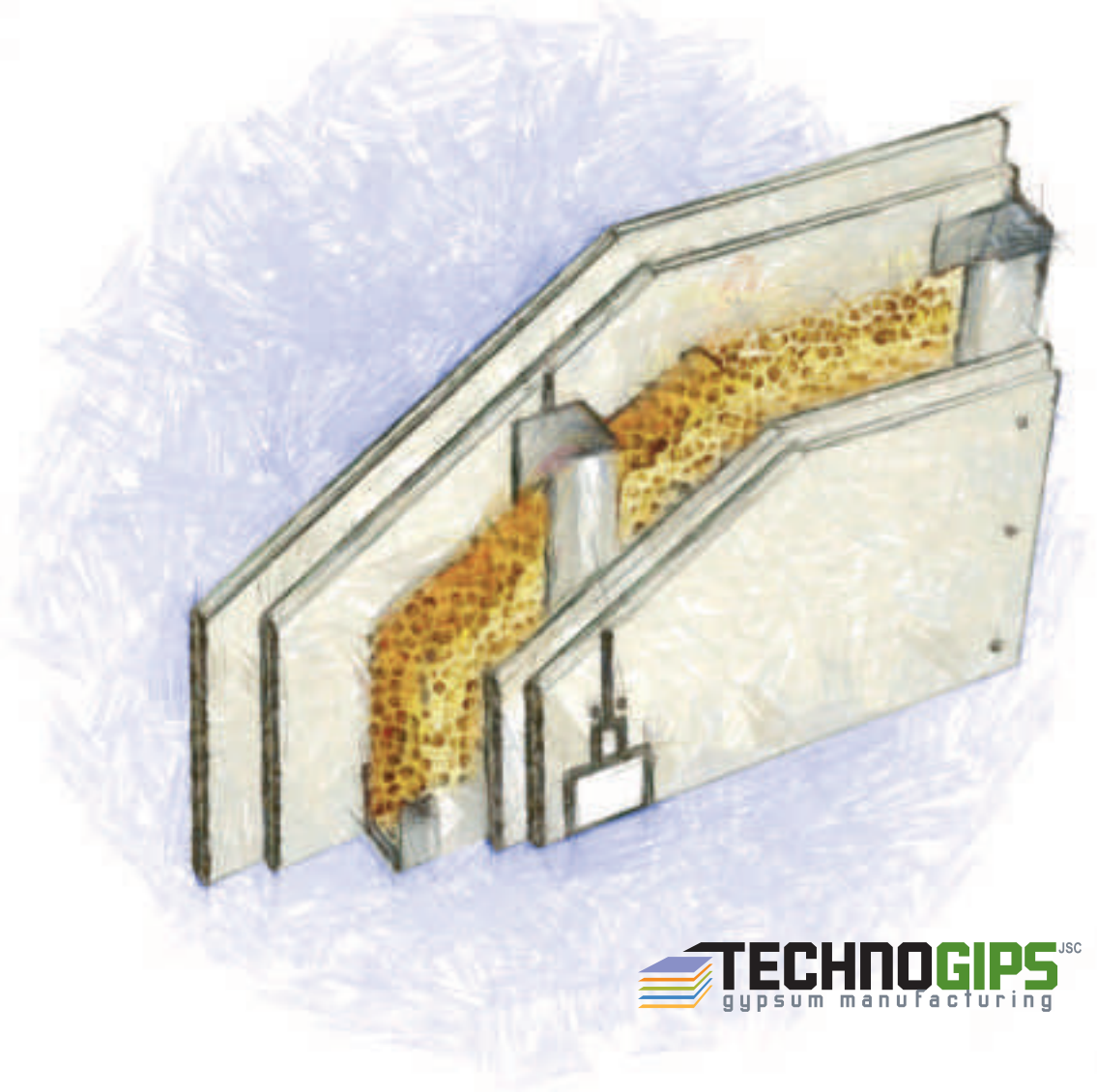
TECHNOGIPS

PARTITION WALLS



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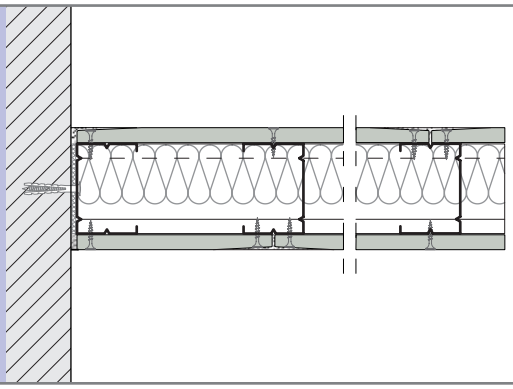
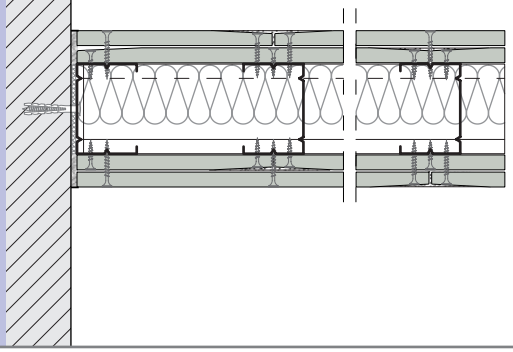
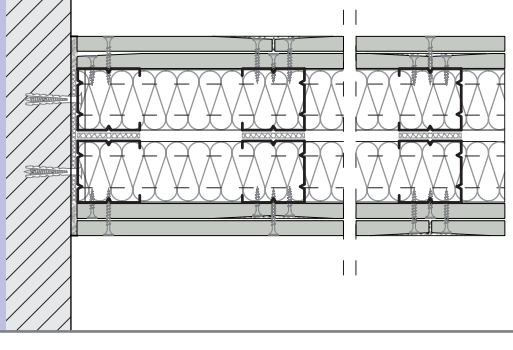
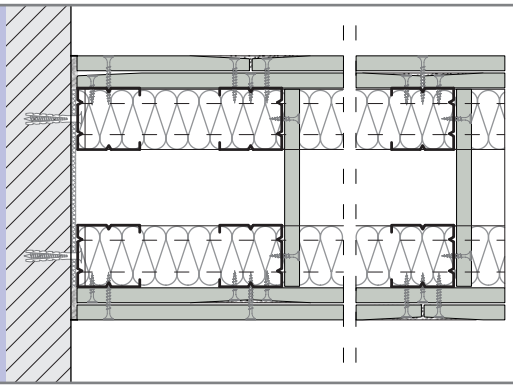
TYPES OF SYSTEMS, GEOMETRY, SOUND INSULATION, FIRE RESISTANCE

Partition wall (scheme)
TECHNOGIPS system (construction set)

		Weight	Construction	Thickness of the wall	Cladding		Thickness of the insulation material / density
			Type / size of profile		Thickness	TECHNOGIPS plasterboard	
		kg/m²	mm	mm	mm	type	mm/kg/m³
Single layer cladding on a single stud construction		about 25	CW/ UW 50	75	1 x 12,5 1 x 15,0	type **A** type **H2** type **F**	40/40
			CW/ UW 75	100			60/40 50/30*
			CW/ UW 100	125			40/40 60/40 80/40
Double layer cladding on a single stud construction		about 45	CW/ UW 50	100	2 x 12,5 2 x 15,0	type **A** type **H2** type **F**	50/11*
			CW/ UW 75	125			50/11* 50/30*
			CW/ UW 100	150			50/11* 80/40*
Double layer cladding on a double stud construction type A		about 50	CW/ UW 50	155	2 x 12,5 2 x 15,0	type **A** type **H2** type **F**	40/40 80/40
				155			2x50/40*
			CW/ UW 75	205			
			CW/ UW 100	255			40/40 80/40
Double layer cladding on a double stud construction type B		about 50	CW/ UW 50	>160	2 x 12,5 2 x 15,0	type **A** type **H2** type **F**	40/40
				>200			2x50/11* 2x50/40*
			CW/ UW 75	>210			40/40

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Airborne sound insulation / acoustic index $R_{W\ (C,\ Cmp)}$	Note	Meet a requirements of sound insulation	Types of spaces	Fire-resistance Thickness/ minimal density of insulation material		Note	
dB	Standard/ protocol	dB	dB	mm/kg/m³	min	Standard/ protocol	Cladding
45	in accordance with DIN 4109	37, 40	wall between offices, walls in dwellings	40/40	30	in accordance with DIN 4102	1x12,5 mm type A
				50/40**	EI 90**	Pr. N 57/11.10.2010**	1x12,5 mm type F
47	Pr. N 989-4-29*			60/40	30	in accordance with DIN 4102	1x12,5 mm type A
46 (-5,-13)*				50/30			
				50/40**	EI 90**	Pr. N 57/11.10.2010**	1x12,5 mm type F
47	in accordance with DIN 4109			40/40	30	in accordance with DIN 4102	1x12,5 mm type A
48				60/40			
51				80/40			
				50/40**	EI 90**	Pr.I N 57/11.10.2010**	1x12,5 mm type F
≥ 50 (-3,-8)*	Pr. N 990-4-30*	37, 40, 42 and 47	walls between offices, between offices and corridors, housing, between the offices of managers, between hotel rooms, between hospital rooms	50/40	EI 90**	Pr. N 56/11.10.2010**	2x12,5 mm type A
				without wool**	EI 120**	Pr. N 8/09.02.10**	2x12,5 mm type F
49 (-2,-6)*	Pr. N 988-4-29*			50/40	EI 90**	Pr. N 56/11.10.2010**	2x12,5 mm type A
51 (-1,-6)*				without wool**	EI 120**	Pr. N 8/09.02.10**	2x12,5 mm type F
49 (-1,-4)*	Pr. N 992-4-32*			50/40	EI 90**	Pr. N 56/11.10.2010**	2x12,5 mm type A
51 (-2,-4)*	Pr. N 1102-4-35*			without wool**	EI 120**	Pr. N 56/11.10.2010**	2x12,5 mm type F
61	in accordance with DIN 4109	37, 40, 42, 47 and 53	all of the above, including the walls between rooms and bathrooms	40/40	60	in accordance with DIN 4102	2x12,5 mm type A
63				80/30	90		
55 (-1,-4)*	Pr. N 1101-4-34*						
63	in accordance with DIN 4109			40/40	60	in accordance with DIN 4102	
65				80/30			
54	calculated	37, 40, 42, 47 and 53	all of the above, including the walls between rooms and bathrooms		90	test	2x12,5 mm type A
55 (-1,-3)*	Pr. N 991-4-31*			40/100			
56 (-2,-3)*							
54	calculated						

NOTES:

The wall structure is made of studs for drywall according to EN 14195.

The central distance is maximum 60 cm if the profile thickness is 0,55 ÷ 0,6 mm. If other thickness is to be applied, the technical expert shall perform all sizing in order to determine the central distance.

* The data is for weighted insulation factor for the particular TECHNOGIPS system Rw (C, Cmp). C calculated adjustment factor for internal premises based on the tests made at the Construction Research Institute, Sofia. The rest of the data is quoted according to DIN 4109 and refer to mineral wool insulation according to EN 13162 with air flow linear resistance factor r>5 kPa.s/m².

** Classification according to Protocols of the Fire Safety and Rescue Administration at the Ministry of Interior.

FIRE RESISTANCE OF TECHNOGIPS PARTITION WALLS

Construction Type of profile	Thickness of the wall mm	Cladding thickness mm	Cladding TECHNOGIPS plasterboard type	Insulating material thickness mm	Insulating material density kg/m³	Fire resistance EI min	Fire resistance protocol
Walls with a single layer cladding with wool							
CW/UW 50	75	1 x 12,5	F	50	40	**EI 90**	**N 56/11.10.2010**
CW/UW 75	100	1 x 12,5	F	50	40		
CW/UW 100	125	1 x 12,5	F	50	40		
Walls with a double layer cladding with wool							
CW/UW 50	100	2 x 12,5	A	50	40	**EI 90**	**N 57/11.10.2010**
CW/UW 75	125	2 x 12,5	A	50	40		
CW/UW 100	150	2 x 12,5	A	50	40		
Walls with a double layer cladding without wool							
CW/UW 50	100	2 x 12,5	F	–	–	**EI 120**	**N 8/09.02.2010**
CW/UW 75	125	2 x 12,5	F	–	–		
CW/UW 100	150	2 x 12,5	F	–	–		

TABLE OF TECHNOGIPS SYSTEMS FOR PARTITION WALLS,COVERING REQUIREMENTS FOR PROTECTION AGIANST AIR-BORNE NOISE:

TECHNOGIPS systems for partition walls	1xCW/UW 75 1x12,5 mm 50 mm 30 kg/m³ structure cladding insualtion mineral wool	1xCW/UW 50 2x12,5 mm 50 mm 11 kg/m³ structure cladding insualtion mineral wool	1xCW/UW 75 2x12,5 mm 50 mm 11 kg/m³ structure cladding insualtion mineral wool	1xCW/UW 75 2x12,5 mm 50 mm 30 kg/m³ structure cladding insualtion mineral wool	1xCW/UW 100 2x12,5 mm 50 mm 11 kg/m³ structure cladding insualtion mineral wool	1xCW/UW 100 2x12,5 mm 80 mm 40 kg/m³ structure cladding insualtion mineral wool	2xCW/UW 50 2x12,5 mm 2x50 mm 40 kg/m³ structure cladding insualtion mineral wool	2xCW/UW 50 2x12,5 mm 2x50 mm 11 kg/m³ structure cladding insualtion mineral wool	2xCW/UW 50 2x12,5 mm 2x50 mm 40 kg/m³ structure cladding insualtion mineral wool
Thickness of the wall, mm	**100**	**100**	**125**	**125**	**150**	**150**	**155**	**≥ 200**	**≥ 200**
Weighted index of air-borne sound insulation Rw of Technogips walls*									
Minimum requirement for index of airborne noise R'w	**Rw** **46** **(-5,-13)**	**Rw** **50** **(-3,-8)**	**Rw** **49** **(-2,-6)**	**Rw** **51** **(-1,-6)**	**Rw** **49** **(-1,-4)**	**Rw** **51** **(-2,-4)**	**Rw** **55** **(-1,-4)**	**Rw** **55** **(-1,-3)**	**Rw** **56** **(-2,-3)**
Type of the wall	R'w dB								
HOUSINGS partition wall in housing	40	●	●	●	●	●	●	●	●	●
HOUSINGS walls between housings and sanitation facilities	53							●	●	●
HOTELS, SOCIAL CARE PREMISES walls between bedrooms and between hallways and bedrooms	47		●	●	●	●	●	●	●	●
MEDICAL INSTITUTIONS walls between: - hospital rooms - hosp. rooms and hallways - offices - offices and hallways - hospital rooms and sanitation facilities	47		●	●	●	●	●	●	●	●
SCHOOLS AND CHILDCARE PREMISES walls between school rooms	47		●	●	●	●	●	●	●	●
SCHOOLS AND CHILDCARE PREMISES walls between school rooms and staricases	52							●	●	●
BUILDINGS FOR PUBLIC-SERVICE ACTIVITIES walls between offices, conference rooms and hallways	47		●	●	●	●	●	●	●	●
BUILDINGS FOR PUBLIC-SERVICE ACTIVITIES walls between working premises and hallways, lobbies, sanitation facilities	42		●	●	●	●	●	●	●	●
BUILDINGS FOR PUBLIC-SERVICE ACTIVITIES walls between working premises	37	●	●	●	●	●	●	●	●	●

*Rw (C, Cmp), where C and Cmp are correction factors for determining the weighted index of sound insulation, calculated on the basis of laboratory test results
Note: Testresults in accordance to EN ISO 140-3

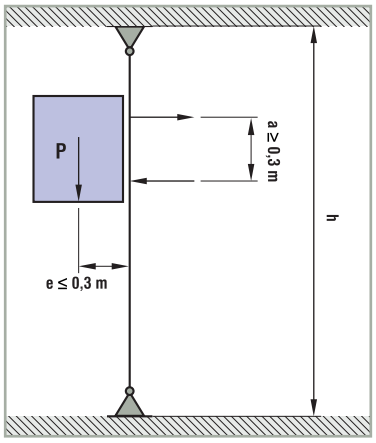
ALLOWABLE PARTITION WALLS HEIGHTS WITH METAL STUD CONSTRUCTION ACCORDING TO DIN 18183

Stud type*	Thickness of the wall	Cladding	Insulating material – thickness	Area of application	
				I	II
				Height of the wall	
	mm	mm	mm	m	m
Walls with a single layer cladding with single stud construction					
CW 50	75	1 x 12,5	50	3,00	2,75
CW 75	100	1 x 12,5	50	4,50	3,75
CW 100	125	1 x 12,5	50	5,00	4,25
Walls with a double layer cladding with single stud construction					
CW 50	100	2 x 12,5	50	4,00	3,50
CW 75	125	2 x 12,5	50	5,50	5,00
CW 100	150	2 x 12,5	50	6,50	5,75
Walls with a double layer cladding with double stud construction type B					
2 x CW 50	155	2 x 12,5	50	4,50	4,00
2 x CW 75	205	2 x 12,5	50	6,60	5,50
2 x CW 100	255	2 x 12,5	50	6,50	6,00

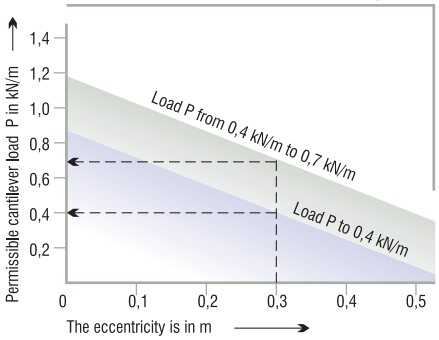
NOTES:
* Studs according to EN 14195, profile thickness d=0,6 mm, the central distance – 60 cm.
** The application areas are stipulated in the German and Austrian construction norms.
Application area I: Areas allowing gathering of a limited number of people (homes, hotels, premises in offices and hospitals including the corridors).
Application area II: Areas allowing gathering of a large number of people (larger conference rooms, school premises, concert, exhibition, commercial halls) as well for premises with a difference between the floors ≥1 m.
In determining the allowable height, measurements for horizontal loads have not been taken under consideration (including wind, earthquake).
If necessary a verification for extra loads must be made by an structural engineer.

BEARING CAPACITY OF THE PARTITION WALLS

The loads are strip loads and are measured in kN/m – the length of the wall when observing Scheme 1:



or Diagram 1:



Cantilever loading (static) according to ONORM B 3415:2009.

TYPE OF LOAD

Load type	**LIGHT LOADS** Flat objects	**LOADS WITH AVERAGE WEIGHT** Shelves, wall medical equipment	**HEAVY LOADS** Suspended toilet, sink with a table, water heater heavier than 150 kg
Size	P ≤ 0,4 kN/m	0,4 ≤ P ≤ 0,7 kN/m	0,7 ≤ P ≤ 1,5 kN/m
Thickness of the cladding	single or double layer cladding ≥12,5 mm	single layer cladding ≥ 18,0 mm double ≥12,5 mm	double layer cladding ≥ 25,0 mm
Construction	single or double stud construction	single or double linked stud construction type B	–
Fastening	at each place on wall with hooks or dowel	at each place on wall with dowel	auxiliary bearing structures (traverses, cantilevers)

In the cases when loads are transferred through the drywall stud construction the profiles are required to be of type UA with thickness 2 mm which are fastened to the floor or respectively to the ceiling with V-shaped angles.

Structural sizing must be made if larger or dynamic loads are to be transferred. It is possible to use frames of UA profiles fastened to the floor or the ceiling with V-shaped angles.

When transferring the forces through plasterboards the distance between the fastening elements of the loads must not exceed 75 cm.

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SPECIFICATIONS OF THE BUILDING AND INSTALLATION WORKS

Single layer cladding on a single stud construction	**Thickness:**	7,5 / 8,0 / 10,0 / 10,5 / 12,5 / 13,0 cm
	Height:	..... m according to item No .....
	Parameters:	soundproofing .....
		fire protection .....
	Construction:	studs according to EN 14195 CW/ UW 50; CW/ UW 75; CW/ UW 100 with thickness .....
	Cladding:	double-sided, single layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS Type A/ TECHNOGIPS Type F/ TECHNOGIPS Type H2**
	Thickness:	1 x 12,5 / 1 x 15,0 mm
	Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
		density ..... kg/m^3, or according to parameter .....
		sealing tape along CW/ UW studs on the structure outline
	Fastening elements:	screws, dowels for drywall according to EN 14566
	Jointing material:	TECHNOFUGA with joint tape
Double layer cladding on a single stud construction	**Thickness:**	10,0 / 12,5 / 15,0 cm
	Height:	..... m according to item No.....
	Parameters:	soundproofing .....
		fire protection .....
	Construction:	studs according to EN 14195 CW/ UW 50; CW/ UW 75; CW/ UW 100 with thickness .....
	Cladding:	double-sided, double layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS Type A/ TECHNOGIPS Type F/ TECHNOGIPS Type H2**
	Thickness:	2 x 12,5 mm
	Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
		density ..... kg/m^3, or according to parameter .....
		sealing tape along CW/ UW studs on the structure outline
	Fastening elements:	screws, dowels for drywall according to EN 14566
	Jointing material:	TECHNOFUGA with joint tape
Double layer cladding on a double stud construction type A	**Thickness:**	15,5 / 20,5 / 25,5 cm
	Height:	..... m according to item No .....
	Parameters:	soundproofing .....
		fire protection .....
	Construction:	studs according to EN 14195 2 x CW/ UW 50; 2 x CW/ UW 75; 2 x CW/ UW 100 with thickness .....
		strips of sealing tape between the CW studs according to the detail
	Cladding:	double-sided, double layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS Type A/ TECHNOGIPS Type F/ TECHNOGIPS Type H2**
	Thickness:	2 x 12,5 mm
	Insulation material:	with/without mineral wool according to EN 13162, with thickness 1 x ..... mm / 2 x ..... mm
		density ..... kg/m^3, or according to parameter .....
		sealing tape along CW/ UW studs on the structure outline
	Fastening elements:	screws, dowels for drywall according to EN 14566
	Jointing material:	TECHNOFUGA with joint tape
Double layer cladding on a double stud construction type B	**Thickness:**	> 16,0 / > 21,0 / > 26,0 cm
	Height:	..... m according to item No .....
	Parameters:	soundproofing .....
		fire protection .....
	Construction:	studs according to EN 14195 2 x CW/ UW 50; 2 x CW/ UW 75 ; 2 x CW/ UW 100 with thickness .....
		strips of plasterboard between the CW studs according to the detail
	Cladding:	double-sided, double layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS Type A/ TECHNOGIPS Type F/ TECHNOGIPS Type H2**
	Thickness:	2 x 12,5 mm
	Insulation material:	with/without mineral wool according to EN 13162, with thickness 1 x ..... mm / 2 x ..... mm
		density ..... kg/m^3, or according to parameter .....
		sealing tape along CW/ UW studs on the structure outline
	Fastening elements:	screws, dowels for drywall according to EN 14566
	Jointing material:	TECHNOFUGA with joint tape

TECHNOLOGY

The most important when making partition walls with TECHNOGIPS plasterboards in order to achieve the utmost quality is stated below:

- **enabling deformations –** the structure must not be rigidly connected to other building materials especially bearing ones in order to prevent tensions in the cladding and the joints and respectively cracking:
  - the structure of CW-studs is cut in a way to be 1,0 cm shorter than the premise height thus enabling the ceiling plate to take up deformations.

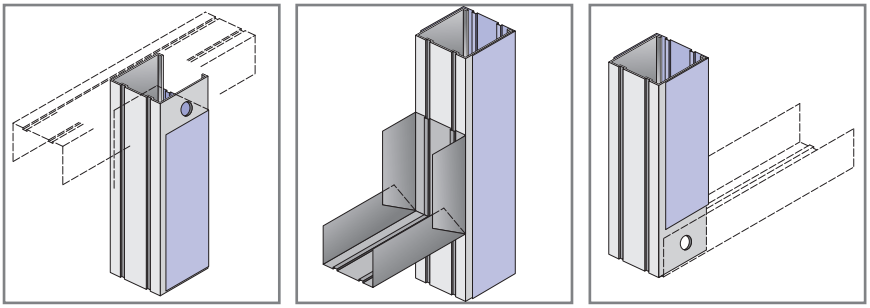
    In case of expected deformations > 1,0 cm sliding connections must be made;
  - It is mandatory for the CW studs to enter in the UW-ending profiles at 1,5 cm;
  - CW-studs can be connected with UW studs only in the cases when the cladding of the structure will be made after a longer period of time. The connection is made with pop-rivets;
- **disconnection of sound bridges –** sealing tape or another appropriate material is put upon all CW and UW studs which shape the frame of the structure and enter into contact with other parts. The studs are fastened to the floor and the ceiling at minimum 3 points at a distance < 1 m and to the lateral surfaces at each 70 cm at minimum 3 points;
- **secure holes drilling –** the suggested options 1 or 2 shall be used;
- **possibility for hanging cantilever loads –** the cladding thickness, structure type and embedding of auxiliary structures must me taken into consideration;
- **flawless operation –** proper selection of the right type of surfaces for cladding. In case of increased moisture moisture-resistant surfaces shall be used and if there is a requirement for fire protection – a system with proven fire protection shall be used;
- **improvement of the operational features of the surfaces**
  - In order to achieve quality finishing works on the plasterboards, it is compulsory to prime them prior to their painting, putting wallpapers or appropriate ground coatings and plasters;
  - If a long period of time has passed before any finishing works are done on the surfaces, the plasterboards have to be primed to prevent them from turning yellowish;
  - In order to increase moisture resistance, the moisture-resistant boards, put in wet premises, shall be further treated with sealing materials;
  - The edges which are not factory made shall be also treated if boards are applied in wet premises;
  - Sealing tape shall be applied upon the horizontal floor surface and vertical plasterboard surface in wet premises;
  - Boards are installed at every 25 cm along the vertical surface per one layer. If there is double layer cladding, the distance between two surfaces shall be 75 cm for the first layer and 25 cm for the second layer;
- **avoidance of stiff connection –** a functioning joint can be achieved through separation with ordinary scotch tape (separating tape) on the contact area between the board edge and other building materials.

SCHEME SHAPING OF FRAMES

OPTION 1

Box of CW/UW profiles or CW-profile with minimal thickness1 mm respectively reinforced with a wooden insert

Application: height of the premise H<2,80 m, clearance <0,90 m and table weight< 25 kg



OPTION 2

UA profiles, attached to the floor or the ceiling with V-shaped angles

Application: height of the premise H>2,80 m, clearance >0,90 m and table wight > 25 kg.(when one of the above-mentioned requirements is not fulfilled).

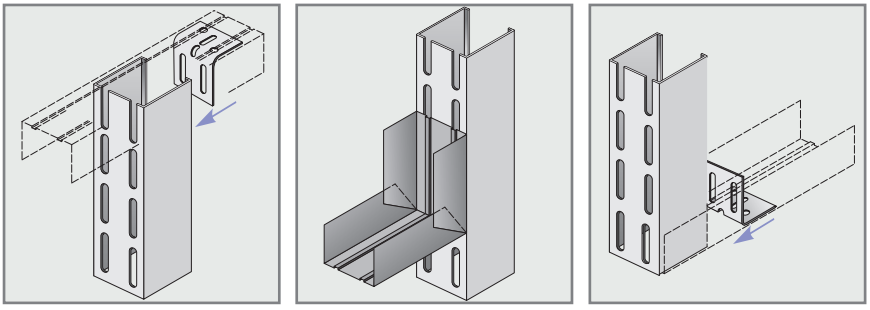


TABLE
COST OF MATERIALS

Partition wall (scheme)
TECHNOGIPS system (construction set)

	Construction in accordance with EN 14195*		Insulation in accordance with EN 13162		Cladding	Fasteners in accordance with EN 14566			Jointing material	
	UW profiles	CW profiles	mineral wool	sealing strip along the contour	TECHNOGIPS plasterboards	dowels for fixing profiles	screw for plasterboard 25 mm	screw for plasterboard 35 mm	TECHNO-FUGA	joint tape
	m¹	m¹	m²	m¹	m²	pcs	pcs	pcs	kg	m¹
Single layer cladding on a single stud construction	0,80	2,00	1,00	1,30	2,00	1,80	26	–	0,6	2,00
Double layer cladding on a single stud construction	0,80	2,00	1,00	1,30	4,00	1,80	10	26	0,9	2,00
Double layer cladding on a double stud construction type A	1,60	4,00	1,00 or 2,00	3,00	4,00	3,60	10	26	0,9	2,00
Double layer cladding on a double stud construction type B	1,60	4,00	1,00 or 2,00	2,60	4,10	3,60	14	26	0,9	2,00

NOTES:

*The data provided for material requirements is at a metal sheet thickness of 0,55 to 0,6 mm.

In case of different thickness sizing of the structure shall be made and the amounts shall be changed if necessary.

The material requirements data refers to straight walls without openings, bents, etc. for an area of about 10,5 m².

The material requirements data is considered without losses and cuttings.

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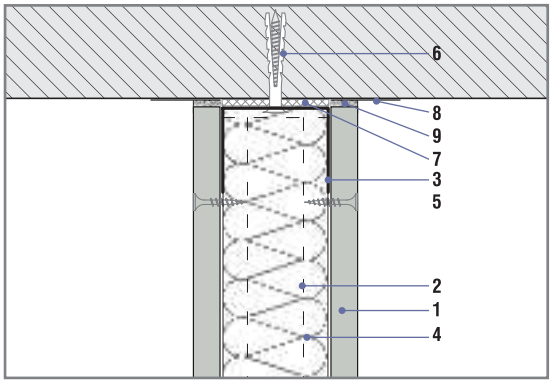
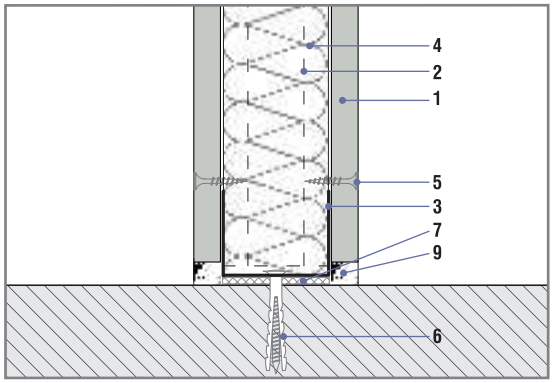
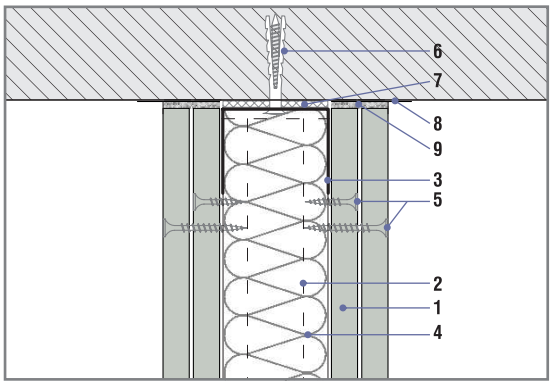
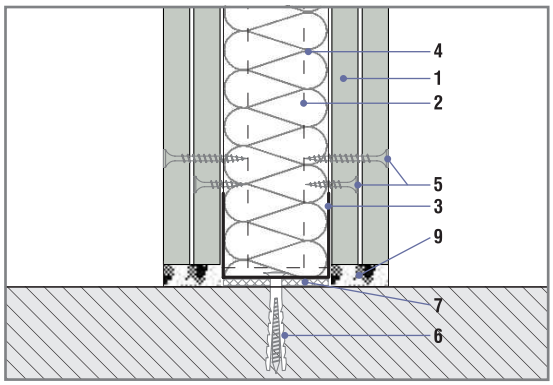
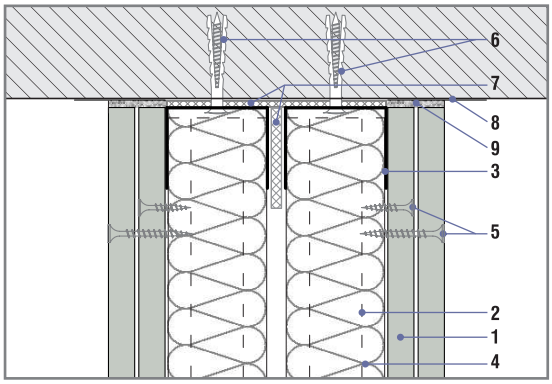
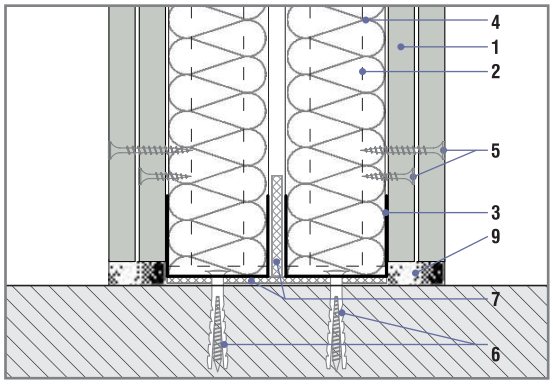
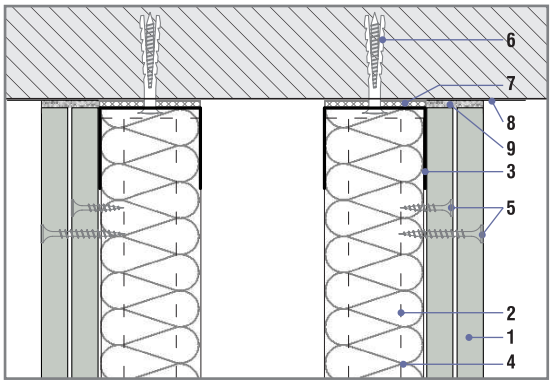
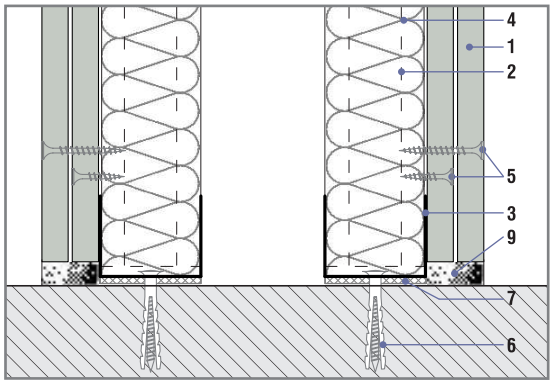
	CONJUNCTION TO CEILING	CONJUNCTION TO FLOOR
Single layer cladding on a single stud construction		
Double layer cladding on a single stud construction		
Double layer cladding on a double stud construction type A		
Double layer cladding on a double stud construction type B		

Positions

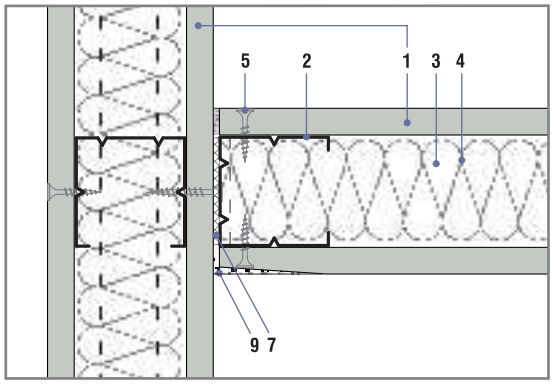
1	*TECHNOGIPS plasterboards*	4	*mineral wool*	7	*sealing strip*
2	*CW profile*	5	*rapid screw*	8	*separating strip*
3	*UW profile*	6	*PVC dowel*	9	*gypsum*

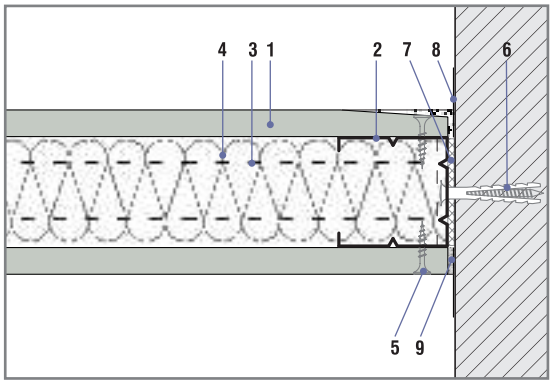
TECHNOGIPS JSC gypsum manufacturing

T-CONJUNCTION TO DRYWALL

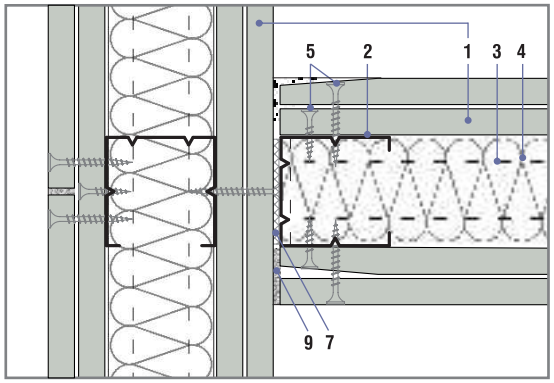
T-CONJUNCTION TO MASSIVE WALL

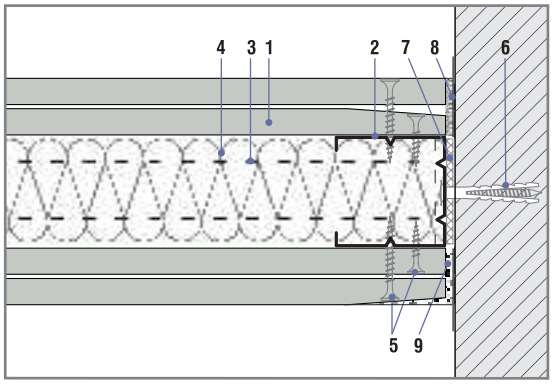
Single layer cladding on a single stud construction



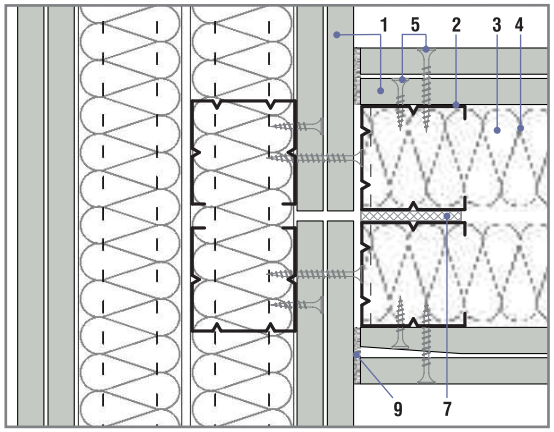


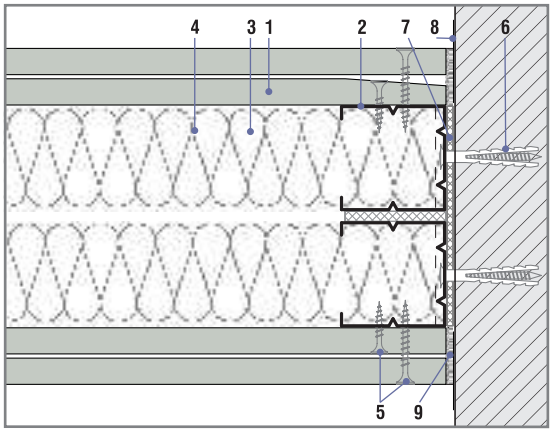
Double layer cladding on a single stud construction



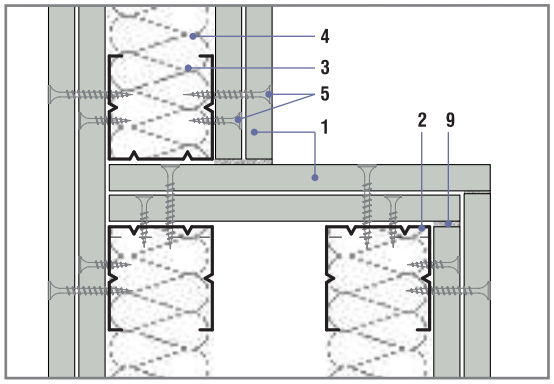


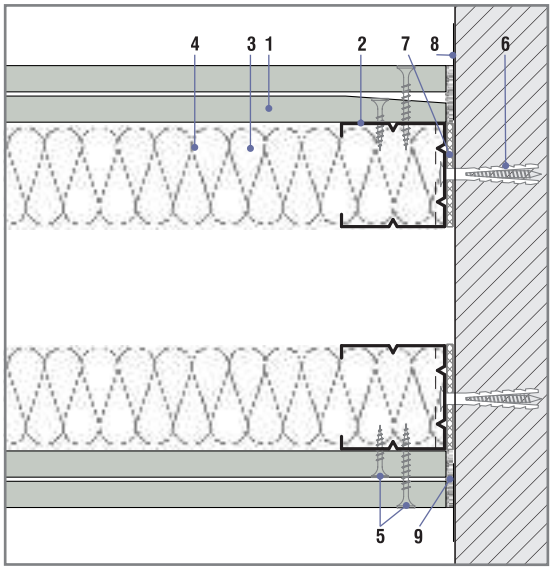
Double layer cladding on a double stud construction type A





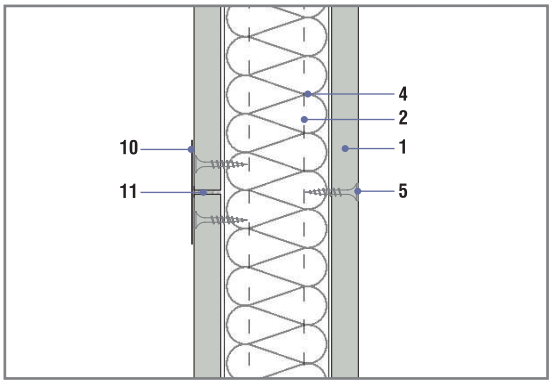
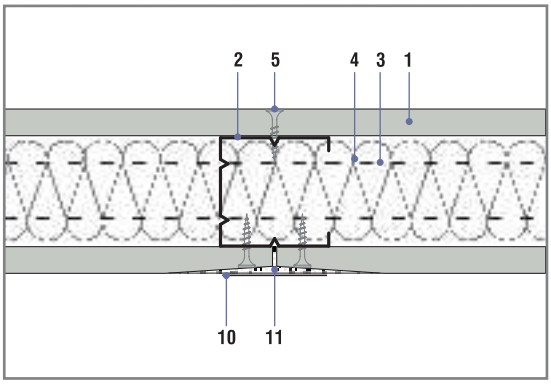
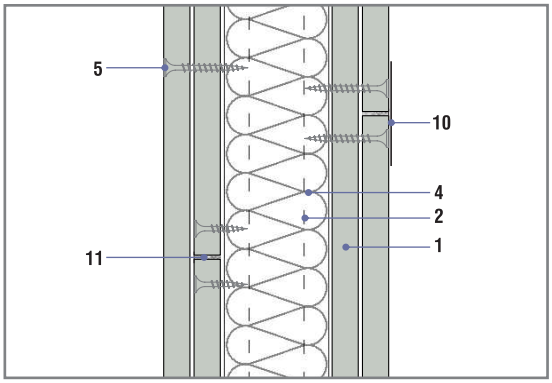
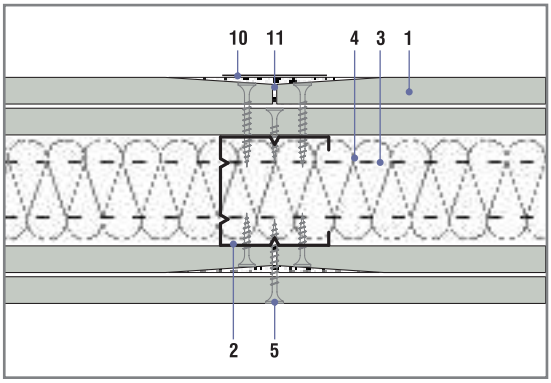
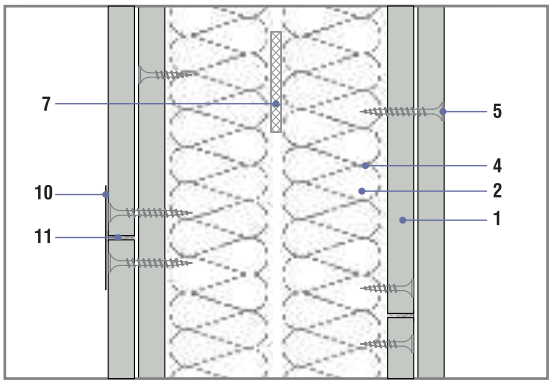
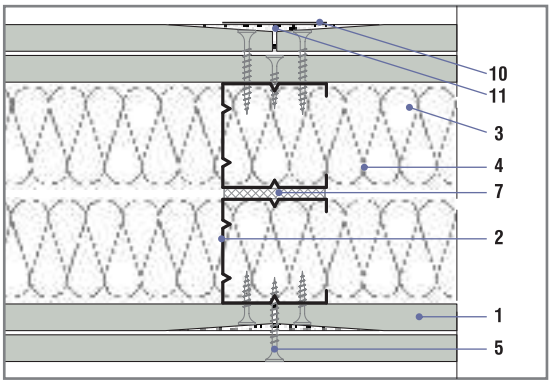
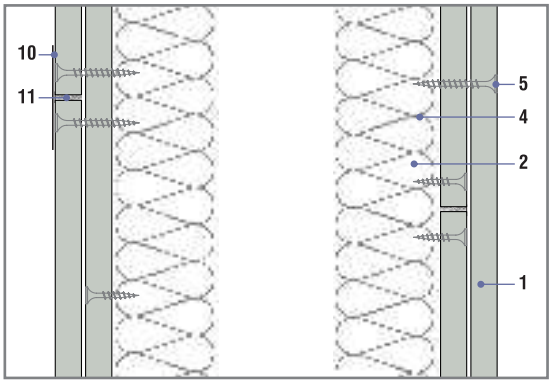
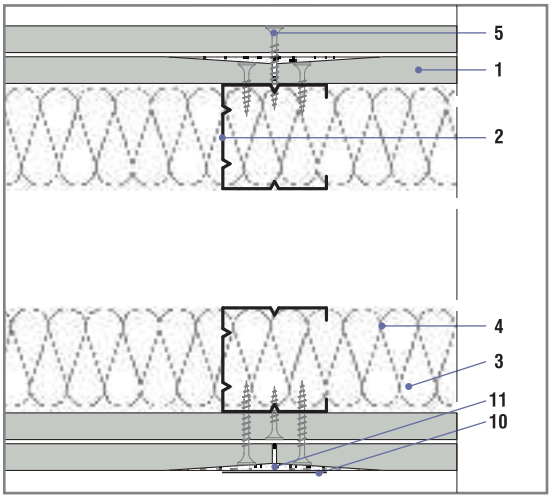
Double layer cladding on a double stud construction type B





Positions

1	*TECHNOGIPS plasterboards*	4	*mineral wool*	7	*sealing strip*
2	*CW profile*	5	*rapid screw*	8	*separating strip*
3	*UW profile*	6	*PVC dowel*	9	*gypsum*

	HORIZONTAL JOINT	VERTICAL JOINT
Single layer cladding on a single stud construction		
Double layer cladding on a single stud construction		
Double layer cladding on a double stud construction type A		
Double layer cladding on a double stud construction type B		

Positions

1	*TECHNOGIPS plasterboards*	5	*rapid screw*	9	*gypsum*
2	*CW profile*	6	*PVC dowel*	10	*joint tape*
3	*UW profile*	7	*sealing strip*	11	*filling material TECHNOFUGA*
4	*mineral wool*	8	*separating strip*		

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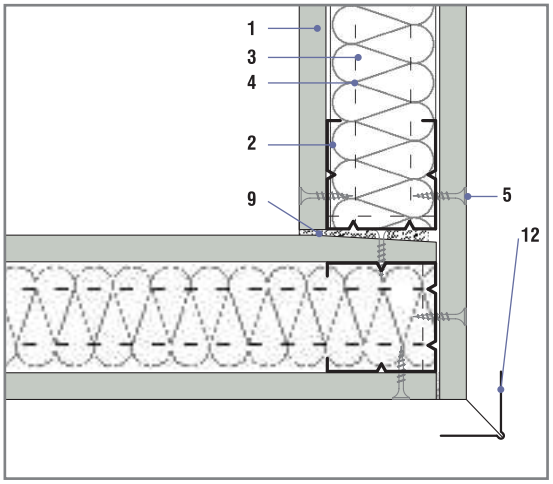
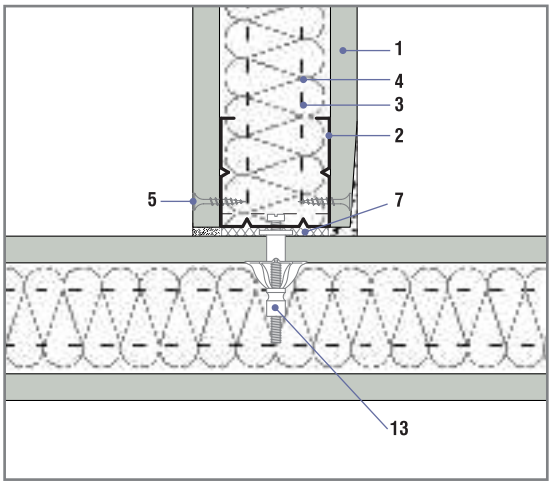
CORNER

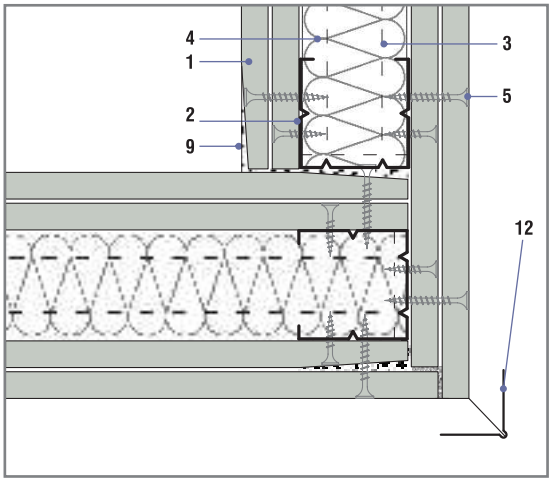
T-CONJUNCTION WITH DOWEL FOR CAVITY

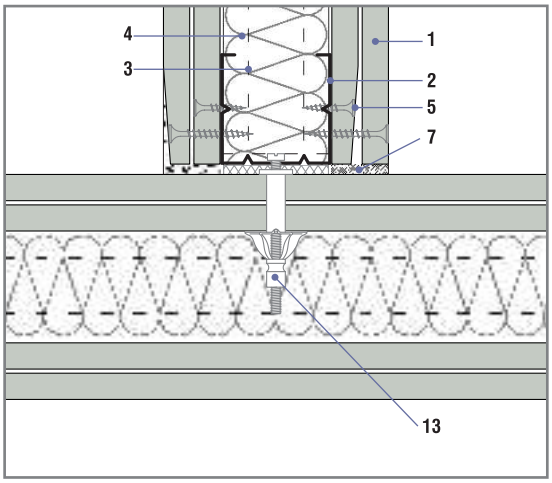
Single layer cladding on a single stud construction



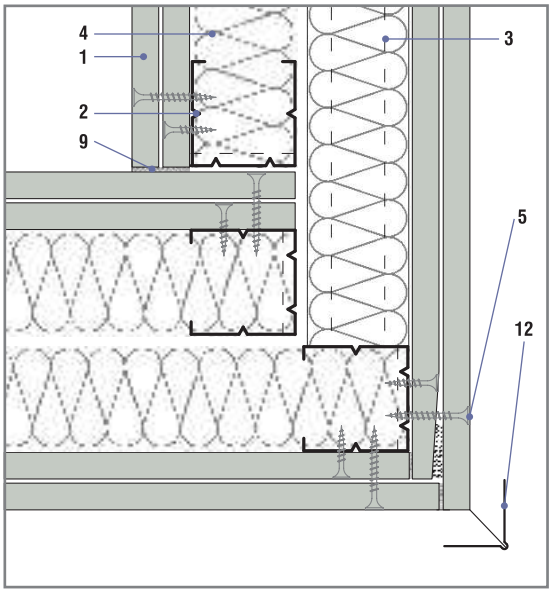


Double layer cladding on a single stud construction

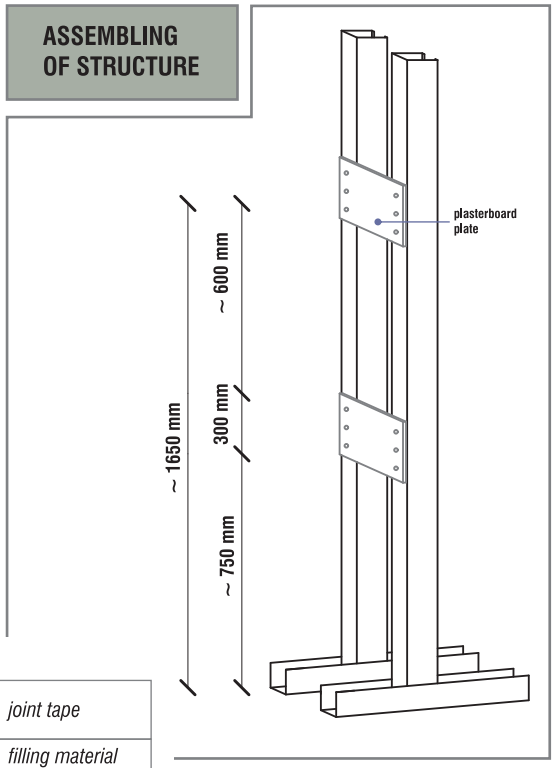




Double layer cladding on a double stud construction type A



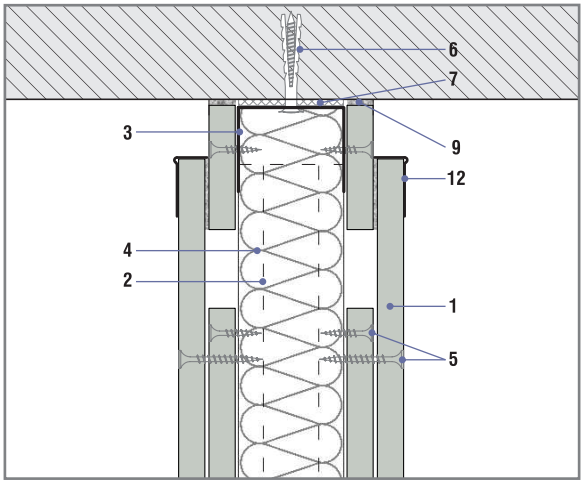
ASSEMBLING OF STRUCTURE



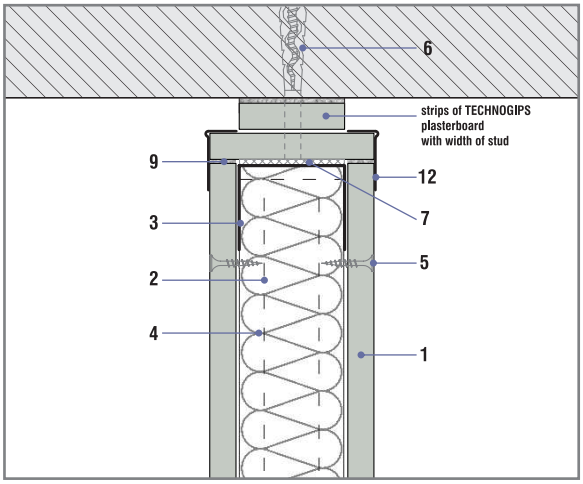
Positions

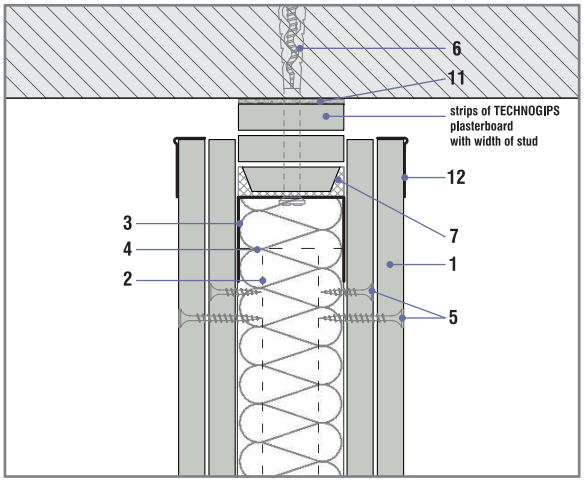
1	*TECHNOGIPS plasterboards*	4	*mineral wool*	7	*sealing strip*	10	*joint tape*		
2	*CW profile*	5	*rapid screw*	8	*separating strip*	11	*filling material TECHNOFUGA*		
3	*UW profile*	6	*PVC dowel*	9	*gypsum*	12	*corner-protector profile*	13	*dowel for cavity*

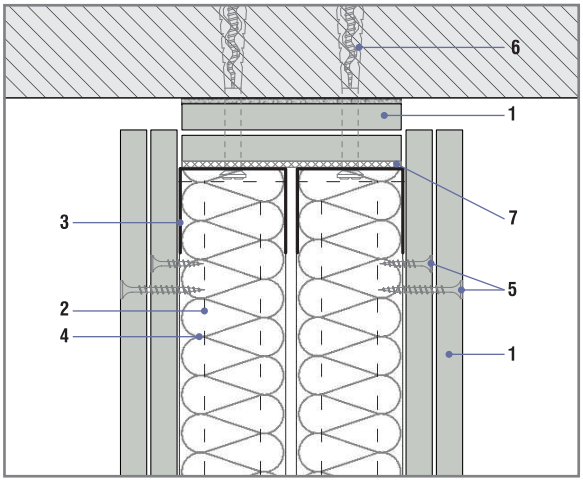
SLIDING CONJUCTION



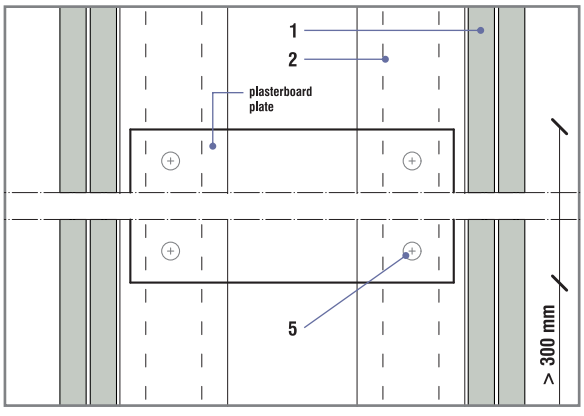
CONJUCTION IN SHADOW

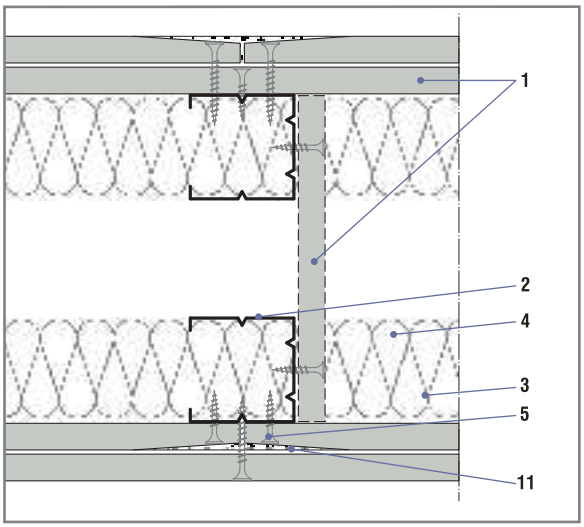






ASSEMBLING OF STRUCTURE





Positions

1	*TECHNOGIPS plasterboards*	6	*PVC dowel*	11	*filling material TECHNOFUGA*
2	*CW profile*	7	*sealing strip*	12	*corner-protector profile*
3	*UW profile*	8	*separating strip*		
4	*mineral wool*	9	*gypsum*		
5	*rapid screw*	10	*joint tape*		

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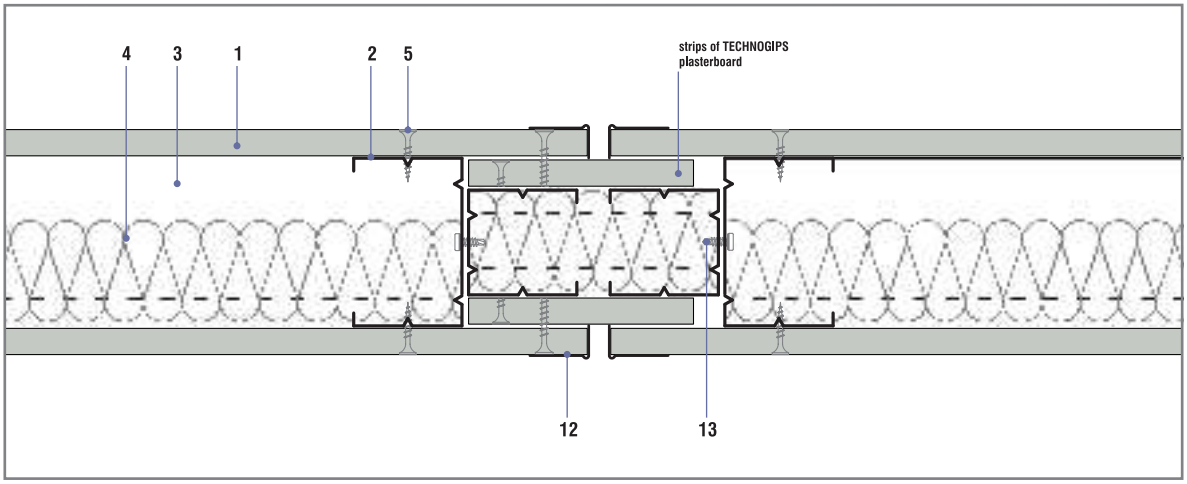
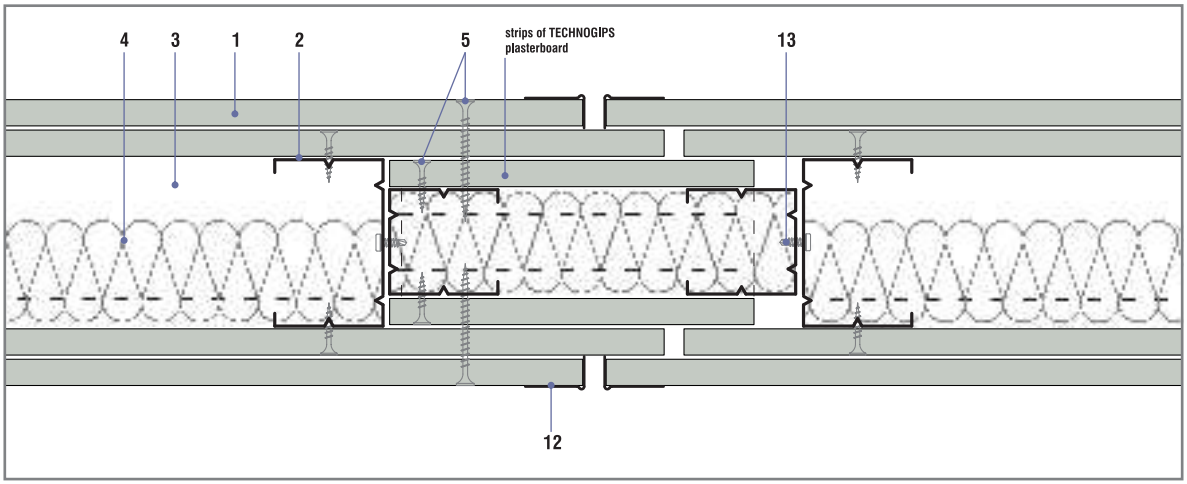
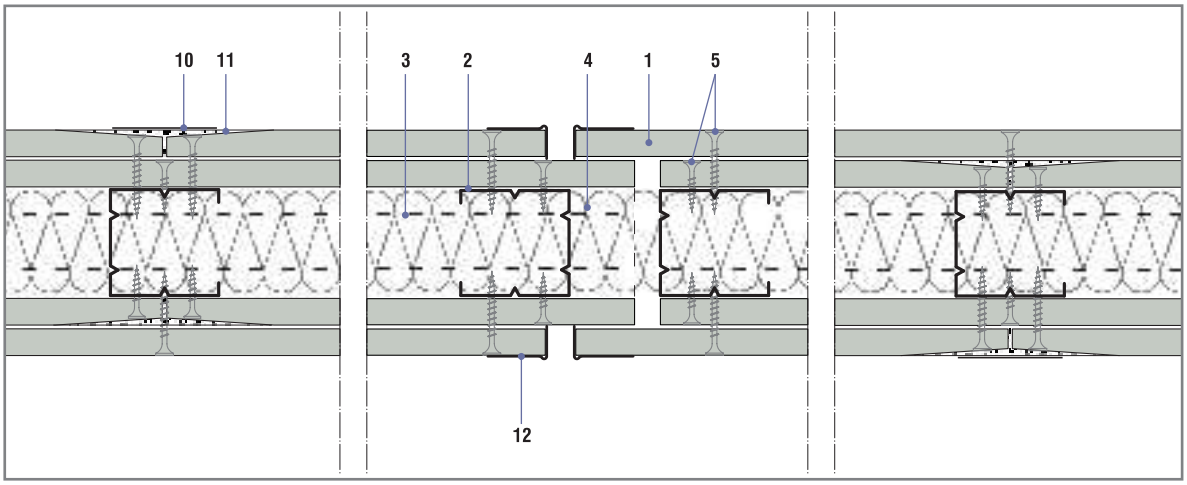
EXPANSION JOINT







Positions

1	*TECHNOGIPS plasterboards*	6	*PVC dowel*	11	*filling material TECHNOFUGA*
2	*CW profile*	7	*sealing strip*	12	*corner-protector profile*
3	*UW profile*	8	*separating strip*	13	*screw for metal*
4	*mineral wool*	9	*gypsum*		
5	*rapid screw*	10	*joint tape*		

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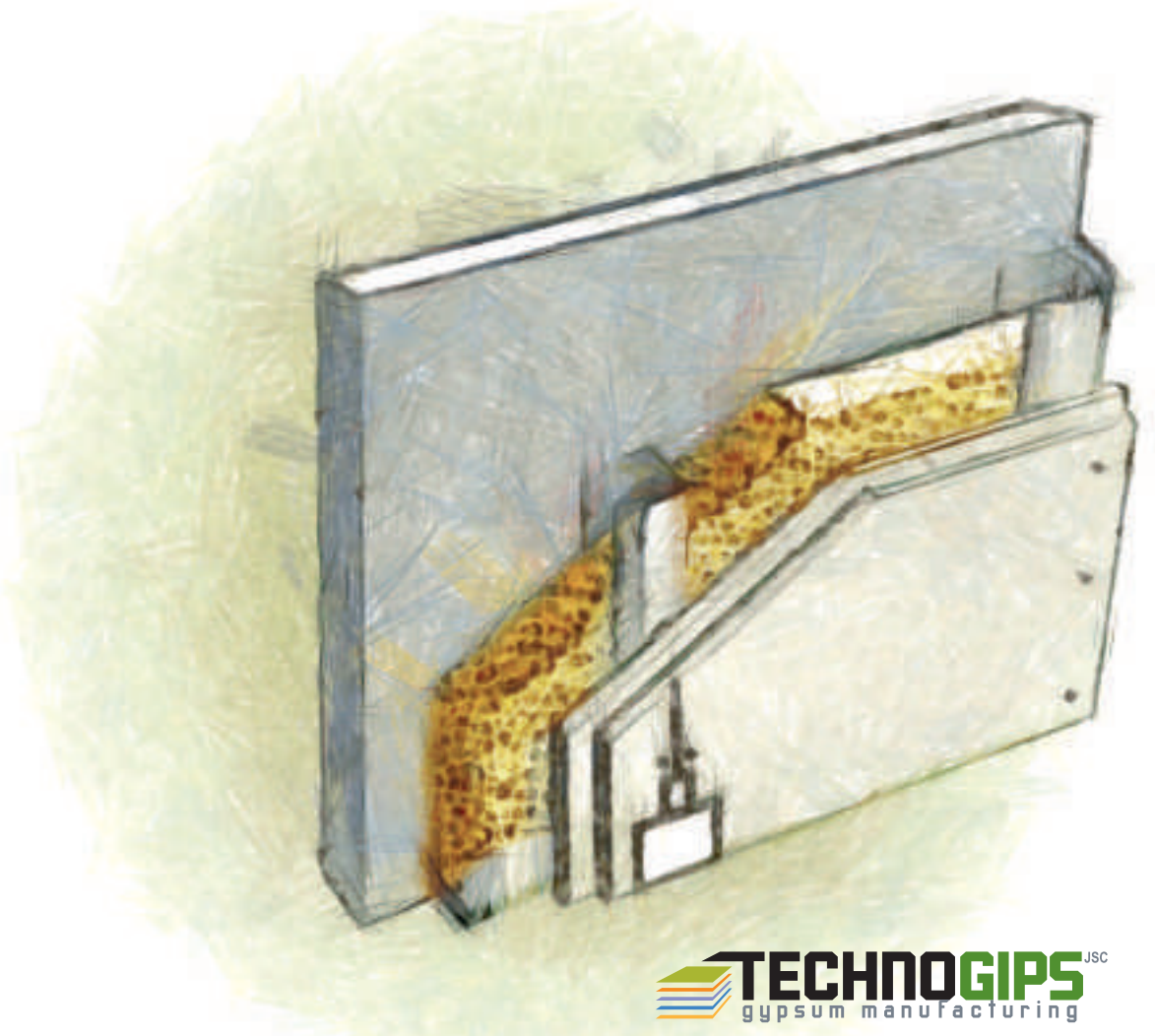
WALL SHEATHING



TECHNOGIPS JSC
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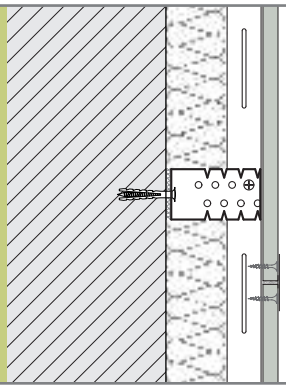
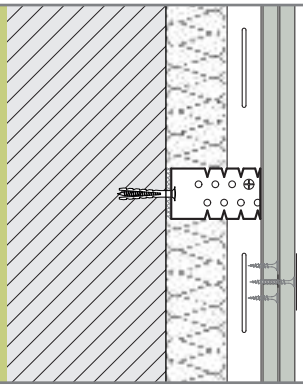
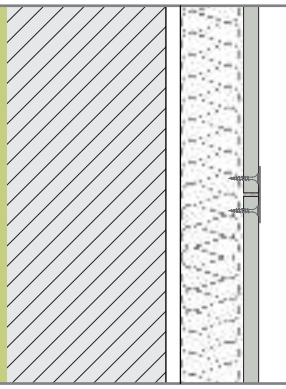
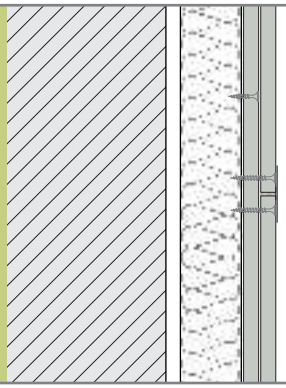
TYPES OF SYSTEMS

Wall sheathing (scheme)
TECHNOGIPS system (construction set)

	Weight	Construction	Cladding		Type of tool fixtures / sizes	Total thickness of wall sheating
		Type / size of profile	Thickness	TECHNOGIPS plasterboard		
	kg/m²	mm	mm	type	mm	mm
Single layer cladding upon CD structure 	about 12	CD/ UD	1 x 12,5	type **A** type **H2** type **F**	direct hanger b=60 l=60-125	40<D<140
Double layer cladding upon CD structure 	about 22	CD/ UD	2 x 12,5	type **A** type **H2** type **F**	direct hanger b=60 l=60-125	50<D<150
Single layer cladding upon CW structure 	about 13	CW/ UW 50	1 x 12,5	type **A** type **H2** type **F**		>70
		CW/ UW 75				>100
		CW/ UW 100				>130
Double layer cladding upon CW structure 	about 23	CW/ UW 50	2 x 12,5	type **A** type **H2** type **F**		>80
		CW/ UW 75				>110
		CW/ UW 100				>140

SOUNDPROOFING OF WALL SHEATHING ACCORDING TO DIN 4109

	Wall sheathing with single layer cladding and insulation material upon a base of*						*Wall sheathing with double layer cladding and insulation material* upon a base of*					
	Concrete 2400 kg/m³		Airated concrete 500 kg/m³		Bricks 800 kg/m³		Concrete 2400 kg/m³		Airated concrete 500 kg/m³		Bricks 800 kg/m³	
Base thickness (mm)	200	250	125	250	120	250	200	250	125	250	120	250
Soundproofing R according to DIN 4109	68	71	47	52	50	58	69	72	48	53	51	59

NOTE: *Mineral wool - thickness 50 mm according to EN 13162 with air flow linear resistance factor r>5 kPa.s/m²

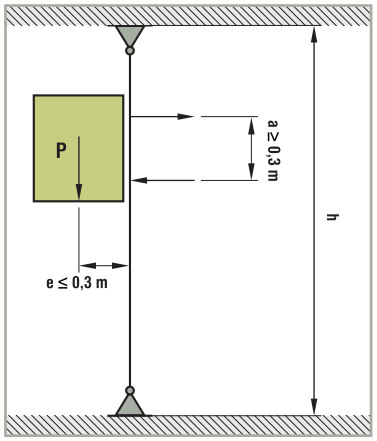
ALLOWABLE HEIGHTS OF WALL SHEATHING ON A METAL CONSTRUCTION ACCORDING TO ONORM 3415:2009

Stud type	Thickness of wall sheathing	Cladding	Insulating material - thickness	Area of application	
				I	II
				Height of the wall sheathing	
	mm	mm	mm	m	m
Wall sheathing on a CW/UW construction, single layer cladding					
CW 75	≥ 87,5	12,5	50	3,00	–
CW 100	≥ 112,5	12,5	50	3,50	3,00
Wall sheathing on a CW/UW construction, double layer cladding					
CW 50	≥ 75	2 x 12,5	50	3,00	–
CW 75	≥ 100	2 x 12,5	50	3,50	2,60
CW 100	≥ 125	2 x 12,5	50	4,00	3,50

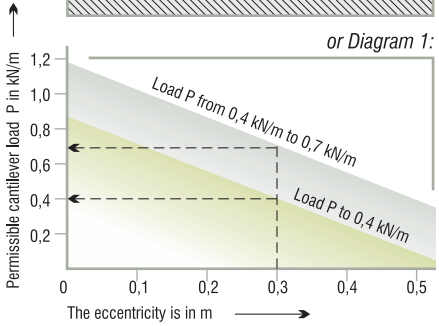
NOTE: The application areas are stipulated in the German and Austrian construction standards.
Application area I: Areas allowing gathering of a limited number of people (homes, hotels, premises in offices and hospitals including the corridors).
Application area II: Areas allowing gathering of a large number of people (larger conference rooms, school premises, concert, exhibition, commercial halls) as well for premises with a difference between the floors ≥ 1 m.

BEARING CAPACITY OF THE WALL SHEATHING ON A CW/UW STRUCTURE

The loads are strip loads and are measured in kN/m – length of the wall when observing Scheme 1:



or Diagram 1:



Cantilever loading (static) according to ONORM B 3415:2009

TYPE OF LOAD

Load type	**LIGHT LOADS** Flat objects	**LOADS WITH AVERAGE WEIGHT** Shelves, wall medical equipment	**HEAVY LOADS** Suspended toilet, sink with a table, water heater heavier than 150 kg
Size	P ≤ 0,4 kN/m	0,4 ≤ P ≤ 0,7 kN/m	0,7 ≤ P ≤ 1,5 kN/m
Thickness of the cladding	single or double layer cladding ≥12,5 mm	single layer cladding ≥ 18,0 mm double ≥12,5 mm	double layer cladding ≥ 25,0 mm
Fastening	at each place on wall with hooks or dowel	at each place on wall with dowel	auxiliary bearing structures (traverses, cantilevers)

In the cases when loads are transferred through the drywall stud construction the profiles are required to be of type UA with thickness 2 mm which are fastened to the floor or respectively to the ceiling with V-shaped angles.

Structural sizing must be made if larger or dynamic loads are to be transferred. It is possible to use frames of UA profiles fastened to the floor or the ceiling with V-shaped angles.

When transferring the forces through plasterboards the distance between the fastening elements of the loads must not exceed 75 cm.

SPECIFICATIONS OF THE BUILDING AND INSTALLATION WORKS

Single layer cladding on a CD structure

Height:	..... m according to item No. .....
Parameters:	soundproofing .....
Construction:	studs according to EN 14195 CD/ UD with thickness .....
	fastening to the main wall with direct hanger
Cladding:	single layer cladding with plasterboards according to EN 520
Type:	**TECHNOGIPS type A / TECHNOGIPS type F / TECHNOGIPS type H2**
Thickness:	1 x 12,5 / 1 x 15,0 mm
Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
	density ..... kg/m^3, or according to parameter .....
	sealing tape on the CD/ UD studs along the structure outline and the direct hanger
Fastening elements:	screws, dowels for drywall according to EN 14566
Jointing material:	TECHNOFUGA with joint tape

Double layer cladding on a CD structure

Height:	..... m according to item No. .....
Parameters:	soundproofing .....
Construction:	studs according to EN 14195 CD/ UD with thickness .....
	fastening to the main wall with direct hanger
Cladding:	double layer cladding with plasterboards according to EN 520
Type:	**TECHNOGIPS type A / TECHNOGIPS type F / TECHNOGIPS type H2**
Thickness:	2 x 12,5 mm
Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
	density ..... kg/m^3, or according to parameter .....
	sealing tape on the CD/ UD studs along the structure outline and the direct hanger
Fastening elements:	screws, dowels for drywall according to EN 14566
Jointing material:	TECHNOFUGA with joint tape

Single layer cladding on a CW structure

Height:	..... m according to item No. .....
Parameters:	soundproofing .....
Construction:	studs according to EN 14195 CW/ UW 50; CW/ UW 70; CW/ UW 100; with thickness ..... (free-standing)
Cladding:	single layer cladding with plasterboards according to EN 520
Type:	**TECHNOGIPS type A / TECHNOGIPS type F / TECHNOGIPS type H2**
Thickness:	1 x 12,5 / 1 x 15,0 mm
Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
	density ..... kg/m^3, or according to parameter .....
	sealing tape on the CW/ UW studs along the structure outline
Fastening elements:	screws, dowels for drywall according to EN 14566
Jointing material:	TECHNOFUGA with joint tape

Double layer cladding on a CW structure

Height:	..... m according to item No. .....
Parameters:	soundproofing .....
Construction:	studs according to EN 14195 CW/ UW 50; CW/ UW 70; CW/ UW 100; with thickness ..... (free-standing)
Cladding:	double layer cladding with plasterboards according to EN 520
Type:	**TECHNOGIPS type A / TECHNOGIPS type F / TECHNOGIPS type H2**
Thickness:	2 x 12,5 mm
Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
	density ..... kg/m^3, or according to parameter .....
	sealing tape on the CW/ UW studs along the structure outline
Fastening elements:	screws, dowels for drywall according to EN 14566
Jointing material:	TECHNOFUGA with joint tape

TECHNOLOGY

The most important when making partition walls with TECHNOGIPS lining with plasterboards in order to achieve the utmost quality is stated below:

- **disconnection of sound bridges –** sealing tape or another appropriate material is put upon all CW- and UW-studs which shape the frame of the structure and enter into contact with other parts. The studs are fastened to the floor and the ceiling at minimum 3 points at a distance < 1 m and to the lateral surfaces at each 70 cm at minimum 3 points;
  - when fastening the connection between the CD studs and the main wall a piece of sealing tape is put which disconnects the transferring of the noise wave or an acoustic bracket is applied;

- **fastening of CD studs to the main wall** – they must be put at a distance which does not exceed 1,50 m. No thickening is allowed since it results in turning the plasterboards into acoustic membranes and this deteriorates acoustics. Fastening is done only with appropriate for the base fastening element;

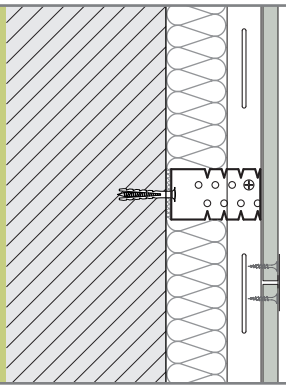
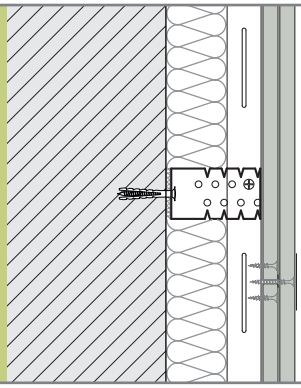
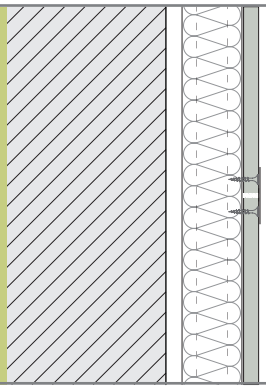
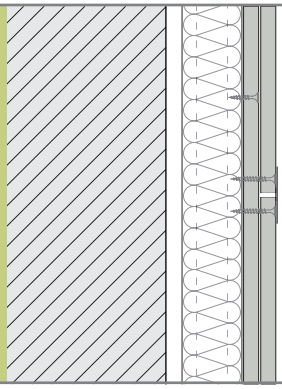
- **possibility for hanging cantilever loads –** the lining thickness, structure type and embedding of auxiliary structures must me taken into consideration;

- **flawless operation –** proper selection of the right type of surfaces for lining. In case of increased moisture, moisture-resistant boards shall be used and if there is a requirement for fire protection – a system with proven fire protection shall be used;

- **improvement of the operational features of the surfaces**
  - in order to achieve quality finishing works on the plasterboards, it is compulsory to prime them prior to their painting, putting wallpapers or appropriate ground coatings and plasters;
  - if a long period has passed before any finishing works are done on the surfaces, the plasterboards have to be primed to prevent them from turning yellowish;
  - in order to increase moisture resistance, the moisture-resistant surfaces, put in wet premises, shall be further treated with sealing materials;
  - the edges, which are not factory made, shall be also treated if they are in wet premises;
  - sealing tape shall be applied upon the horizontal floor surface and vertical plasterboard surface in wet premises;
  - surfaces are installed at every 25 cm along the vertical surface per single layer. If there is double layer lining, the distance between two surfaces shall be 75 cm for the first layer and 25 cm for the second layer.

TABLE
COST OF MATERIALS

Wall sheathing (scheme)
TECHNOGIPS system (construction set)

		*Construction in accordance with EN 14195**				*Insulation in accordance with EN 13162*			
		UD profiles	CD profiles	UW profiles	CW profiles	mineral wool	sealing strip 30 mm	sealing strip for hangers	sealing strip for loop
		m¹	m¹	m¹	m¹	m²	m¹	m¹	m¹
Single layer cladding on a CD structure		1,30	1,80	–	–	without or 1,00	1,30	0,05	–
Double layer cladding on a CD structure		1,30	1,80	–	–	without or 1,00	1,30	0,05	–
Single layer cladding on a CW structure		–	–	0,80	2,00	without or 1,00	–	–	1,30
Double layer cladding on a CW structure		–	–	0,80	2,00	without or 1,00	–	–	1,30

Cladding	*Fixing agent / hanger for structure*	*Jointing material*		*Mechanical fasteners in accordance with EN 14566*			
TECHNOGIPS plasterboards		TECHNOFUGA	joint tape	dowels for structure	screw for metal	screw for plaster-board 25 mm	screw for plaster-board 35 mm
m²		kg	m¹	pcs	pcs	pcs	pcs
1,00	**0,7**	**0,3**	**1,00**	**1,80**	**1,4**	**13**	–
2,00	**0,7**	**0,45**	**1,00**	**1,80**	**1,4**	**10**	**13**
1,00	–	**0,3**	**1,00**	**1,80**	–	**13**	–
2,00	–	**0,45**	**1,00**	**1,80**	–	**10**	**13**

NOTES:

*The data provided for material requirements is at a metal sheet thickness of 0,55 to 0,6 mm.

In case of different thickness sizing of the construction shall be made and the amounts shall be changed if necessary.

The material requirements data refers to straight walls without openings, bents, etc. for an area of about 10,5 m².

The material requirements data is considered without losses and cuttings.

THERMAL INSULATION OF WALL CLADDING THRU CALCULATION

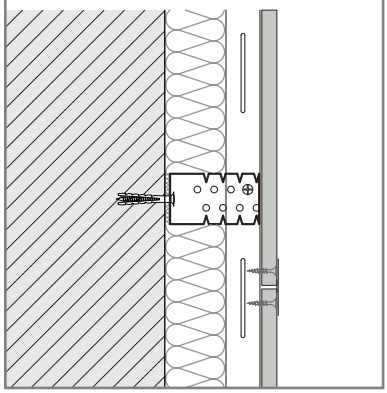
Thickness of the wall without insulation	Value of U_o without insulation	Value of U_{CT} with claddind, with 1x12,5 mm TEHNOGIPS plasterboard (W/m².K) + mineral wool d (mm)							
		d=50 mm Thickness (kg/m³)		d=60 mm Thickness (kg/m³)		d=80 mm Thickness (kg/m³)		d=100 mm Thickness (kg/m³)	
cm	W/m².K	30	75	30	75	30	75	30	75
Masonry of aerated concrete with density 500 kg/m³									
20	0,674	0,337	0,327	0,307	0,298	0,261	0,252	0,227	0,219
25	0,557	0,305	0,297	0,28	0,272	0,241	0,234	0,212	0.205
30	0,474	0,278	0,272	0,258	0,251	0,225	0,218	0,199	0,192
Masonry of hollow bricks									
25	1,401	0,454	0,437	0,402	0,386	0,327	0,313	0,275	0,263
Masonry of bricks									
25	1,82	0,491	0,471	0,430	0,412	0,345	0,330	0,289	0,275
Concrete									
20	2,811	0,542	0,518	0,47	0,448	0,37	0,352	0,306	0,290
25	2,588	0,533	0,51	0,463	0,442	0,366	0,348	0,303	0,288
30	2,397	0,525	0,502	0,456	0,436	0,362	0,345	0,300	0,285

NOTICE:

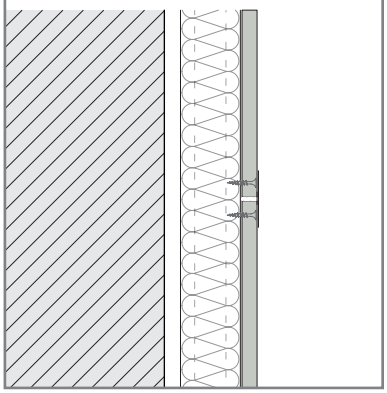
U_{CT} values of the coefficient of thermal conductivity relate to exterior walls and are obtained by calculation based on thermo characteristics of construction products pursuant to Annex N4 to Article 10, paragraph 5 of the Ordinance on energy effectiveness and heat-saving of buildings.

U_o values of the coefficient of thermal conductivity relate to exterior walls which are thermal insulated with wall sheathing with 1x12, 5 mm Technogips plasterboards and wool of various thicknesses and densities. Received thru calculation-method.

Single layer cladding upon CD structure

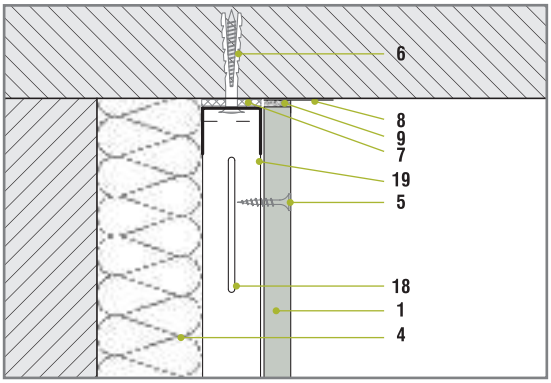
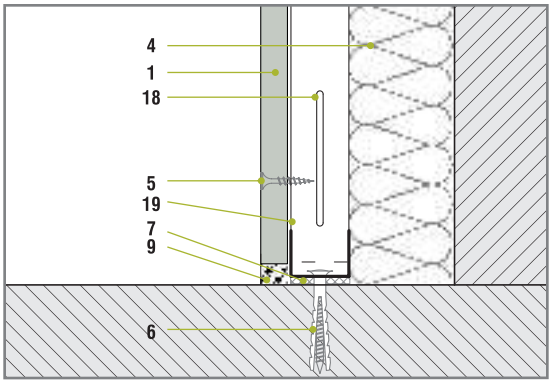
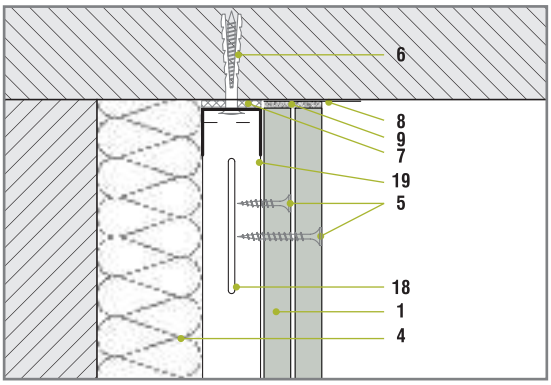
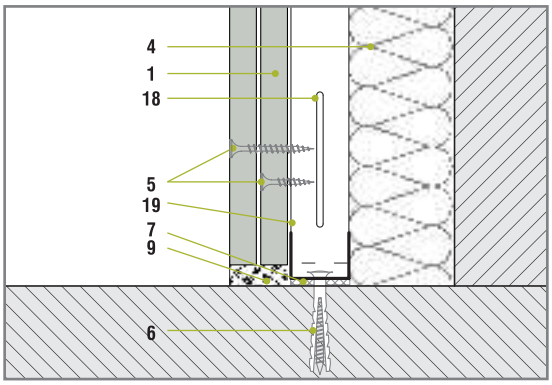
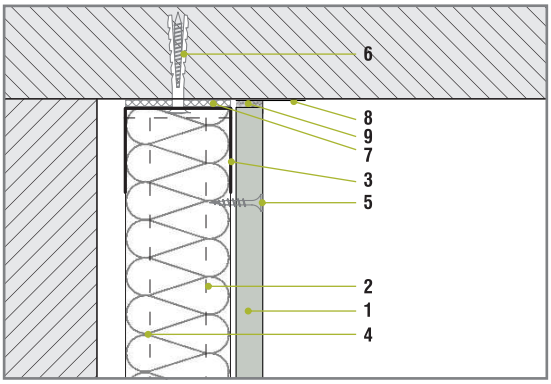
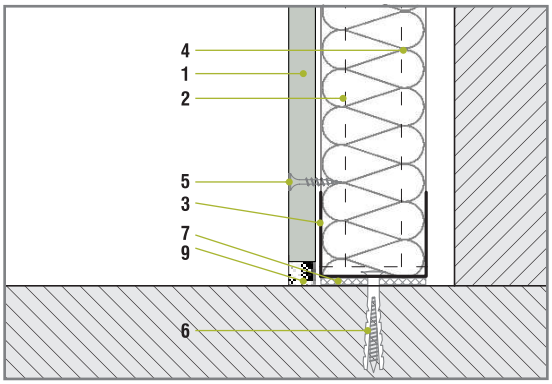
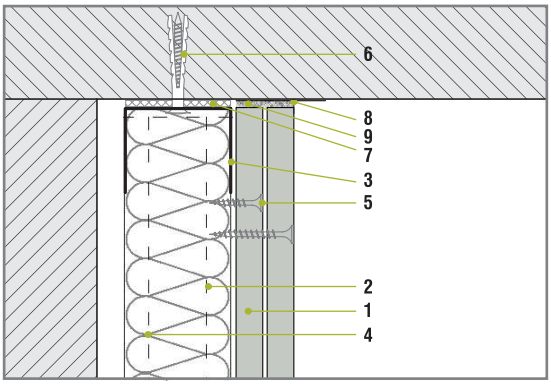
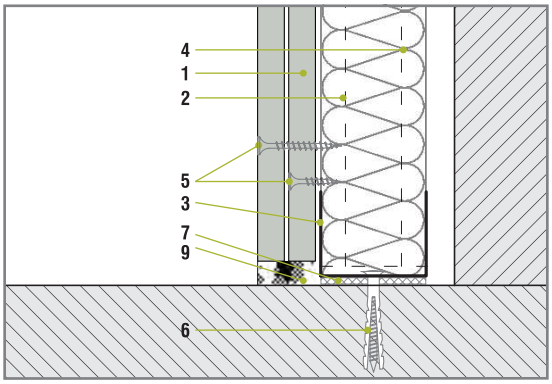


Single layer cladding upon CW structure



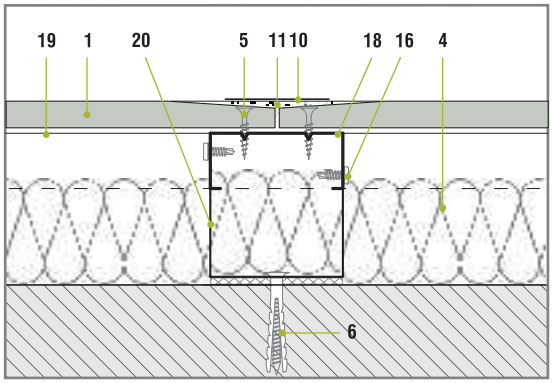
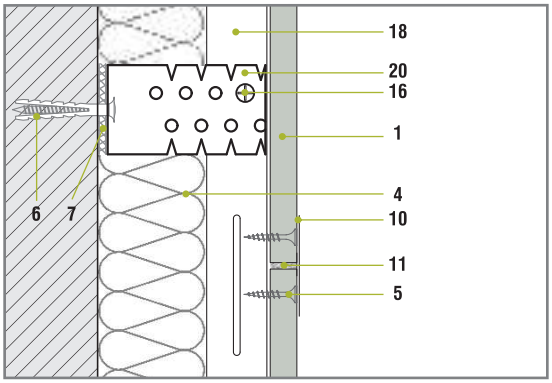
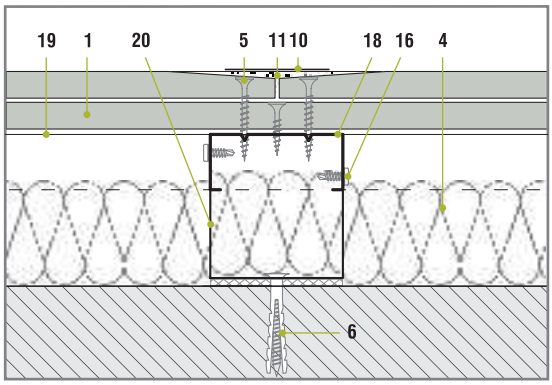
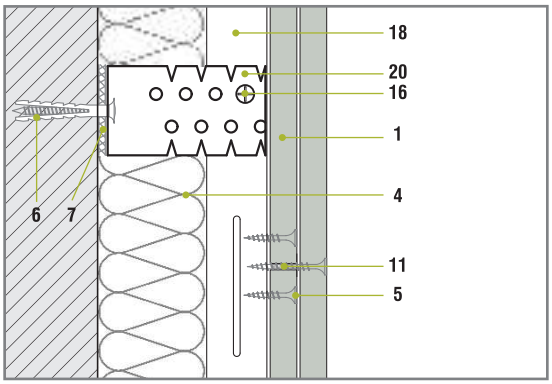
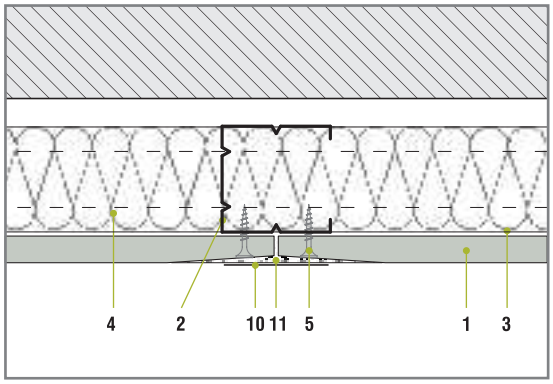
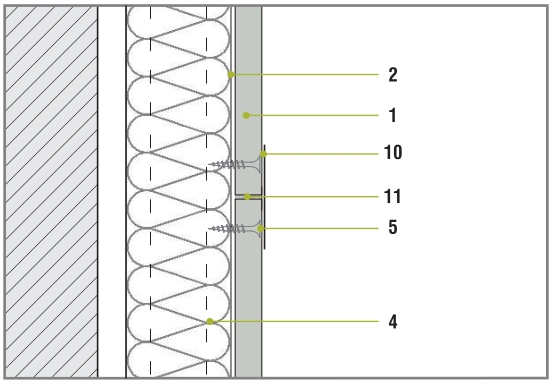
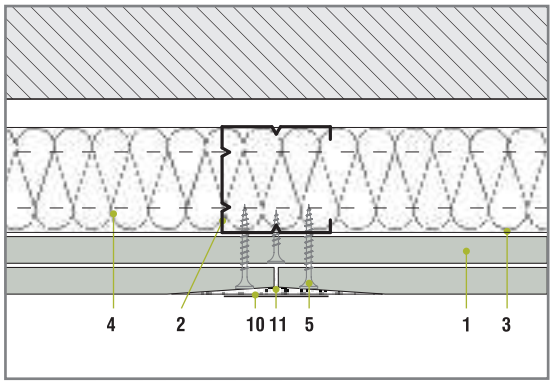
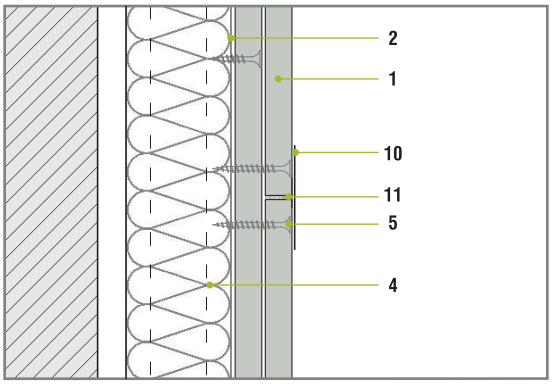
TECHNOGIPS JSC
gypsum manufacturing

Sanirtary performance

	CONJUCTION TO CEILING	CONJUCTION TO FLOOR
Single layer cladding on a CD structure		
Double layer cladding on a CD structure		
Single layer cladding on a CW structure		
Double layer cladding on a CW structure		

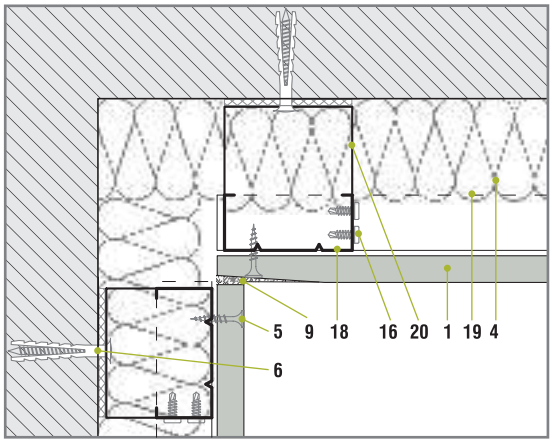
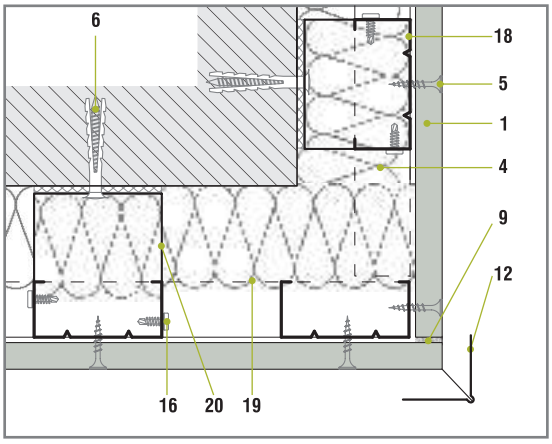
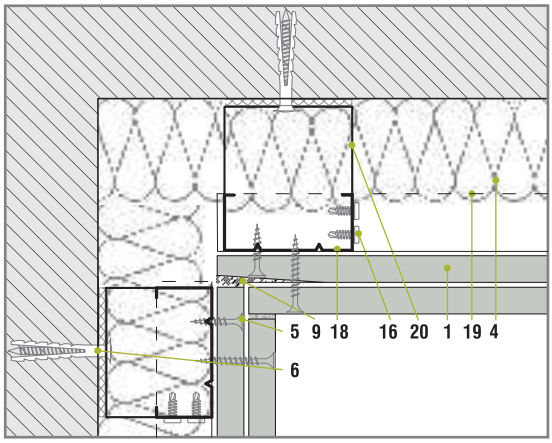
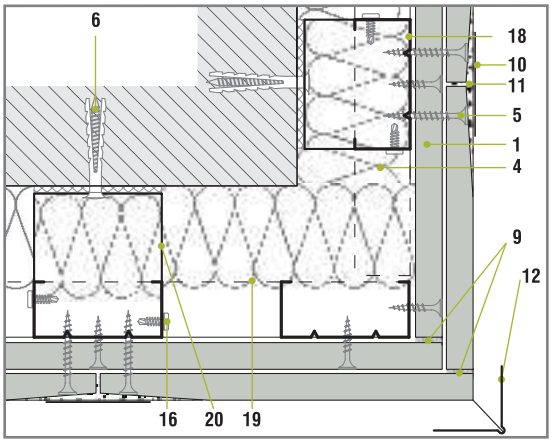
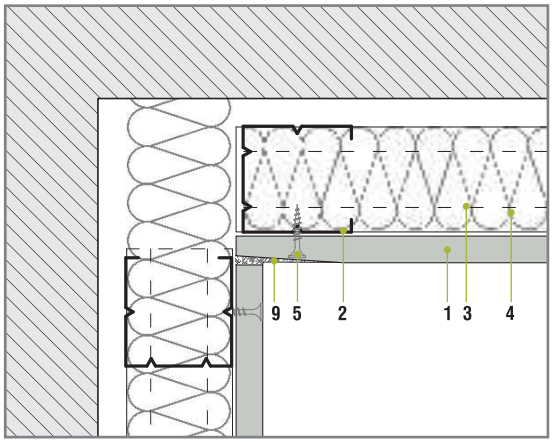
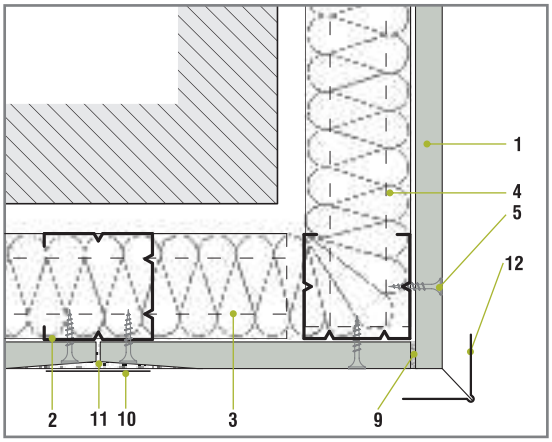
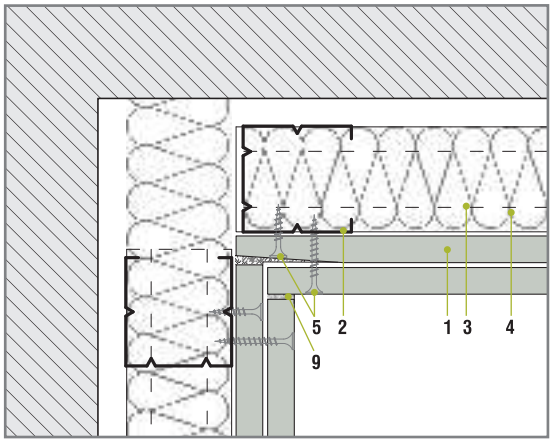
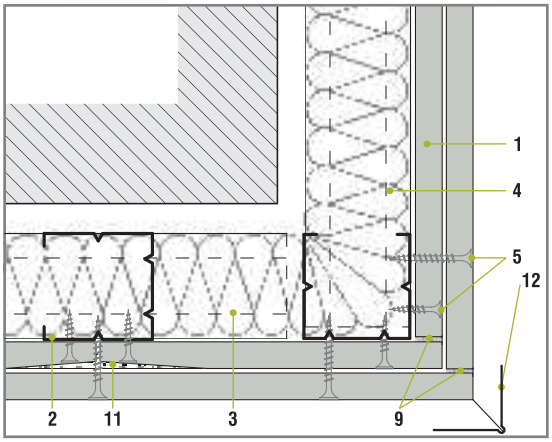
Positions

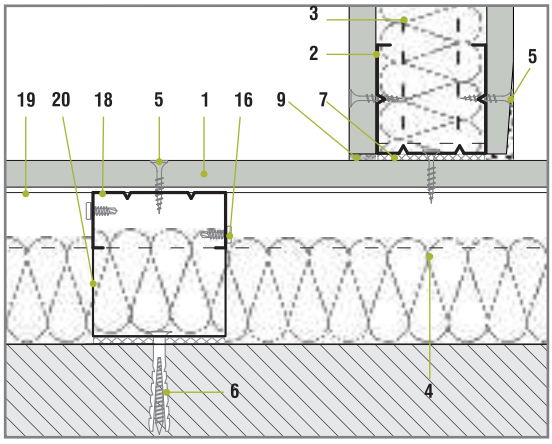
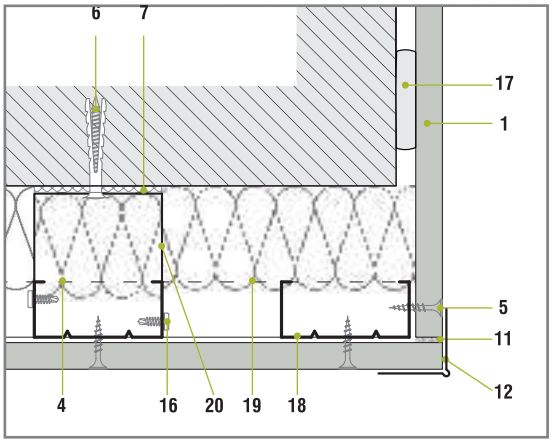
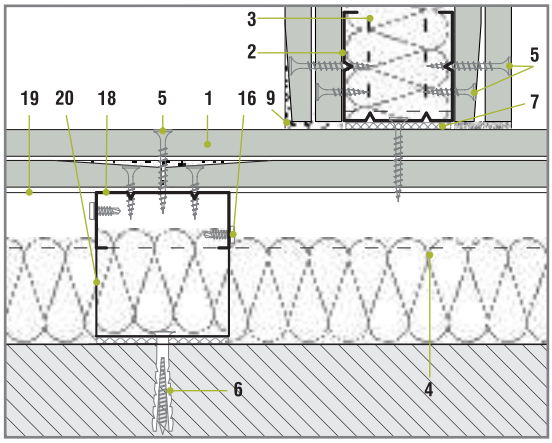
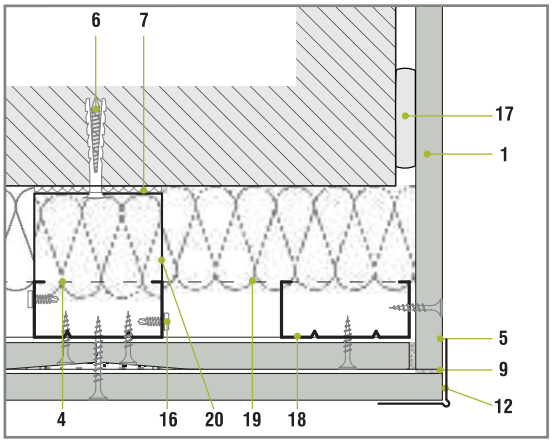
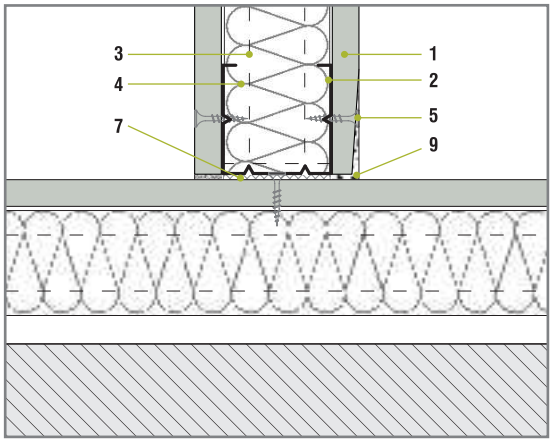
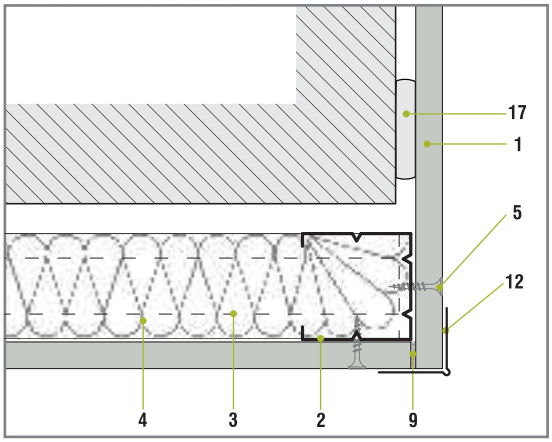
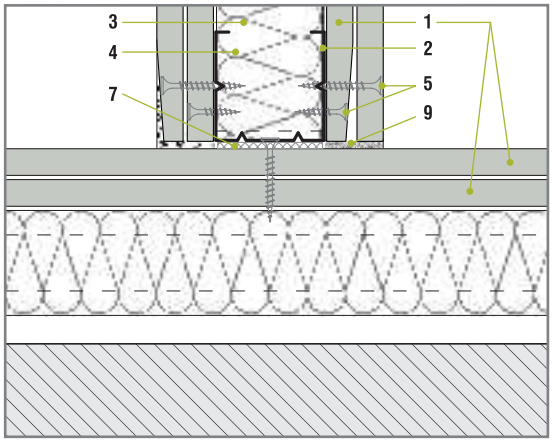
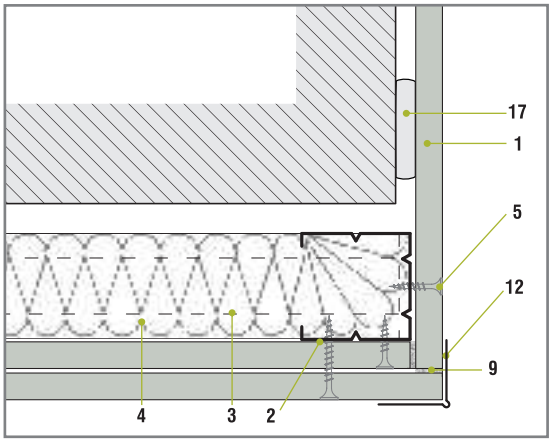
1	TECHNOGIPS plasterboards	4	mineral wool	7	sealing strip	10	reinforcing strip	13	dowel for cavity	18	CD 60x27
2	CW profile	5	rapid screw	8	separating strip	11	filling material TECHNOFUGA	16	screw for metal	19	UD 28x27
3	UW profile	6	PVC dowel	9	gypsum	12	corner-protector profile	17	gypsum adhesive	20	direct hanger

	VERTICAL JOINT	HORIZONTAL JOINT
Single layer cladding on a CD structure		
Double layer cladding on a CD structure		
Single layer cladding on a CW structure		
Double layer cladding on a CW structure		

Positions

1	*TECHNOGIPS plasterboards*	4	*mineral wool*	7	*sealing strip*	10	*joint tape*	13	*dowel for cavity*	18	*CD 60x27*
2	*CW profile*	5	*rapid screw*	8	*separating strip*	11	*filling material TECHNOFUGA*	16	*screw for metal*	19	*UD 28x27*
3	*UW profile*	6	*PVC dowel*	9	*gypsum*	12	*corner-protector profile*	17	*gypsum adhesive*	20	*direct hanger*

	INTERNAL CORNER	OUTER CORNER
Single layer cladding on a CD structure		
Double layer cladding on a CD structure		
Single layer cladding on a CW structure		
Double layer cladding on a CW structure		

	T-CONJUCTION TO PARTITION WALL	OUTER CORNER WITH WALL LININGS
Single layer cladding on a CD structure		
Double layer cladding on a CD structure		
Single layer cladding on a CW structure		
Double layer cladding on a CW structure		

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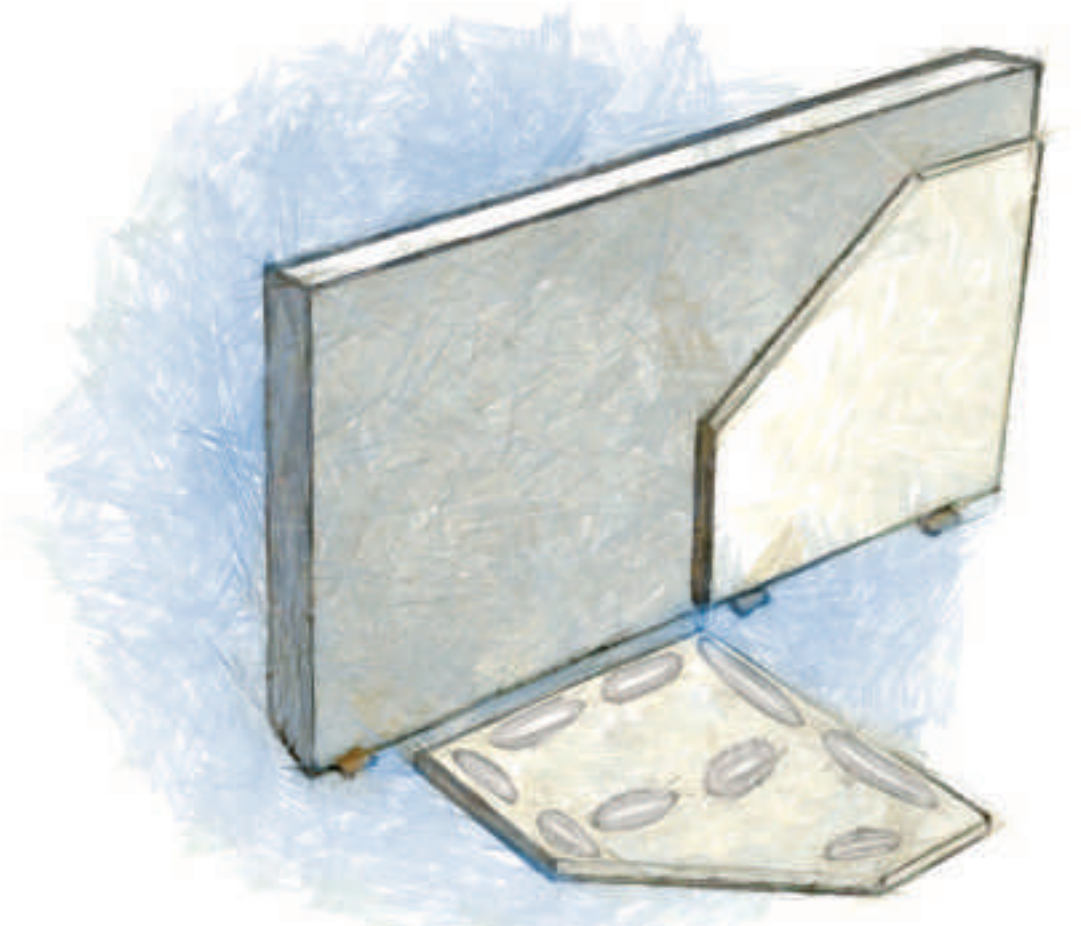
WALL CLADDING



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TYPES OF SYSTEMS

Wall cladding (scheme)
TECHNOGIPS system (construction set)

	Weight	Cladding		Types of gluing the plasterboards / cladding thickness		
		Thickness	TECHNOGIPS plasterboard			
	kg/m²	mm	type	I method*	II method*	III method*
Single layer direct bonding lining with gypsum adhesive	about 15	1 x 12,5	type **A**	d<5 mm D=d+ 12,5 mm	d<10 mm D=d+ 12,5 mm	d<10 mm D= (d+ 12,5)xn+ 12,5 mm n<3
Single layer direct bonding lining on insulating material mineral wool	about 15	1 x 12,5	type **A**	d<5 mm D=d+d_1+ 12,5 mm	d<10 mm D=d+d_1+ 5+12,5 mm	d<10 mm D= (d+ 12,5)xn+ d_1+5+12,5 mm n<3
Single layer direct bonding lining on insulating material polyester type EPS	about 13	1 x 12,5	type **A**	d<5 mm D=d+d_1+ 12,5 mm (EPS ≤ 50 mm)	d≤10 mm D=d+d_1+ 12,5 mm (EPS ≤ 50 mm)	d≤10 mm D= (d+ 12,5)xn+ d_1+12,5 mm n<3 (EPS ≤ 50 mm)

* **I method**
Thin bonding plasterboards, respectively, of insulating material with TECHNOFUGA jointing compound.
Over so glued insulating material , the plasterboards must be thin glued with TECHNOFUGA jointing compound.

* **II method**
Gluing of plasterboards, respectively, an insulating material with balls of gypsum adhesive TECHNOFIX.

* **III method**
Gluing of plasterboards stripes with gypsum adhesive TECHNOFIX. (to 3 pcs.)

NOTES:
D – total thickness of direct bonding lining
d – thickness of the adhesive, respectively filling materiual
d_1 – thickness ot the insulation material
The insulating material may be stuck too with cement adhesive

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SOUNDPROOFING OF WALL CLADDING WITH MINERAL WOOL 40 mm	*Single-layer wall cladding on base of*					
	Concrete 2400 kg/m³		Airated concrete 500 kg/m³		Bricks (single) 800 kg/m³	
Thickness of the base (mm)	200	250	200	250	120	250
Soundproofing R according to DIN 4109	~57	~58	~49	~49	~49	~50

NOTE: Mineral wool with thickness 50 mm according to EN 13162 with air flow linear resistance factor r>5 kPa.s/m²

BEARING CAPACITY

The loads shall be beared by the main wall

HEIGHT

Allowable height - max. 3,00 m

TECHNOLOGY

The most important when making wall linings with TECHNOGIPS plasterboards in order to achieve high quality:

- **selection of a way for adhesion:**
  - thin-layer gluing – at a very smooth surface and proper flatness through strips of joint filler on a gill bar
  - balls of gypsum-based adhesive when correcting rough surfaces of ± 10 mm
  - strips of plasterboard glued with balls of gypsum-based adhesive. It is possible to use 2-3 rows
- **proper preparation of the main surface** – it must be clean and all residues of oils and others shall be removed, proper priming is recommendable to create adhesion and improve hydrospicity;
- **proper positioning of the balls of gypsum-based adhesive** – at a distance of 30 – 40 cm.

SPECIFICATIONS OF THE BUILDING AND INSTALLATION WORKS

Wall cladding: wall lining	**Height:**	..... m according to item No. .....
	Cladding:	single layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS type A**
	Thickness:	1 x 12,5 mm
	Gluing:	TECHNOFIX / TECHNOFUGA
	Jointing material:	TECHNOFUGA with joint tape

Wall cladding: wall lining with mineral wool	**Height:**	..... m according to item No. .....
	Parameters:	soundproofing .....
	Cladding:	single layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS type A**
	Thickness:	1 x 12,5 mm
	Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
		density ..... kg/m³, or according to parameter .....
	Gluing:	TECHNOFIX / TECHNOFUGA
	Jointing material:	TECHNOFUGA with joint tape

Wall cladding: wall lining with polystyrene boards	**Height:**	..... m according to item No. .....
	Parameters:	soundproofing .....
	Cladding:	single layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS type A**
	Thickness:	1 x 12,5 mm
	Insulation material:	polystyrene board according to EN 13162, with thickness ..... mm
		density ..... kg/m³, or according to parameter .....
	Gluing:	TECHNOFIX / TECHNOFUGA
	Jointing material:	TECHNOFUGA with joint tape

TABLE
COST OF MATERIALS

Wall cladding (scheme)
TECHNOGIPS system (constr. set)

Insulation in accordance with EN 13162		Cladding		I		II			III			Jointing material	
mineral wool	EPS board	TECHNOGIPS plasterboards		A	B	C	D	E	F	G	H	TECHNOFUGA	joint tape
m¹	m¹	type	m²	kg	kg	kg	kg	kg	kg	kg	kg	kg	m¹
Single layer direct bonding lining with gypsum adhesive													
–	–	type **A** type **H2****	1,00	–	1,1	4,5	–	–	3,0*	–	1,1	0,3	1,00
Single layer direct bonding lining on insulating material mineral wool													
1,00	–	type **A** type **H2****	1,00	1,1	1,1	–	4,5	1,1	3,0*	1,0	1,1	0,3	1,00
Single layer direct bonding lining on insulating material polyester type EPS													
–	1,00	type **A** type **H2****	1,00	1,1 cement adhesive	1,1	–	4,5	1,1	3,0*	1,0	1,1	0,3	1,00

I method – gluing
A of insulating material withTECHNOFUGA
B of plasterboards monolayer with TECHNOFUGA

II method – gluing
C of plasterboards monolayer with TECHNOFIX
D of insulating material with TECHNOFIX
E of plasterboards monolayer with TECHNOFUGA

III method - gluing
F of strips of gypsum board with TECHNOFIX
G of insulating material on plaster-board-strips with TECHNOFIX
H of plasterboards monolayer with TECHNOFIX

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NOTES:

* The given expenditure is for one row stripes.

** Wall cladding with plasterboards to type H2 does not to be execute in wet rooms.

The material requirements data refers to straight walls without openings, bents, etc. for an area of about 10,5 m².

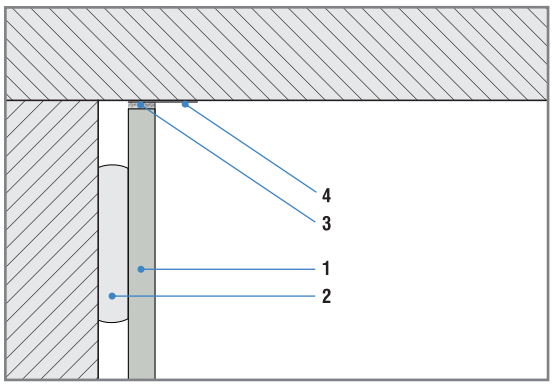
The material requirements data is considered without losses and cuttings.

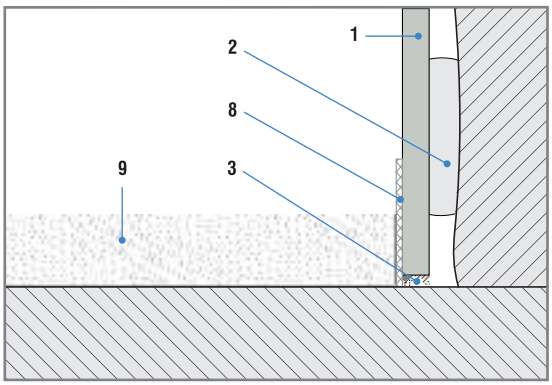
For gluing the EPS panels must be used gypsum adhesive in the given expenditure or cement adhesive with data according to manufacturer.

CONJUCTION TO CEILING

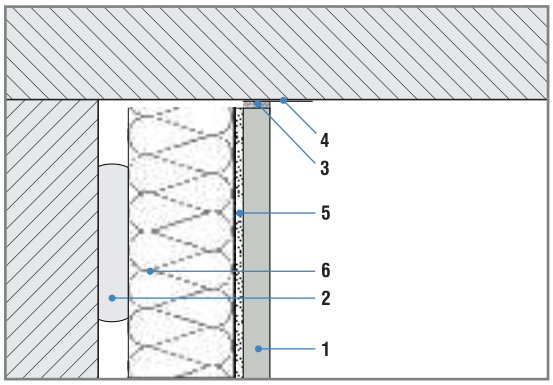
CONJUCTION TO FLOOR

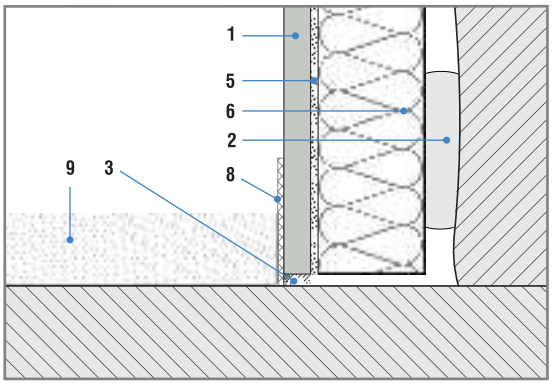
Single layer direct bonding lining with gypsum adhesive



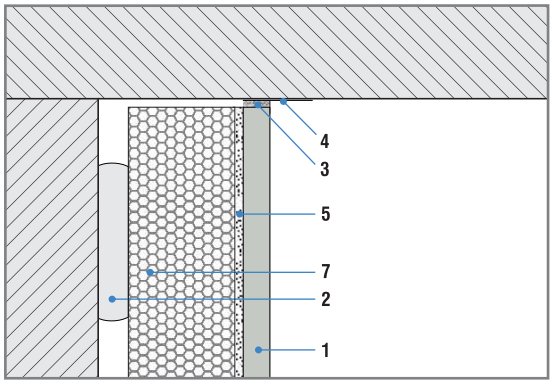


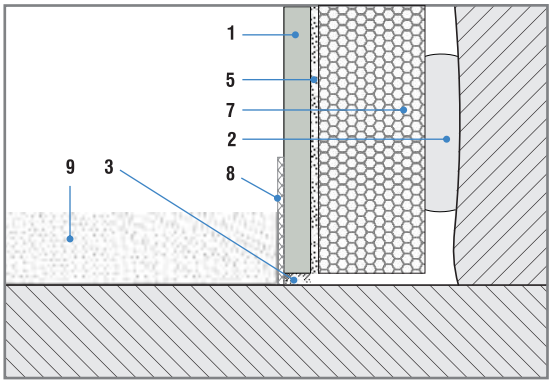
Single layer direct bonding lining on insulating material mineral wool



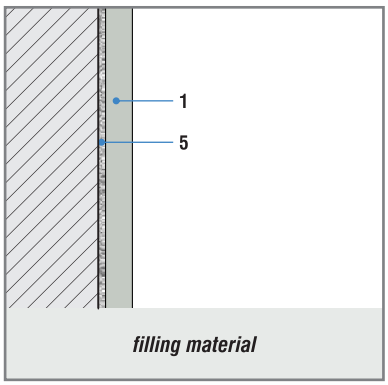


Single layer direct bonding lining on insulating material polyester type EPS

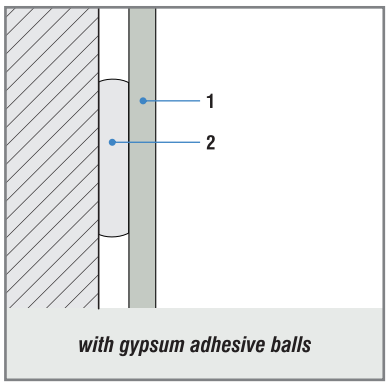




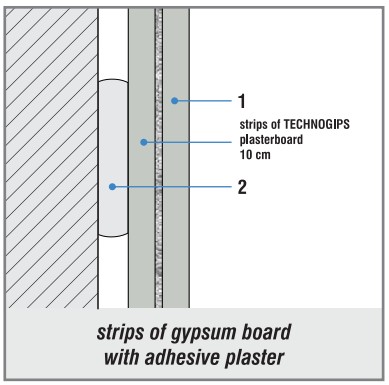
TYPES OF GLUING



filling material



with gypsum adhesive balls



strips of gypsum board with adhesive plaster

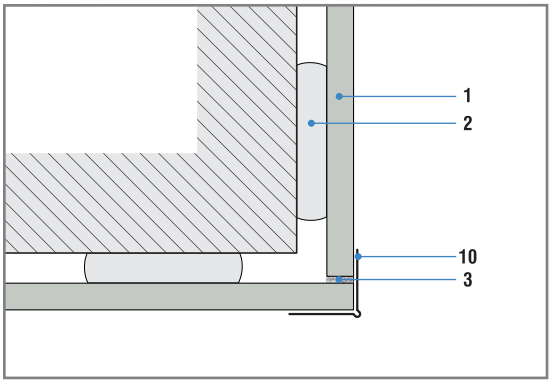
Positions

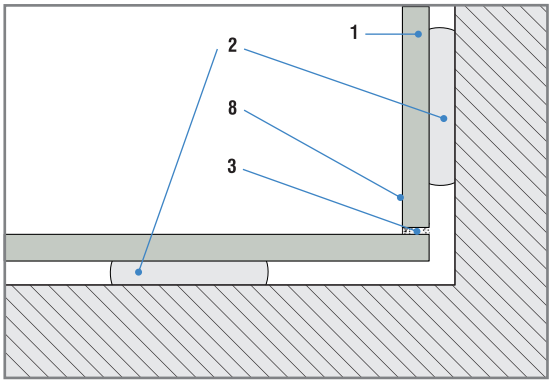
1	TECHNOGIPS plasterboards	3	gypsum	5	filling material TECHNOFUGA	7	EPS polystyrene	9	floor coating
2	gypsum adhesive	4	separating strip	6	mineral wool	8	insulating strip		

OUTER CORNER

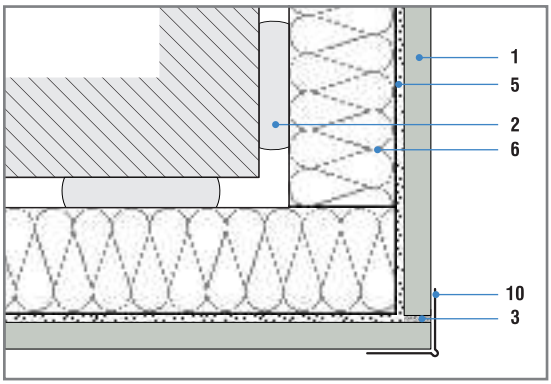
INTERNAL CORNER

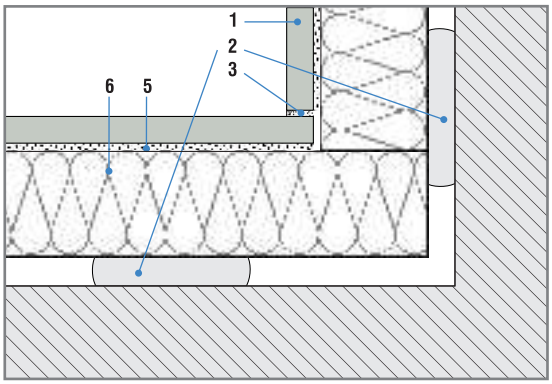
Single layer direct bonding lining with gypsum adhesive



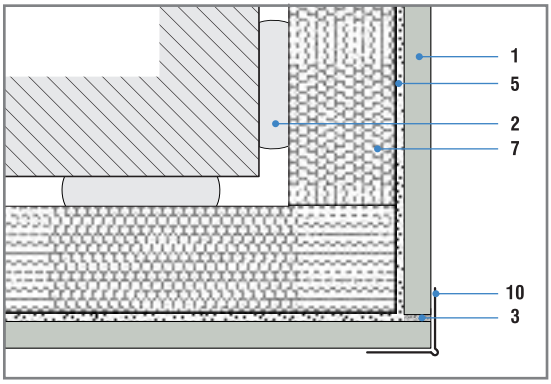


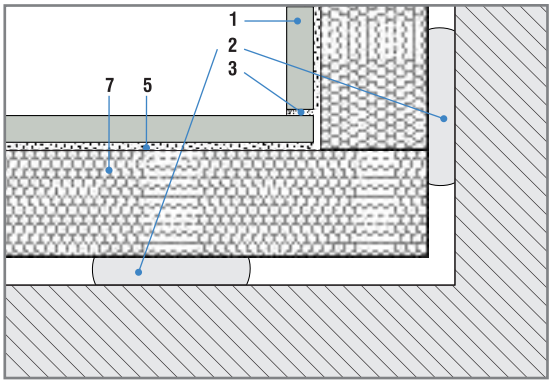
Single layer direct bonding lining on insulating material mineral wool



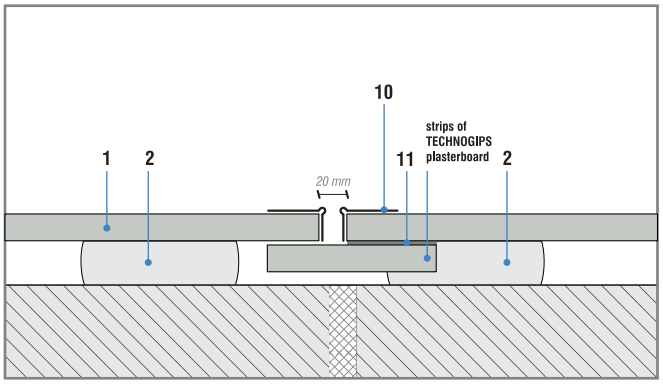


Single layer direct bonding lining on insulating material polyester type EPS

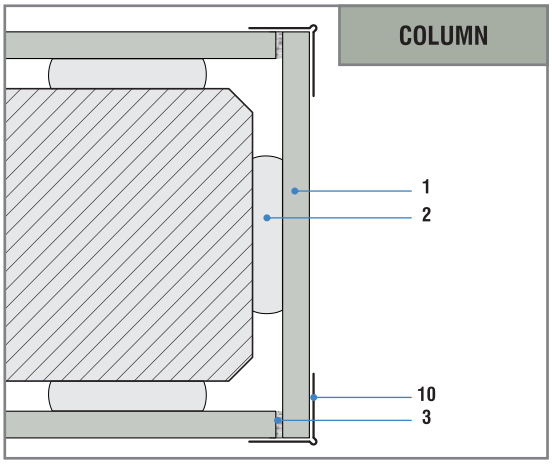




EXPANSION JOINT



COLUMN



Positions

1	*TECHNOGIPS plasterboards*	3	*gypsum*	5	*filling material TECHNOFUGA*	7	*EPS polystyrene*	9	*floor coating*	11	*construction adhesive (for example polyurethane)*
2	*gypsum adhesive*	4	*separating strip*	6	*mineral wool*	8	*insulating strip*	10	*corner-protector profile*		

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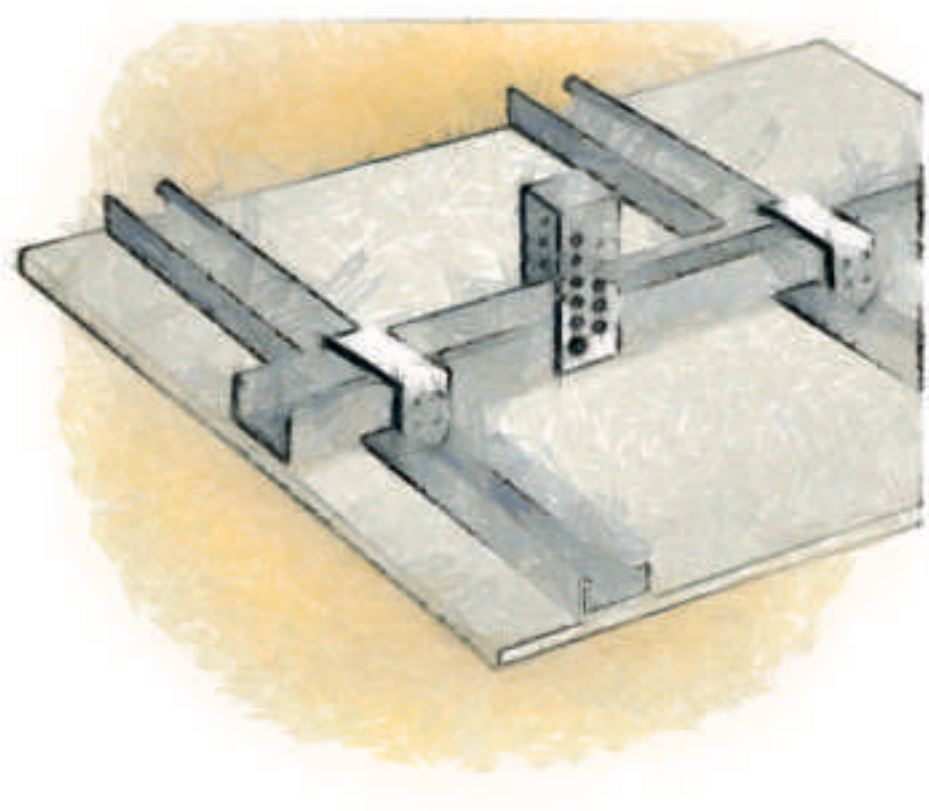
CEILING CLADDING AND SUSPENDED CEILINGS



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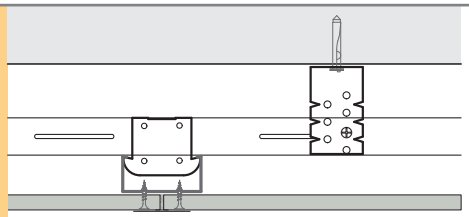
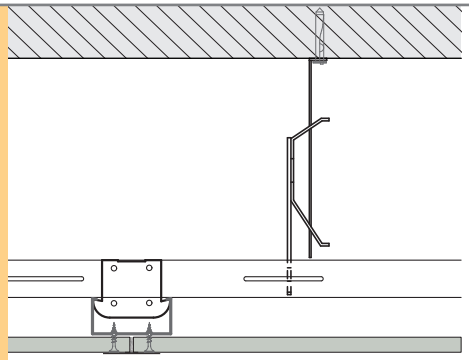
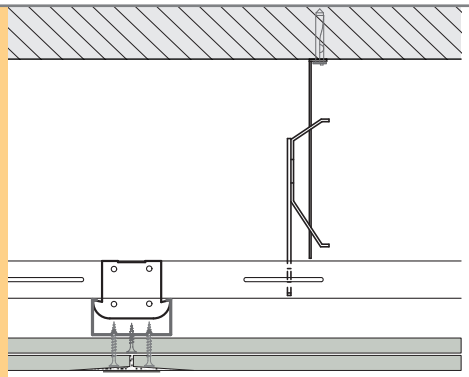
TYPES OF SYSTEMS

Ceiling cladding and suspended ceilings (scheme)
TECHNOGIPS system (construction set)

	Weight	Construction	Cladding		Insulation material	Supporting tool for ceiling
		Type / size of profile	Thickness	TECHNOGIPS plasterboard		
	kg/m²	mm	mm	type		
Single/double layer cladding on a directly fixed construction 	>15	CD/ UD	1 x 12,5 1 x 15,0 2 x 12,5 2 x 15,0	type **A** type **H2** type **F**	necessarily	direct hanger
Single layer cladding on a suspended construction 	>15	CD/ UD	1 x 12,5 1 x 15,0	type **A** type **H2** type **F**	necessarily	anchor hanger Nonius hanger
Double layer cladding on a suspended construction 	>25	CD/ UD	2 x 12,5 2 x 15,0	type **A** type **H2** type **F**	necessarily	anchor hanger Nonius hanger

NOTES:
The ceiling structure is made of studs for drywall according to EN 14195.
Standard bearing capacity of: direct and nonius hanger – 40 kg;
anchor hanger /hanging wire/ – 25 kg.

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BEARING CAPACITY

The load directly suspended to a plasterboard surface cannot exceed 60 N. Heavier loads are suspended directly to the reinforced concrete ceiling or another bearing structure. In the case of fire-resistant suspended ceilings, the hanging of additional loads to the plasterboard lining surfaces is not allowed.

Main requirements for sizing and making ceiling linings and suspended ceilings:

Only fastening elements according EN 14566 should be used.

Only fastening elements with proven bearing capacity like direct and nonius hangers with bearing capacity 0,4 kN, hanging wire with bearing capacity – 0,25 kN and construction profiles type CD according to EN 14195 and fastening elements according to EN 14566 should be used.

Only metal dowel should be used when elements are suspended to a reinforced concrete ceiling. Wrenching safety factor should be >3.

The table with allowable distances for fastening of the bearing structure is according to ONORM B 3415:

	Surface load p* /kN/m²/		
	Bearing profiles CD 0,6 mm		
	up 0,15	0,15 < p < 0,30	0,30 < p < 0,50
Central distance between the bearing profiles (mm)	1000	850	750
Central distance between the hangers (mm)	900	750	600

NOTE:
p* is a load by structure, hanging, lining and additionally embedded elements in the ceiling

TECHNOLOGY

The most important to be observed when making linings upon a directly fastened construction and suspended ceilings with TECHNOGIPS plasterboards in order to achieve high quality:

- **the only allowed fastening element to a reinforced concrete ceiling is a metal dowel;**
- **compliance between the central distances of hanging and bearing studs with the load of the ceiling;**
- **creation of a rigid connection –** the structure is suspended with a nonius hanger if there is a requirement for fire protection or shock-resistance;
- **provision against horizontal loading** – diagonal connections of the structure shall be envisioned in case horizontal for example caused by wind loading is to be beard;
- **separation of the connection from other building materials** – by putting a separation tape on the contact surface between the plasterboard surface and the surface of another building material the transfer of forces is disconnected and the joint integrity is preserved;
- **forming a joint between the lining and the vertical surface** – it can be formed by the help of a special construction like a shadow joint or a visible joint by putting it at an open distance;
- **the central distance of the rapid screws is max. 170 mm;**
- **the different hardness of the plasterboards must be taken into consideration prior to the installation** – in the case of a cross installation the central distance between the installation studs is max. 50 cm, and in the case of a longitudinal installation - max. 42 cm;
- **installation of the plasterboards is done with rapid screws off in17 cm.**

SPECIFICATIONS OF THE BUILDING AND INSTALLATION WORKS

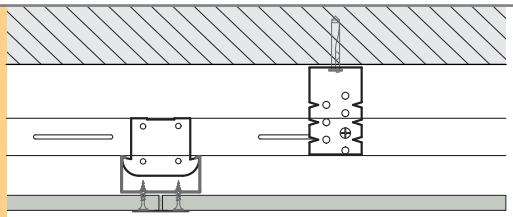
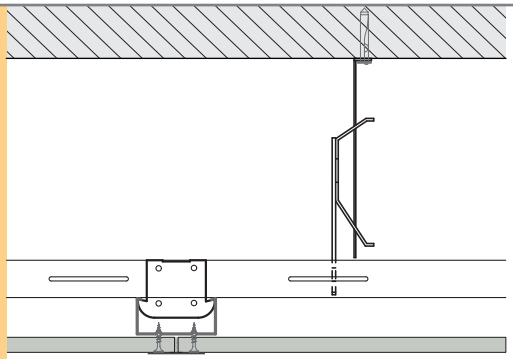
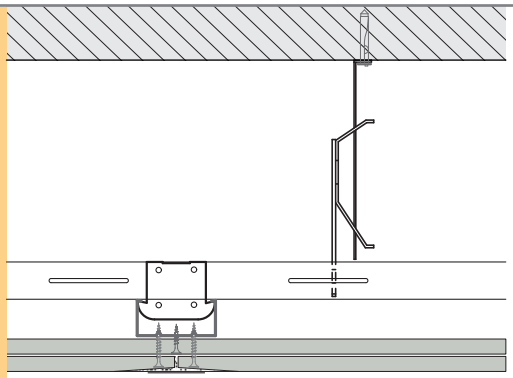
Ceiling lining: single/double layer lining upon CD construction	**Height:**	..... m according to item No. .....
	Construction:	studs according to EN 14195 CD/ UD with thickness .....
		fastening to a reinforced concrete ceiling with a direct hanger with metal dowel
	Cladding:	single/ double layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS type A / TECHNOGIPS type F / TECHNOGIPS type H2**
	Thickness:	1 x 12,5 / 1 x 15,0 mm or 2 x 12,5 / 2 x 15,0 mm
	Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
		density ..... kg/m³, or according to parameter .....
		sealing tape on the UD studs along the structure outline
	Fastening elements:	screws, dowels for drywall according to EN 14566
	Jointing material:	TECHNOFUGA with joint tape

Suspended ceiling: single layer lining upon suspended construction	**Height:**	..... m according to item No. .....
	Construction:	studs according to EN 14195 CD/ UD with thickness .....
		conjuction to the concrete ceiling with wire with loop with metal dowel/
		conjuction to the concrete ceiling with vernier hanger with metal dowel by requirement for fire protection
	Cladding:	single layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS type A / TECHNOGIPS type F / TECHNOGIPS type H2**
	Thickness:	1 x 12,5 mm / 1 x 15,0 mm
	Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
		density ..... kg/m³, or according to parameter .....
		sealing tape on the UD studs along the structure outline
	Fastening elements:	screws, dowels for drywall according to EN 14566
	Jointing material:	TECHNOFUGA with joint tape

Suspended ceiling: double layer lining upon suspended construction	**Height:**	..... m according to item No. .....
	Construction:	studs according to EN 14195 CD/ UD with thickness .....
		conjuction to the concrete ceiling with wire with loop with metal dowel/
		conjuction to the concrete ceiling with vernier hanger with metal dowel by requirement for fire protection
	Cladding:	double layer with plasterboards according to EN 520
	Type:	**TECHNOGIPS type A / TECHNOGIPS type F / TECHNOGIPS type H2**
	Thickness:	2 x 12,5 / 2 x 15,0 mm
	Insulation material:	with/without mineral wool according to EN 13162, with thickness ..... mm
		density ..... kg/m³, or according to parameter .....
		sealing tape on the UD studs along the structure outline
	Fastening elements:	screws, dowels for drywall according to EN 14566
	Jointing material:	TECHNOFUGA with joint tape

TABLE
COST OF MATERIALS

Ceiling cladding and suspended ceilings (scheme)
TECHNOGIPS system (construction set)

		Construction		*Insulation*			Supporting tool to the concrete ceiling, type
		UD profiles	CD profiles	mineral wool	sealing tape for UD profile	sealing tape for hangers	
		m¹	m¹	m²	m¹	m¹	number
Single/double layer cladding on a directly fixed construction		**0 or 0,9**	**3,5**	necessarily	**0 or 0,9**	**0,1**	direct hanger **1,5** **1,7**
Single layer cladding on a suspended construction		**0 or 0,9**	**3,5**	necessarily	**0 or 0,9**	–	anchor or vernier hanger **1,5**
Double layer cladding on a suspended construction		**0 or 0,9**	**3,5**	necessarily	**0 or 0,9**	**0,1**	anchor or vernier hanger **1,7**

Mechanical fastening elements					*Cladding*		*Jointing material*	
PVC dowel for UD profile	metal dowel for hanger	screw for metal for hanger and CD profile	screw for plaster-board 25 mm	screw for plaster-board 35 mm	type	TECHNOGIPS plasterboards	TECHNOFUGA	joint tape
pcs	pcs	pcs	pcs	pcs		m²	kg	m¹
0 or 1,0	**1,5**	**3,0**	**18**	–	monolayer	**1,00**	**0,3**	**1,2**
0 or 1,0	**1,7**	**3,4**	**9**	**18**	doublelayer	**2,00**	**0,6**	**1,2**
0 or 1,0	**1,5**	**3,0**	**18**	–	monolayer	**1,00**	**0,3**	**1,2**
0 or 1,0	**1,7**	**3,4**	**9**	**18**	doublelayer	**2,00**	**0,6**	**1,2**

NOTES:

*The data provided for material requirements is at a metal sheet thickness of 0,6 mm.

In case of different thickness sizing of the construction shall be made and the amounts shall be changed if necessary.

The material requirements data refers to smooth ceilings, without holes, creases, etc. for an area of about 20 m².

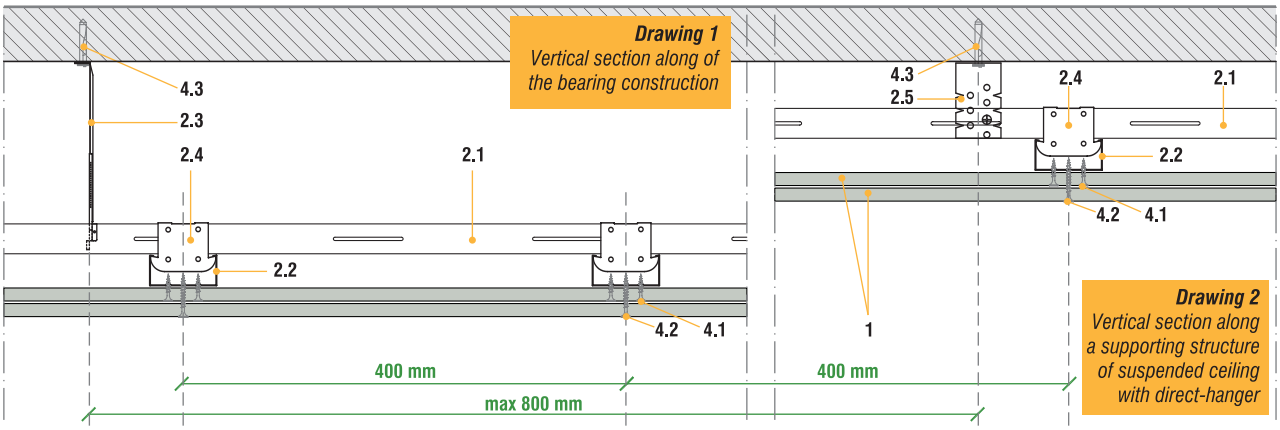
The material requirements data is considered without losses and cuttings.

In the performance of fire resistant ceiling with plaster boards 2 x 15 mm must be take into account the compression of the structure according to the table on page 42 – FIRE RESISTANCE OF TECHNOGIPS SUSPENDED CEILINGS.

FIRE RESISTANCE OF TECHNOGIPS SUSPENDED CEILING

Construction		Hanger 0.4 kN	Axial distance between			Cladding		Fire resistance	
Type of profile			hangers	bearing profiles	mounting profiles	thickness	TECHNOGIPS plasterboard	EI	protocol
bearing	mounting		mm	mm	mm	mm	type	min	
CD 60	CD 60	direct or vernier hanger	800	800	400	2 x 15	F	60	Pr. N 2/16.02.2011

TECHNOGIPS SUSPENDED CEILING, FIRE RESISTANCE EI 60

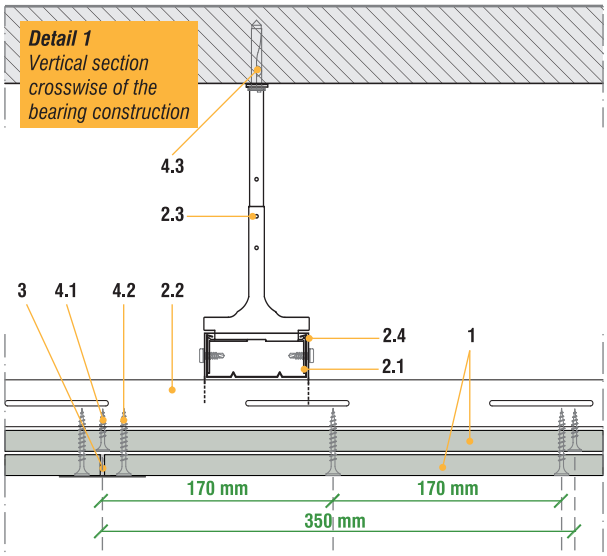


Drawing 1
Vertical section along of the bearing construction

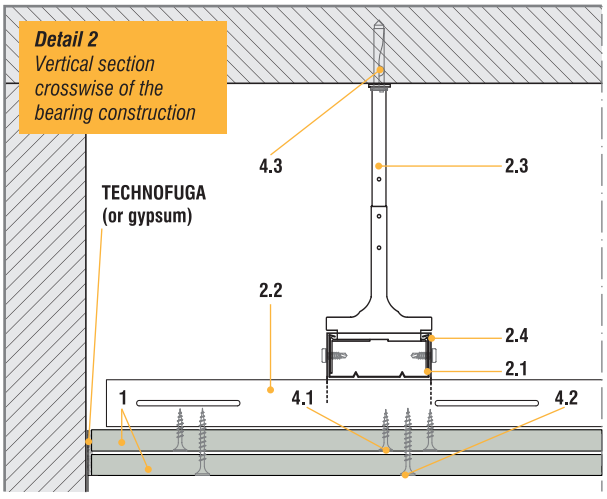
Drawing 2
Vertical section along a supporting structure of suspended ceiling with direct-hanger

Positions

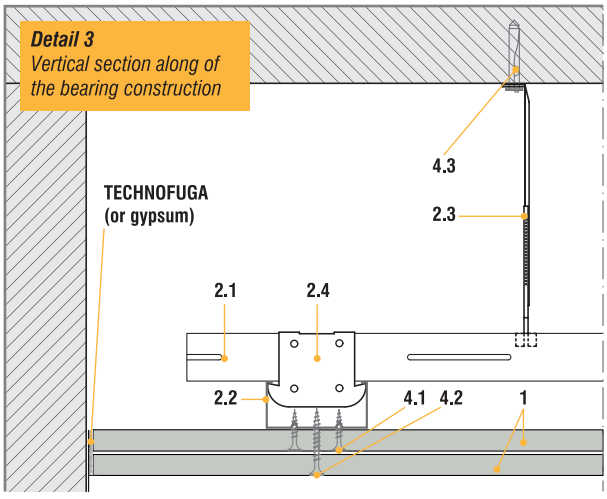
1	*TECHNOGIPS fire-resistance plasterboards, 15 mm, type F*	2.5	*Direct hanger*
2.1	*Bearing profile type CD*	3	*Filling material TECHNOFUGA*
2.2	*Mounting profile type CD*	4.1	*Screw for plasterboard for the first layer, 35 mm*
2.3	*Vernier hanger 0,4 kN*	4.2	*Screw for plasterboard for the second layer, 35 mm*
2.4	*Cross connection for CD profile*	4.3	*Metal anchor nail*



Detail 1
Vertical section crosswise of the bearing construction



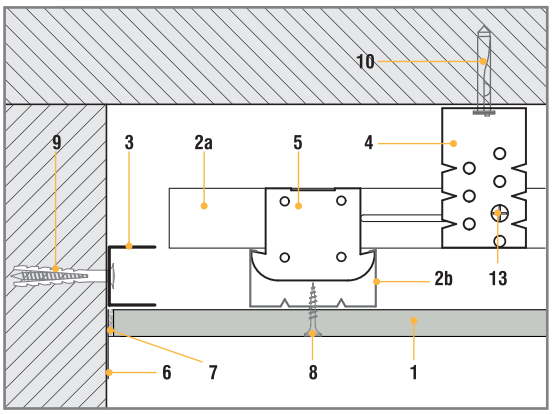
Detail 2
Vertical section crosswise of the bearing construction

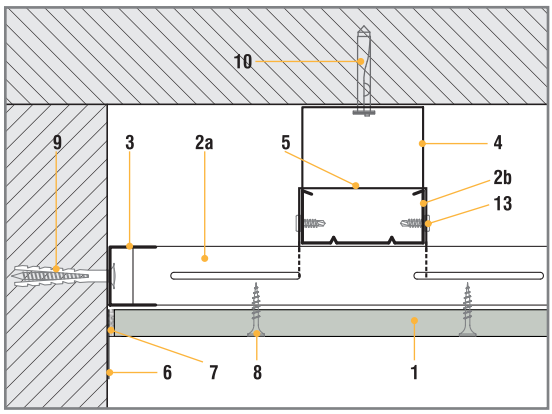


Detail 3
Vertical section along of the bearing construction

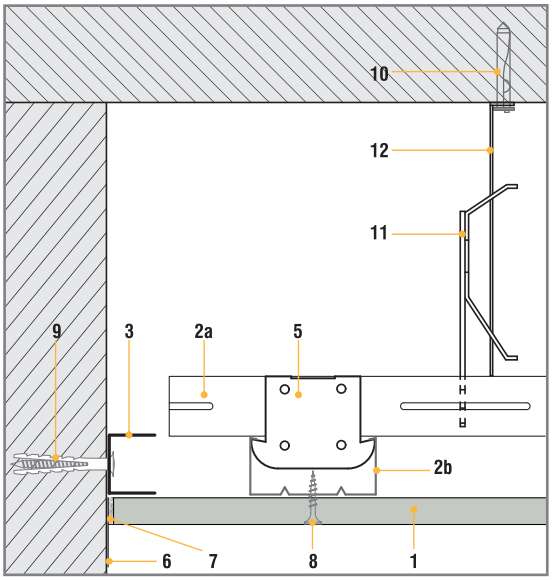
CONJUCTION TO MASSIVE WALL WITH UD STRUCTURE

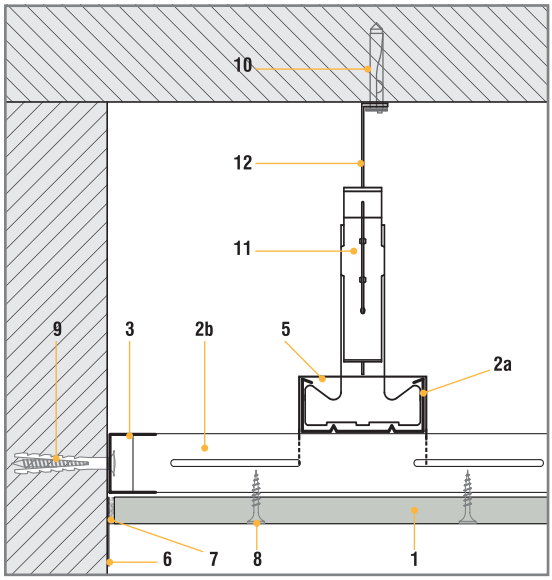
Single/double layer cladding on a directly fixed construction



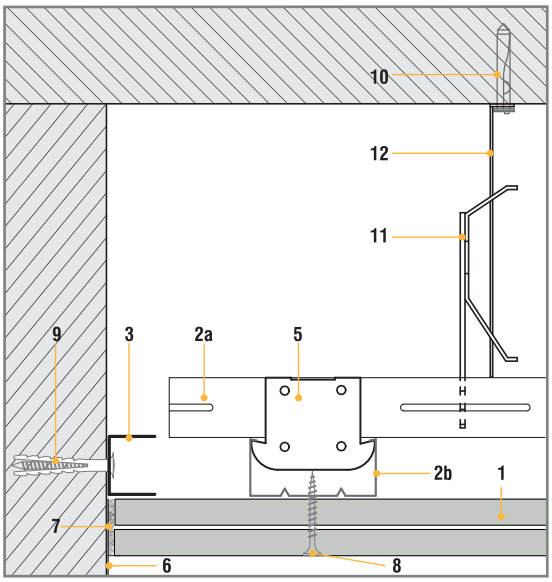


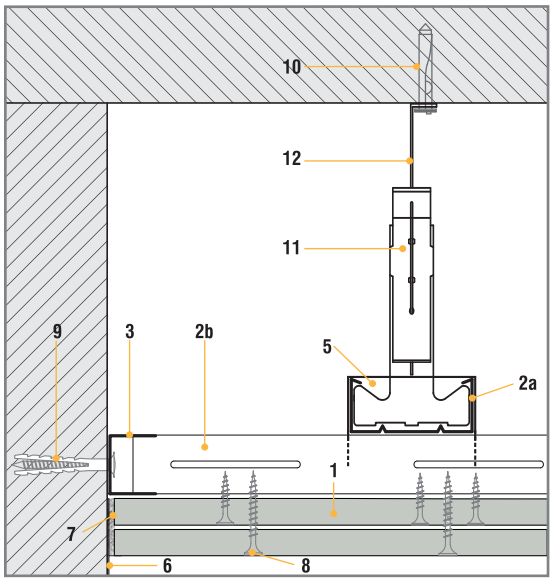
Single layer cladding on a suspended construction





Double layer cladding on a suspended construction



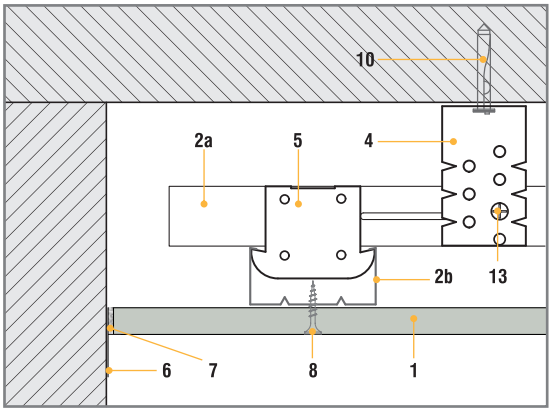


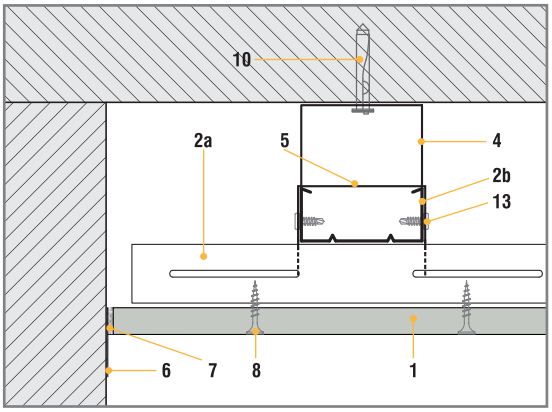
Positions

1	TECHNOGIPS plasterboards	3	UD profile	6	separating strip	9	PVC dowel	12	wire with ear	15	filling material TECHNO-FUGA
2a	CD profile	4	direct hanger	7	gypsum	10	metal dowel	13	screw for metal		
2b	CD profile	5	cross connection for CD profile	8	rapid screw	11	anchor hanger	14	reinforcing strip		

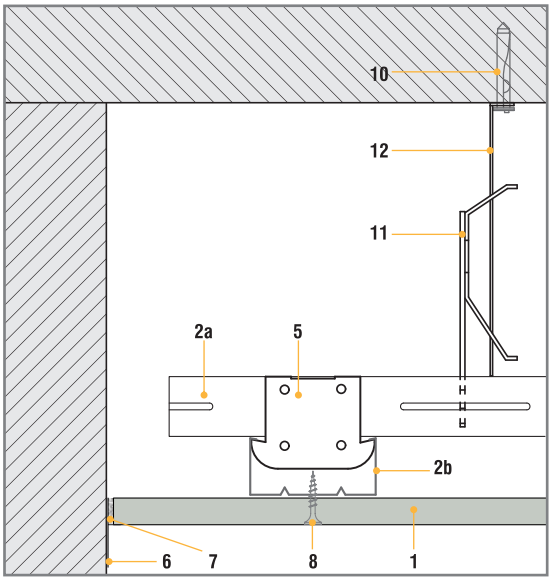
CONJUCTION TO MASSIVE WALL WITHOUT UD STRUCTURE

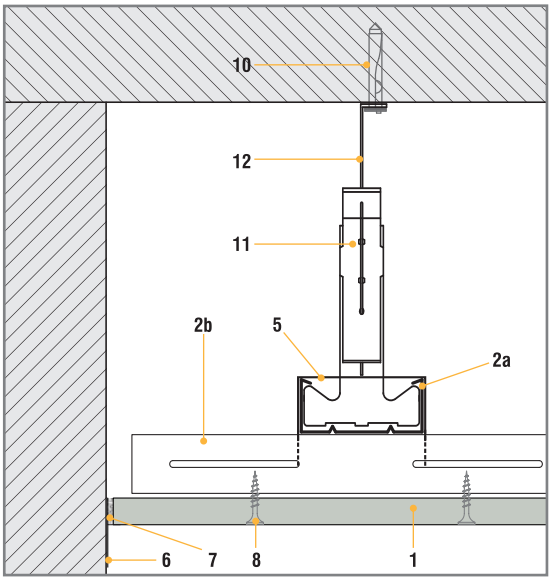
Single/double layer cladding on a directly fixed construction



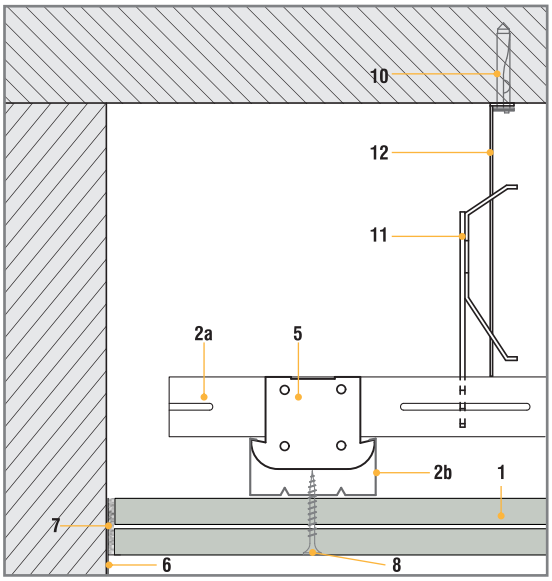


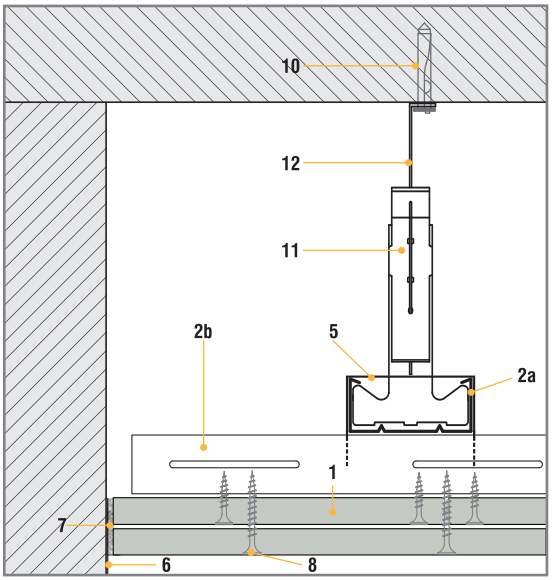
Single layer cladding on a suspended construction





Double layer cladding on a suspended construction



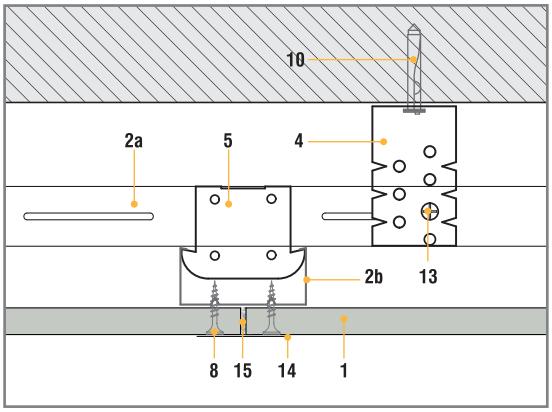


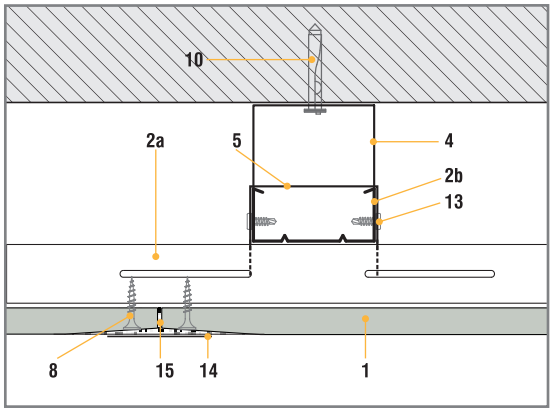
Positions

1	*TECHNOGIPS plasterboards*	3	*UD profile*	6	*separating strip*	9	*PVC dowel*	12	*wire with ear*	15	*filling material TECHNO-FUGA*
2a	*CD profile*	4	*direct hanger*	7	*gypsum*	10	*metal dowel*	13	*screw for metal*		
2b	*CD profile*	5	*cross connection for CD profile*	8	*rapid screw*	11	*anchor hanger*	14	*reinforcing strip*		

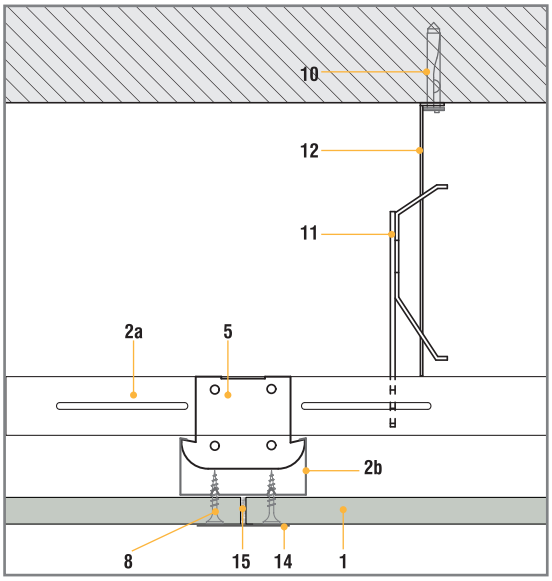
JOINTS BETWEEN PLASTERBOARDS

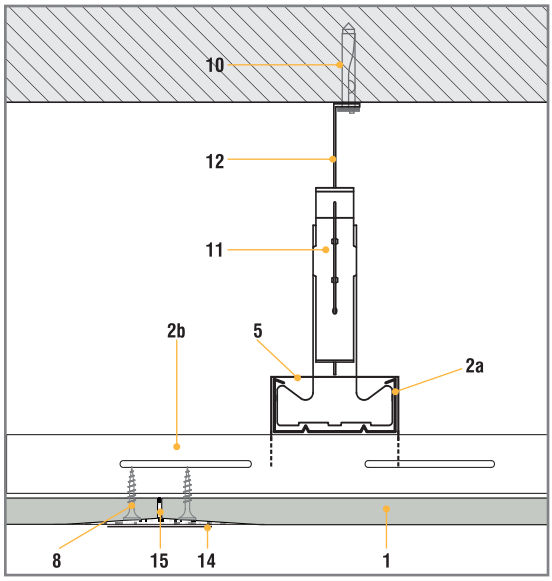
Single/double layer cladding on a directly fixed construction



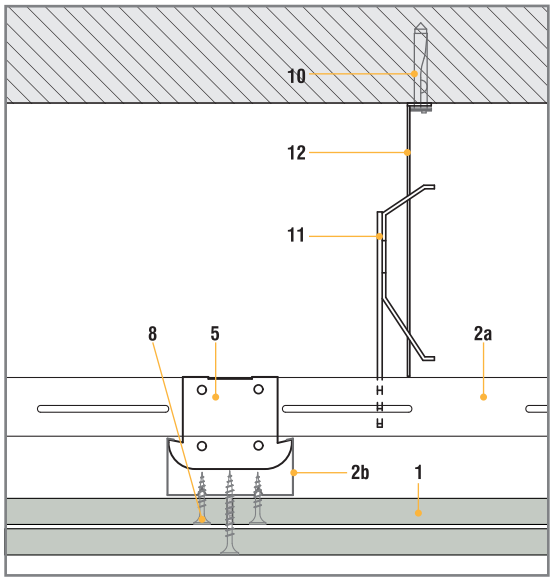


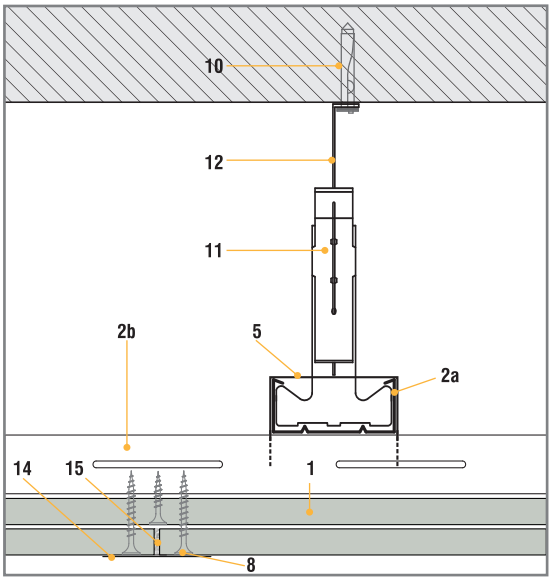
Single layer cladding on a suspended construction





Double layer cladding on a suspended construction



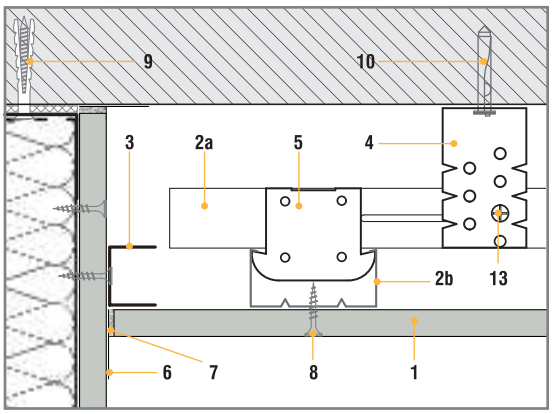


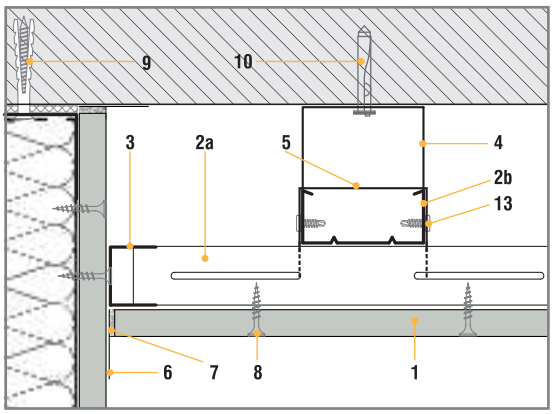
Positions

1	*TECHNOGIPS plasterboards*	3	*UD profile*	6	*separating strip*	9	*PVC dowel*	12	*wire with ear*	15	*filling material TECHNO-FUGA*
2a	*CD profile*	4	*direct hanger*	7	*gypsum*	10	*metal dowel*	13	*screw for metal*		
2b	*CD profile*	5	*cross connection for CD profile*	8	*rapid screw*	11	*anchor hanger*	14	*reinforcing strip*		

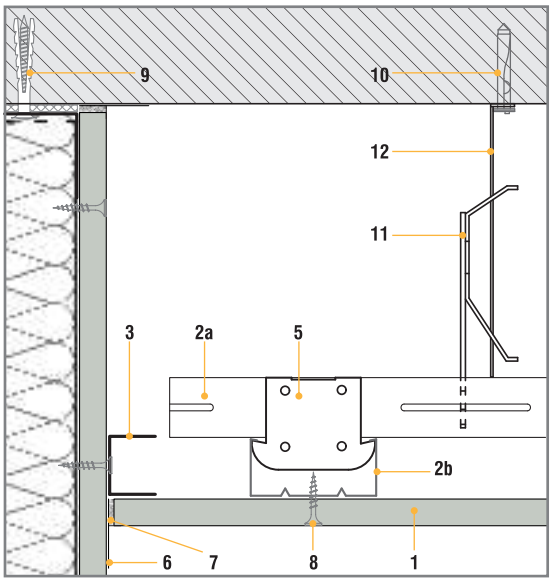
CONJUCTION TO PARTITION WALL WITH UD STRUCTURE

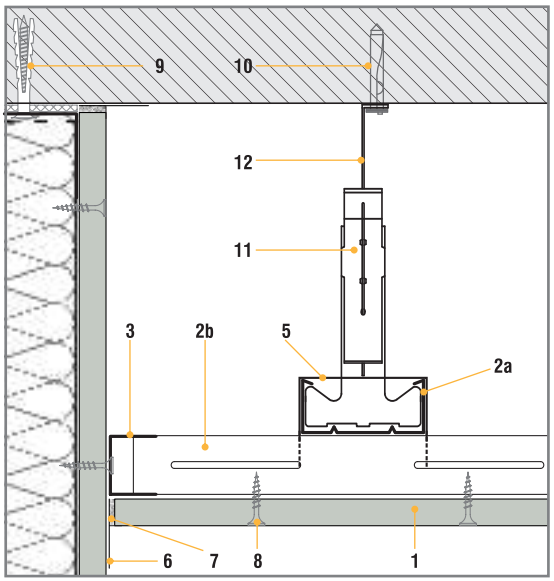
Single/double layer cladding on a directly fixed construction



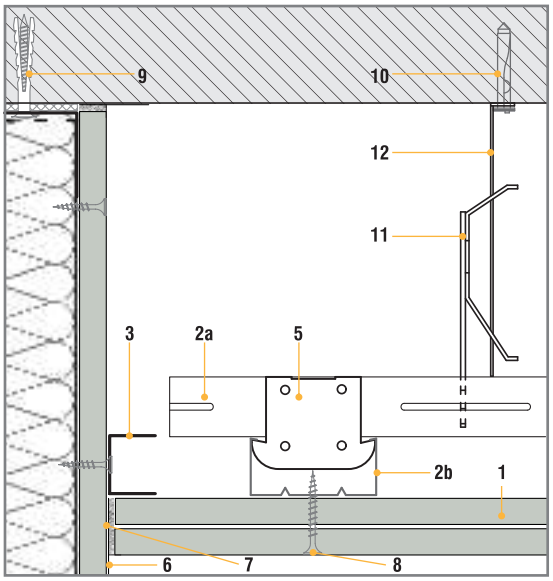


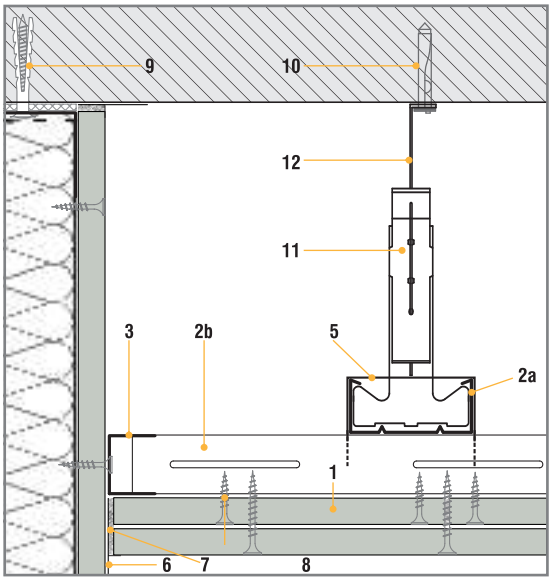
Single layer cladding on a suspended construction





Double layer cladding on a suspended construction





Positions

1	*TECHNOGIPS plasterboards*	3	*UD profile*	6	*separating strip*	9	*PVC dowel*	12	*wire with ear*	15	*filling material TECHNO-FUGA*
2a	*CD profile*	4	*direct hanger*	7	*gypsum*	10	*metal dowel*	13	*screw for metal*		
2b	*CD profile*	5	*cross connection for CD profile*	8	*rapid screw*	11	*anchor hanger*	14	*reinforcing strip*		

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