Fire protection according to a system

Hoesch isorock® Hoesch isorock® integral D
Hoesch isorock® vario Hoesch isorock® akustik

A company of ThyssenKrupp Steel

ThyssenKrupp Bausysteme

ThyssenKrupp

Hoesch isorock® product overview

Dependable, contemporary and advanced, there is one name standing for: ThyssenKrupp Bausysteme, the competent partner for building owners, architects and planners. In order to meet the ever increasing demands with respect to fire protection, we have again improved our wellproven Hoesch isorock® and are now able to offer the product in four versions:

Hoesch isorock®
Hoesch isorock® acoustic
Hoesch isorock® vario
Hoesch isorock® integral D

Whatever ideas and demands you may have, ThyssenKrupp Bausysteme is your proficient partner who will assist you in finding a solution to your tasks offering:

- one of the most extensive ranges of environmentally friendly and recyclable products for industrial and commercial building
- products and service which are optimally suited to customers' requirements
- production sites close to the market, thus rapid and flexible processes
- highly motivated and qualified staff to advise you
- high grade innovative products at competitive prices

Hoesch isorock® ..... page 6

Hoesch isorock® acoustic ..... page 10

Hoesch isorock® vario ..... page 8

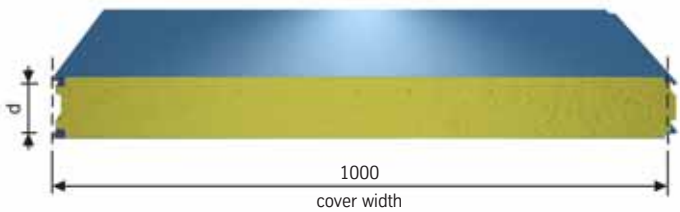
Hoesch isorock® integral D .. page 12

ThyssenKrupp Bausysteme

Innovation in the field of fire protection and thermal insulation

High Tech in our CreativeLine:
The new generation of Hoesch isorock® sandwich elements

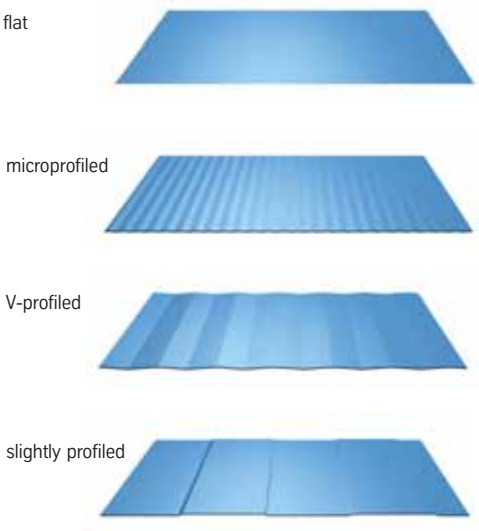
As the first European company ThyssenKrupp Bausysteme were awarded the building material classification **A2-s1**, **d0** in accordance with DIN EN 1350-1. Hence, the complete element (Hoesch isorock® and Hoesch isorock® vario) consisting of a Conrock rock wool layer classified A1 as the insulating core and coil-galvanized and coil-coated faces, is classified as "non combustible". This high performance was recognized by the DIBT in Berlin by entering "non combustible" in the approval Z-10-4-235 in chapters 1.2 and 3.3. Thus, Hoesch isorock®, Hoesch isorock® vario and Hoesch isorock® integral D are the only sandwich elements to have this classification in the approval. Furthermore, thanks to the good values achieved in the airborne sound insulation test (test certificates P-BA 69/1999 and P-BA 88/2001), these products efficiently contribute to a sound level reduction.



Surface texture

Hoesch isorock® and Hoesch isorock® vario elements are available with various surface textures:

- outer sheet
  - E = flat
  - M = microprofiled
  - V = V-profiled
  - L = slightly profiled
- inner sheet
  - E = flat
  - L = slightly profiled



The safety of the new generation
Hoesch isorock®, Hoesch isorock® vario and Hoesch isorock® integral D

In the recent years, due to large-scale fires, fire protection became increasingly an important issue in the public. Today, a comprehensive protection against fire of man and material assets is an essential part of the planning for new buildings and refurbishments. Up to now, however, very often only partial aspects of fire protection were considered; fire resistance, non combustibility, smoke development or spreading of a fire were considered and assessed separately without taking account of the full scenario of such a catastrophe.
Building materials may have a fire resistance of 30 minutes or more and nevertheless endanger people or hinder the fire brigade, e.g. due to the development of smoke. This is the point were the European standard DIN EN 13501-1 applies: classifications are only granted when the essential potential risks resulting from the fire performance of a building material have been accounted for. Both, the combustibility of a product and flaming droplets are subject to classification.
Aware of these facts, Hoesch isorock®, Hoesch isorock® vario and Hoesch isorock® integral D products have undergone constant further development, and every detail likely to have an effect on the fire performance has been subjected to thorough testing and improvement. The result: these panels are the first in Europe to be awarded the best possible classification according to DIN EN 13501-1, i.e.

A2-s1, d0

A2 the product is not combustible and does not essentially contribute to growth of a fully developed fire. Thus, the panel is an efficient protection (barrier) against fire.

s1 is the lowest level of smoke development. This is especially important when bearing in mind that in the case of a fire 80% of the people are directly or indirectly hurt by the smoke or even die.

d0 no flaming droplets, no fire spreading, escape ways are not blocked.

These excellent features altogether allow awarding the classification "non combustible" according to DIN EN 13501-1. Unlike for other products which are graded "almost non-inflammable", the range of application for Hoesch isorock®, Hoesch isorock® vario and Hoesch isorock® integral D is considerably extended. In view of the achieved fire resistance grade F 90, the panels may be used as a **fire wall** as specified in the industrial directive, chapter 5.8.4. Thus, the customer is offered products which provide completely new possibilities in fire protection.

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Possible applications for Hoesch isorock® and Hoesch isorock® vario: The fire wall

The structure
In order to provide flexibility on site for the erection of fire walls, the rules applicable to industrial building (item 5.8.4) allow for two opposite walls **of a classified fire resistance of F 90** made from **non combustible material** to be used instead of an interior fire wall. The new generation of our Hoesch isorock® and Hoesch isorock® vario elements complies with the requirements specified in this directive, i.e. "non combustible" and "fire resistance class F 90". Thus, they may be used as fire walls. An example of the structure of such a wall is shown below. The adaptation to local conditions must be co-ordinated with an expert responsible for fire protection. Members of staff of ThyssenKrupp Bausysteme will also be pleased to give you advice.

The benefits
Compared with a conventionally built fire wall, a fire wall made from Hoesch isorock® and Hoesch isorock® vario offers the following benefits:

- rapid erection, dry construction
- no curing or setting time
- installation in existing buildings already in use is possible
- easy and low-cost erection due to low dead weight
- low-cost foundation due to low dead weight
- smooth surface easy to clean
- factory-applied coloured finish
- available with foodstuff compatible surface
- large stock of material ensures short lead times
- erection similar to light-construction walls, no other crafts are required
- low-cost purchase and erection compared with solid walls
- can be dismantled and erected in another place

You should use Hoesch isorock® and Hoesch isorock® vario for your next project.

Fire resistance classes for Hoesch isorock®
The demands for fire protection on outer walls have been met with the classification according to DIN 4102-3 in the fire resistance class

- W 90 - A.

This is documented in general approval P-3544/2420-MPA BS issued by the Building Authorities.

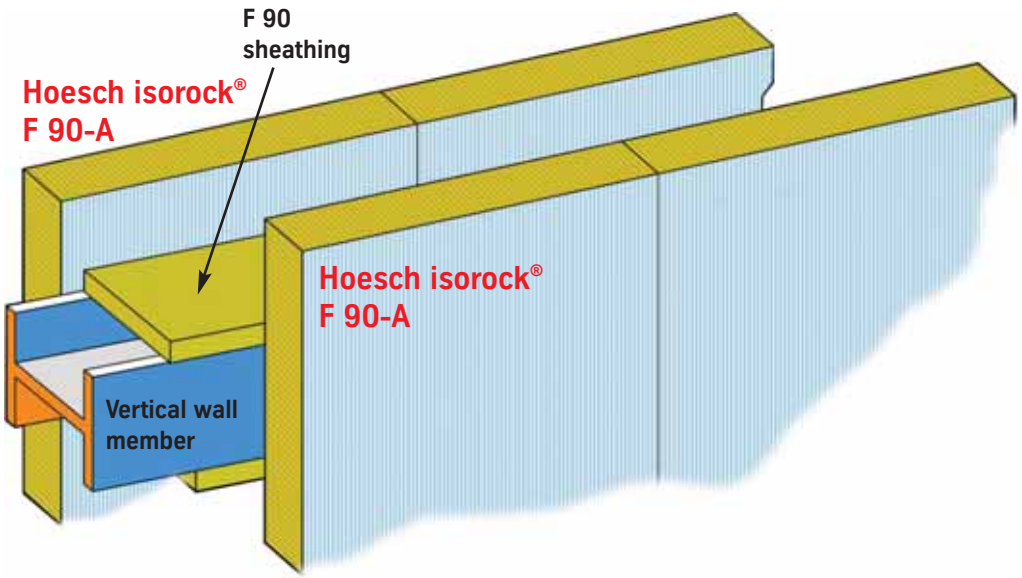
As a result of the test as a space-enclosing, non load-bearing wall, partition wall to DIN 4102-2, the element was classified according to the following fire resistance classes:

- F 30 - A
- F 60 - A
- F 90 - A
- F 120 - A.

General approval P-3545/2430 -MPA BS applies to these fire resistance classes.
The range is completed by the European classification according to DIN EN 13501-2 (12.2003)

- EI 30
- EI 60
- EI 90.

The corresponding tests were carried out according to EN 1363-1 and EN 1364-1.



Schematic representation of a fire wall made from Hoesch isorock® panels

Excerpt from the rules applicable to industrial buildings, item 5.8.4

"Instead of an interior fire wall, two opposite walls with a classified fire resistance of F 90 made from non combustible material are permissible. Structural elements supporting or reinforcing these walls must be made from materials of the same fire resistance class as that of the load-bearing structural elements in the fire resistant compartment under consideration."

This item has now been included in the building codes throughout Germany.

The Hoesch isorock® generation

The system
Hoesch isorock® panels are sandwich elements consisting of two metal sheets positioned on either side of a core of the mineral wool which are firmly bonded together in a shear-resistant manner.
Thus, the sandwich panels are resistant to high loads (see load tables) and provide thermal insulation.

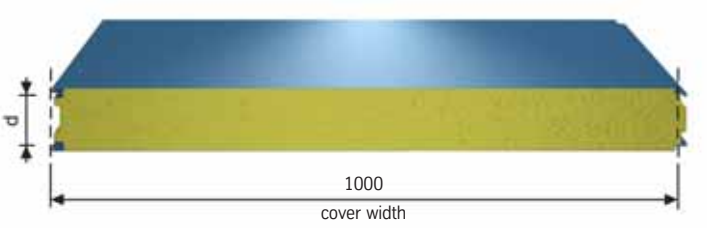
The core layer
Hoesch isorock® wall panels are generally produced using "CONROCK bio-degradable rock wool" as the core layer (bio-degradable = TRGS 905). The CONROCK rock wool layer is non combustible, building material class A1, according to DIN 4102-1.

Laying methods
Due to the exact joint geometry, Hoesch isorock® may be laid

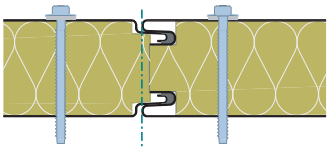
- vertically or
- horizontally.

Tongue and groove design
The exact joint geometry with inserted sealing tapes ensures high tightness against air and driving rain. Test certificates P-6-306/1999 and P-6-307/1999 have been issued by the Fraunhofer Institute.

Sound insulation
The weighted sound reduction index Rw is 32 dB according to test report no. 164 22589/issued by the ift Rosenheim.

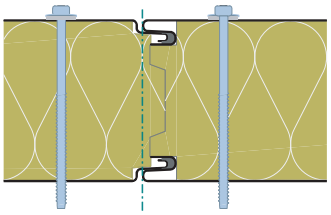


for element thickness d = 60 mm



(In the case of a panel thickness of 60 mm, the rockwool is supplied without the tongue and groove feature.)

for element thickness d ≥ 80 mm



Designation of building element	Type	Element thickness d	Material thickness outer sheet t_N	Material thickness inner sheet t_N	Max. length supplied	Weight	Thermal resistance R*	Heat transfer coefficient U*	Thermal resistance R_D**	Heat transfer coefficient U**
		mm	mm	mm	m	kg/m²	m²K/W	W/m²K	m²KW	W/m²K
Hoesch isorock®	D0	60	**0.50** 0.75	**0.50** 0.75	**16.0** 16.0	**14.0** 18.3	1.44	0.62	1.40	0.65
		80			**16.0** 16.0	**15.8** 20.1	1.93	0.48	1.90	0.50
		100			**16.0** 16.0	**17.6** 21.9	2.41	0.39	2.40	0.40
		120			**16.0** 16.0	**19.4** 23.7	2.90	0.33	2.90	0.34
		140			**16.0** 15.7	**21.2** 25.5	3.39	0.28	3.35	0.29
		160			**16.0** 14.7	**23.0** 27.3	3.88	0.25	3.85	0.25
		180			**16.0** 13.8	**24.8** 29.1	4.37	0.22	4.35	0.23
		200			**15.1** 13.0	**26.5** 30.8	4.85	0.20	4.85	0.21
Hoesch isorock®	D1	60	**0.50** 0.75	**0.50** 0.75	**16.0** 16.0	**14.6** 18.9	1.37	0.65	1.35	0.67
		80			**16.0** 16.0	**16.6** 20.9	1.84	0.50	1.80	0.52
		100			**16.0** 16.0	**18.6** 22.9	2.30	0.40	2.30	0.42
		120			**16.0** 16.0	**20.6** 24.9	2.77	0.34	2.75	0.35
		140			**16.0** 14.9	**22.6** 26.9	3.23	0.29	3.20	0.30
		160			**16.0** 13.9	**24.6** 28.9	3.70	0.26	3.70	0.27
		180			**15.1** 13.0	**26.6** 30.9	4.16	0.23	4.15	0.24
		200			**14.1** 12.2	**28.5** 32.8	4.63	0.21	4.60	0.21
Hoesch isorock®	D2	60	**0.50** 0.75	**0.50** 0.75	**16.0** 16.0	**16.0** 20.4	1.31	0.68	1.30	0.70
		80			**16.0** 16.0	**18.5** 22.9	1.76	0.52	1.75	0.54
		100			**16.0** 15.8	**21.0** 25.4	2.20	0.42	2.20	0.43
		120			**16.0** 14.4	**23.5** 27.9	2.64	0.36	2.60	0.37
		140			**15.4** 13.2	**26.0** 30.4	3.09	0.31	3.05	0.32
		160			**14.0** 12.2	**28.5** 32.9	3.53	0.27	3.50	0.28

Element thickness d = 150 mm, longer versions or other combinations of material thickness on request
* calculation acc. to EN ISO 6946 ** calculation acc. to EN 13 162 taking account of the joints acc. to EN 14 509

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Hoesch isorock® fire resistance classes

The great number of fire resistance grades achieved by Hoesch isorock® are compiled in the table below. The maximum spaces between horizontal and vertical members, respectively, are only limit values for the specified classes of fire resistance. When used as external cladding, wind loads as specified in the table of spans or in the structural analysis must be taken into account. The smaller value determined on the basis of both tables is decisive for the design.

Hoesch isorock® fire resistance classes for use as wall elements

Designation of building element	Fire resistance class		Laying direction	Max. spacing of wall girts (h) / supports (b) in m	Type	Element thickness (d) in mm	Test certificate Test report no.
Hoesch isorock®	DIN 4102-2.3	F 30-A	vertical	h ≤ 4.00	D2	≥ 60	Official test certificate no. P-3545/2430-MPA BS
			vertical	h ≤ 5.00	D1	≥ 80	
			horizontal	b ≤ 6.00	D2	≥ 100	
		F 60-A	vertical	h ≤ 4.00	D1	≥ 80	
			vertical	h ≤ 5.00	D2	≥ 80	
			horizontal	b ≤ 6.00	D2	≥ 120	
		F 90-A	vertical	h ≤ 5.00	D2	≥ 100	
			vertical	h ≤ 6.00	D2	≥ 120	
			horizontal	b ≤ 3.20	D2	≥ 100	
			horizontal	b ≤ 6.00	D2	≥ 120	
		F 120-A	vertical	h ≤ 5.00	D2	≥ 120	
		W 90-A	vertical	h ≤ 5.00	D2	≥ 80	Test certificate P-3544/2420-MPA BS
			horizontal	b ≤ 4.50	D2	≥ 100	
	DIN EN 13501-2	EI 30*	see 1)	h ≤ 4.00	D2	≥ 60	3275/8119
		EI 60*	see 1)	h ≤ 4.00	D1	≥ 80	9477 A
		EI 90*	see 1)	h ≤ 4.00	D1	≥ 160	PB III/B-03-036

Hoesch isorock® fire resistance classes for use as the underside of ceilings

Designation of building element	Fire resistance class			Max. span in m	Type	Element thickness (d) in mm	Test certificate
	Class		Condition of support / flame impingement conditions				
Hoesch isorock®	DIN EN 13501-2	EI 30**	Unsupported floor / flame impingement from below „a ⟵ b“	≤ 4.40	D1	≥ 100	PB III/B-02-237

* Test acc. to EN 1363-1 und EN 1364-1, classification acc. to DIN EN 13501-2. ** Test acc. to EN 1364-2, classification acc. to DIN EN 13501-2.
1) In Germany, only vertical laying is permissible, in other countries both vertical and horizontal laying are permissible.

The applications

When in addition to the well-known features of sandwich elements additional demands on fire protection must be complied with, the Hoesch isorock® wall panel proves its suitability as

- external cladding
- space-enclosing building part
- external wall meeting demands on fire protection
- partition wall meeting demands on fire protection
- cladding for centralized air conditioning plants, cladding for ventilation ducts
- cladding for installation channels
- inside fire wall
- lower ceiling

A new feature of Hoesch isorock®: concealed fastening

Visual appearance
The outside joint of Hoesch isorock® vario has been designed so as to be identical with that of the well-proven PUR sandwich panel Hoesch isowand® vario. This allows achieving a high degree of fire protection without any constraints of visual appearance. The joint design is such that in the case of horizontal installation a change from PUR to rock wool is possible without any problem, so that the building can be subdivided into a number of fire resisting compartments without affecting the visual appearance. In the case of vertical installation, Hoesch isorock® vario and Hoesch isowand® vario can be combined and adapted on site, or a pilaster strip is used as in case of horizontal laying.

Fire resistance classes Hoesch isorock® vario
As a modern product, Hoesch isorock® vario has already been tested with respect to fire resistance according to the European standards DIN EN 1363-1 and DIN 1364-1. The panel has passed the tests successfully and has been awarded the European classification according to DIN EN 13501-2 (08.2003):

- EI 30
- EI 60
- EI 90.

This European grading system corresponds to the German F classes according to DIN 4102-2. Hence, Hoesch isorock® vario is suitable for applications where fire protection is a major issue.

Hoesch isorock® vario fire resistance classes for use as wall elements

Designation of building element	Fire resistance class		Laying direction	Max. spacing of wall girts (h) / supports (b) [m]	Type	Element thickness [mm]	Test certificate
Hoesch isorock® vario	DIN EN 13501-2	EI 30*	see [1]	≤ 4.00	D2	≥ 80	PB III/B-02-306
		EI 60*	see [1]	≤ 4.00	D2	≥ 120	PB III/B-02-259
		EI 90*	see [1]	≤ 4.00	D1	≥ 150	PB III/B-03-038

* Test acc. to EN 1363-1 and EN 1364-1, classification acc to DIN EN 13501-2
[1] In Germany, only vertical laying is permissible, in other countries both vertical and horizontal laying are permissible.

Designation of building element	Type	Element thickness d	Material thickness outer sheet t_N	Material thickness inner sheet t_N	Max. length supplied	Weight	Thermal resistance R*	Heat transfer coefficient U*	Thermal resistance R_D**	Heat transfer coefficient U**
		mm	mm	mm	m	kg/m²	m²K/W	W/m²K	m²K/W	W/m²K
Hoesch isorock® vario	D0	80	**0.50** 0.75	**0.50** 0.75	**16.0** 16.0	**15.9** 20.4	1.93	0.48	1.90	0.53
		100			**16.0** 16.0	**17.7** 22.2	2.41	0.39	2.40	0.42
Hoesch isorock® vario	D1	80	**0.50** 0.75	**0.50** 0.75	**16.0** 16.0	**16.9** 21.4	1.84	0.50	1.80	0.55
		100			**16.0** 16.0	**18.9** 23.4	2.30	0.40	2.30	0.44
		120			**16.0** 15.7	**20.9** 25.4	2.77	0.34	2.75	0.36
		140			**16.0** 14.6	**22.9** 27.4	3.23	0.29	3.20	0.31
		150			**16.0** 14.0	**23.9** 28.4	3.47	0.28	3.45	0.29
		160			**16.0** 13.6	**24.9** 29.4	3.70	0.26	3.70	0.27
		180			**14.9** 12.7	**26.9** 31.4	4.16	0.23	4.15	0.24
		200			**13.8** 12.0	**28.9** 33.4	4.63	0.21	4.60	0.22
Hoesch isorock® vario	D2	80	**0.50** 0.75	**0.50** 0.75	**16.0** 16.0	**18.8** 23.3	1.76	0.52	1.75	0.57
		100			**16.0** 15.5	**21.3** 25.8	2.20	0.42	2.20	0.46
		120			**16.0** 14.1	**23.8** 28.3	2.64	0.36	2.60	0.38
		140			**15.2** 13.0	**26.3** 30.8	3.09	0.31	3.05	0.32
		160			**13.9** 12.0	**28.8** 33.3	3.53	0.27	3.50	0.28

Other cover sheet combinations such as outside / inside = 0.75 / 0.50 are available as a standard
Element thickness d = 150 mm, longer versions or other material combinations on request
* calculation acc. to EN ISO 6946 ** calculation acc. to EN 13 162 taking account of the joints acc. to EN 14 509

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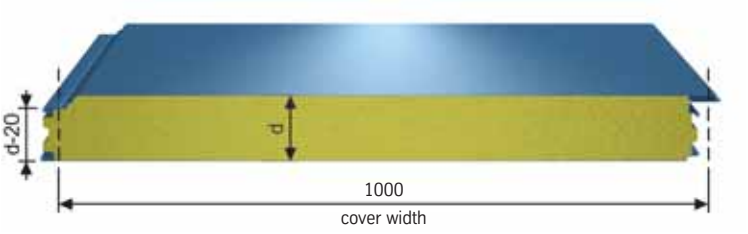
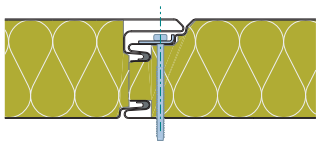
Product properties:

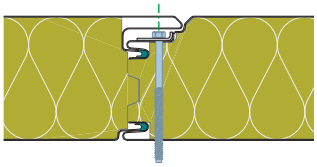
- defined fire resistance classes according to European standard
- class of building material A2, s1, d0 according to DIN EN 13501-1 "non combustible"
- concealed fastening
- vapour-tight cover sheets made from coil-coated GALFAN®
- thermal separation
- visual appearance of outside joint identical with Hoesch isowand vario®
- various coating systems are available
- exact joint geometry, factory-inserted sealing tapes
- ready for installation
- alternative materials for cover sheets on request
- special elements for the connection of corners and parapets are available



(In the case of a panel thickness of 80 mm,
the rock wool is supplied without the tongue and groove feature)



for element thickness d = 80 mm



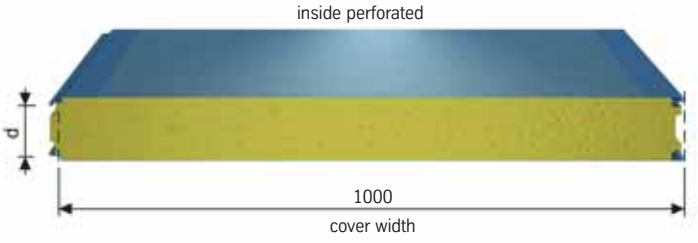
for element thickness d ≥ 100 mm

Special accessories: see special catalogue info 5.2.1

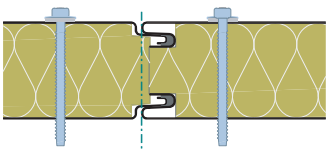
Yet another task for Hoesch isorock® used as inside wall: noise protection

Description
In many factories, the noise level is very high. However, people have the right to be protected against such excessive noise. Our proposal: Hoesch isorock® acoustic. Manufactured according to well-proven procedures and using the same materials but with enhanced acoustic properties, Hoesch isorock® acoustic with its excellent sound absorption values protects from reflected noise. Airborne noise is also efficiently absorbed, which is shown by the weighted sound reduction index Rw = 34 dB.

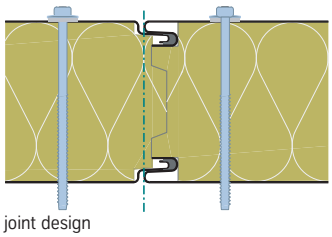
This panel, however, can only be used inside a building, as due to the acoustic perforation on the flat B face the cover sheet is not vapour-tight. Hoesch isorock® acoustic panels are available in all colours offered by ThyssenKrupp Bausysteme. For more information, please consult your contact partner in our company.



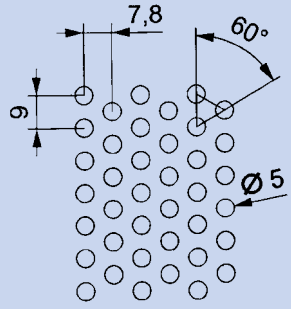
(In the case of a panel thickness of 60 mm, the rock wool is supplied without the tongue and groove feature)



joint design
for element thickness d = 60 mm



joint design
for element thickness d ≥ 80 mm



Perforation pattern
Percentage of perforation 26 %

Designation of building element	Type	Element thickness d	Material thickness outer sheet t_N	Material thickness inner sheet t_N	Max. length supplied	Weight	Thermal resistance R*	Heat transfer coefficient U*	Thermal resistance R_D**	Heat transfer coefficient U**	Weighted sound reduction index R_W
		mm	mm	mm	m	kg/m²	m²K/W	W/m²K	m²K/W	W/m²K	dB
Hoesch isorock® akustik	D1	60	**0.50** 0.75	**0.50** 0.75	**16.0** 16.0	**13.5** 17.2	1.37	0.65	1.35	0.67	34
		80			**16.0** 16.0	**15.5** 19.2	1.84	0.50	1.80	0.52	
		100			**16.0** 16.0	**17.5** 21.2	2.30	0.40	2.30	0.42	
		120			**16.0** 16.0	**19.5** 23.2	2.77	0.34	2.75	0.35	
		140			**16.0** 15.9	**21.5** 25.2	3.23	0.29	3.20	0.30	
		150			**16.0** 15.3	**22.5** 26.2	3.47	0.28	3.45	0.28	
		160			**16.0** 14.7	**23.5** 27.2	3.70	0.26	3.70	0.27	
		180			**15.7** 13.7	**25.5** 29.2	4.16	0.23	4.15	0.24	
		200			**14.6** 12.9	**27.4** 31.1	4.63	0.20	4.60	0.21	

Element thickness d = 150 mm, longer versions or other material combinations on request
* calculation acc. to EN ISO 6946 ** calculation acc. to EN 13 162 taking account of the joints acc. to EN 14 509

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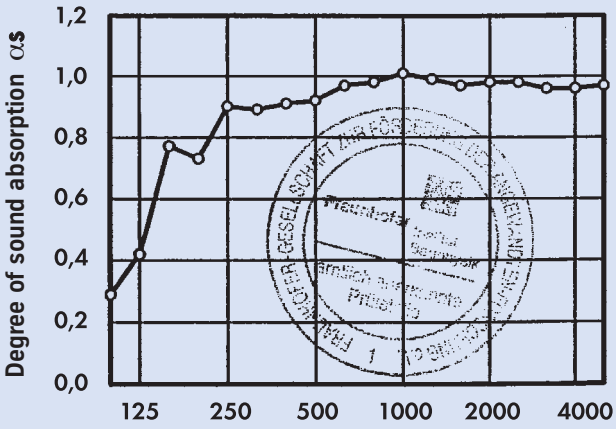

Degree of sound absorption according to EN 20354 (test certificate P-BA 27/2001), tested by the Fraunhofer Institute for Building Physics

Product properties:

- high thermal insulation
- bio-degradable rock wool layer
- efficient airborne noise absorption Rw = 34 dB
- thermal separation of cover sheets
- lengths up to 16 m
- high rigidity
- exact joint geometry, factory-inserted sealing strip
- rapid and easy installation

The complement to Hoesch isorock® and Hoesch isorock® vario: Hoesch isorock® integral D, non combustible with concealed fastening

Our well-known and successful fire protection elements Hoesch isorock® and Hoesch isorock® vario have been complemented by the Hoesch isorock® integral D sandwich roof element which is now available.

Product description:

- use as roof element
- concealed fastening
- non combustible in accordance with EN 13 501-1: A2-s1,d0
- small and medium-sized apertures in the continuous upper chord can be easily cut out during erection
- no penetration of the water-bearing roof surface by through bolts
- the rock wool core layer is classified as A1 building material, non combustible
- the rock wool core layer is bio-degradable
- high thermal insulation resulting from a reduced number of deep beads, almost complete utilization of the nominal panel height
- vapour-tight cover sheets with factory-applied sealing tapes
- thermal separation of the cover sheets

Hoesch isorock® integral D fire resistance classes for use as roof elements

Designation of building element	Type	Fire resistance class		Max. span[1)]	Load [m]	Element thickness [kN/m]	Test certificate [mm]
Hoesch isorock® integral D	D1	DIN EN 13501-2	EI 30 EI 60 EI 90	4.3 4.3 4.3	0 0 0	155 155 155	PB III/B-05-039
			REI 30	2.0	0.75	95	9010332000
			REI 30 REI 60 REI 90*	2.0 2.0 2.0	1.2 1.2 1.2	155 155 155	9009705000-2

* Strips of mineral wool must be placed under the joint cover [1)] Refer to the structural analysis

Designation of building element	Type	Element thickness d	Material thickness Outer sheet t_N	Material thickness Inner sheet t_N	Max. length supplied	Weight	Thermal resistance R*	Heat transfer coefficient U*	Thermal resistance R_D**	Heat transfer coefficient U**
		mm	mm	mm	m	kg/m²	m²K/W	W/m²K	m²K/W	W/m²K
Hoesch isorock® integral D	D1	95	**0.50** 0.75	**0.50** 0.75	**18.0** 17.8	**18.0** 22.5	2.19	0.42	2.15	0.46
		115			**18.0** 16.3	**20.0** 24.5	2.65	0.35	2.65	0.38
		135			**18.0** 15.1	**22.0** 26.5	3.12	0.30	3.10	0.32
		155			**16.7** 14.0	**24.0** 28.5	3.58	0.27	3.55	0.28
	D2	95	**0.50** 0.75	**0.50** 0.75	**18.0** 16.1	**20.3** 24.8	2.09	0.44	2.05	0.48
		115			**17.6** 14.7	**22.8** 27.3	2.53	0.37	2.50	0.39
		135			**15.8** 13.4	**25.3** 29.8	2.98	0.32	2.95	0.33
		155			**14.4** 12.4	**27.8** 32.3	3.24	0.28	3.40	0.29

Other element thicknesses or other material combinations on request.
* Calculated acc. to EN ISO 6946. ** Calculated acc. to EN 13 162 taking account of the joints acc. to prEN 14 509.

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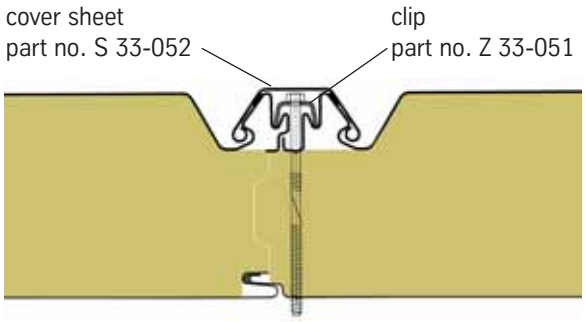
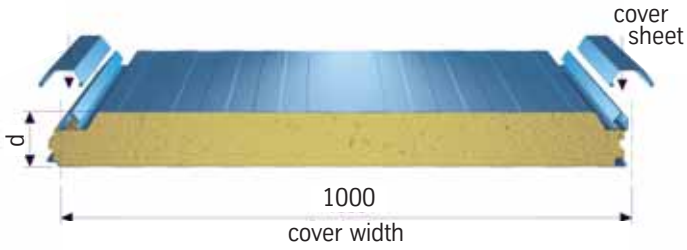


joint detail, concealed fastening



Profiling of cover sheet	Slightly profiled (L)	Microprofiled (M)	V-profiled (V)	Flat (E)
Outer sheet	●	●	●	■
Inner sheet	●			■

● = available / ■ = on request

Properties and advantages of Hoesch isorock®, Hoesch isorock® vario and Hoesch isorock® integral D

Corrosion protection system and coating
Our corrosion protection system well-proven for decades is also applied to Hoesch isorock® panels.
The system is based on hot-dip alloy coated steel composed of 95% Zn and 5% Al, abbreviation ZA, known as **GALFAN®** (layer group ZA255). Optimum corrosion protection is only achieved using the duplex system (galvanizing + coating). The following coating systems are available for outside and inside use:

- **PLADUR®**, DU [1)]
  K II according DIN 55928-8
- **PLADUR®**, SP
  K III according DIN 55928-8
- **PLADUR®**, PVDF
  K III according DIN 55928-8

Our storekeeping system enables us to guarantee short delivery terms. On request and depending on the quantity, you may choose your favourite colour from our large colour chart. Please request our information 6.1.1. and/or ask your sales contact.
Elements without additional coil coating systems are supplied with a cover layer consisting of high-quality alloy-galvanised **GALVALUME® (AZ)**. With a weight of 185 g/m² on both sides, corrosion class III to DIN 55928-8 is achieved.

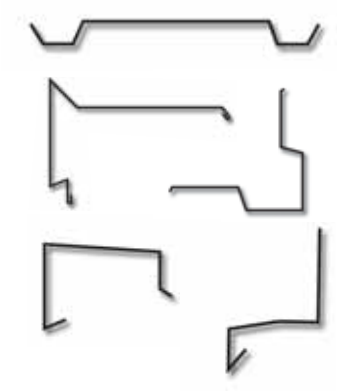
[1)] DU only for inside application

Product description:
- defined fire resistance grades, for the protection of people and buildings
- bio-degradable CONROCK rock wool layer: building material class 1, non combustible
- high thermal insulation, saving of energy costs
- vapour tight cover sheets: high thermal insulation at long term
- thermal separation, no thermal bridges, saving of energy costs
- cover sheets with various surface textures
- various coating systems available, high resistance against weathering, long service life
- ready for installation when delivered, sealing tapes in the longitudinal joint
- large range of colours
- length up to 16 m and 18 m, respectively, which minimizes cross joints
- rapid and easy installation, low installation costs, short installation periods
- high economic efficiency, a real alternative to foam mortar
- in-house production control and external supervision ensure constant product quality
- additional external supervision
- general approval no. Z-10.4-235 issued by the Building Authorities
- furthermore, the requirements of RAL GZ-617 be adheared to

GB · Info 2.3.1 · 5.2008 · bc

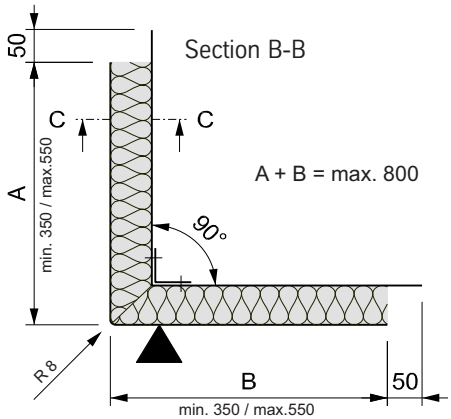
Flashings and corner elements

ThyssenKrupp Bausysteme offer flashings and accessories to suit Hoesch isorock® building elements. For standard applications, the flashings have been assigned reference numbers to facilitate ordering but individual solutions are of course also possible.



In addition to corner designs using flashings, ThyssenKrupp Bausysteme provide special elements made from Hoesch isorock® and Hoesch isorock® vario wall panels. Whether they are 90° corner, rounded, horizontal or vertical, these special corner elements give every building a pleasing visual appearance. For more technical details and information on ordering, please see Info 5.2.1.

90° outer corners



▲ = outer sheet with protective foil

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GB · Info 2.3.1 · 5.2008 · bc