HEBEL AAC panels

HEBEL AAC-panels are an intelligent solution for industrial and commercial constructions. Buildings constructed from solid HEBEL aerated concrete ensure a high level of building quality in walls and roof.

Production

HEBEL-panels are reinforced autoclaved aerated concrete elements, and are a completely cured, inert and stable form of calcium silicate hydrate. The structure is composed of very small pores which give the HEBEL material its high thermal insulation and valuable water vapour diffusion characteristics. Its high insulation values and positive ecological balance make it one of the traditional materials of yesterday, today and tomorrow.

HEBEL is manufactured by a closely controlled factory process with the basic raw materials such as cement, lime, finely ground sand and water with the addition of a minimum amount aluminium powder.

All internal reinforcing steel cages in each unit are treated with a special anticorrosion material protection (using ecological dispersion paint).

After mixing the ingredients, the slurry is poured into moulds where a controlled chemical reaction takes place. Hydrogen gas is liberated, causing the mass to expand and forming evenly distributed closed spherical cells that give HEBEL its unique physical properties, combining low density with excellence in insulation and fire protection.

When hard, the mass is wire cut to close tolerances into panels. These are then steam cured in an autoclave under high pressure (10 atm) and at a temperature of 180°C thus completing the chemical process and ensuring a stable, inert product.

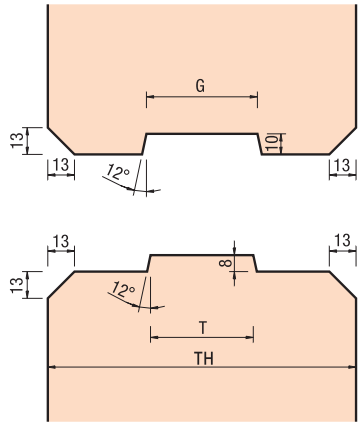
A quality control programme is operated at the factory to ensure that raw materials, batch proportions, process conditions and finished products comply with the required standards. This rigid quality control throughout all phases of manufacture results in a consistently uniform product.

Independent Government inspectors make regular visits to the factory and carry out tests to ensure compliance with the German Agreement Certificate Standards.

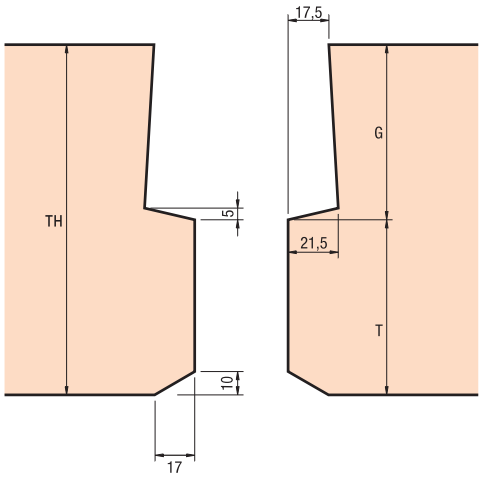
Continuous research work and new techniques are steadily improving production methods and widening the fields of application.

There are HEBEL panels for internal, external and fire protection walls, as well as for floors and roofs. Industrially prefabricated, the HEBEL panels simply have to be mounted at the construction site.

Hebel caracteristics



Thickness TH (mm)	100	150	200	240	300
Groove G (mm)	-	54	54	54	54
Tongue T (mm)	-	50	50	50	50



Thickness TH (mm)	100	150	200	240	300
Groove G (mm)	52	75	75	75	75
Tongue T (mm)	38	65	115	155	215

Panel Sizes
Length: 6.00m or 6.75m (max)
Width: 600mm or 750mm (max)
Thickness: 100, 150, 200, 240 & 300mm

Shrinkage
The shrinkage due to drying does not exceed 0.20 mm/m

Panel shape
Rectangular panels with tongue and groove edge profiles for walls or symmetric profiles along the long edges for roofs and floors.

Thermal Expansion.
The coefficient of linear expansion is 8x10-6/°C

Densities	Class CC/500	Class CC/600
Apparent bulk density (dry)	400< ρ <500	500< ρ <600
Design value, incl. reinforcement	575 kg/m³	675 kg/m³
Transport value, incl. reinforcement	715 kg/m³	815 kg/m³

Weights	Class CC/600		Class CC/500		
Thickness	100	150	200	240	300
Design weight (kg/m²)	67	101	115	138	172
Transport weight (kg/m²)	81	122	143	172	215

Bending Tensile Strength (characteristic value)		
	Class CC/500	Class CC/600
Short term	fcflk = 0.81 N/mm²	fcflk =1.08 N/mm²
Long term	fcflk = 0.54 N/mm²	fcflk =0.72 N/mm²

Thermal Resistance (U-value) W/m2K						
Thickness	100	150	175	200	240	300
Class G3/500	-	--	0,60	0.53	0.45	0.37
Class G4/600	1,19	0,85	0,73	0.65	0,55	0.45

Modulus of elasticity	
Class CC/500	Class CC/600
1500 N/mm²	2000 N/mm²

Thermal Conductivity (λ-value)	
Class CC/500	Class CC/600
0.115 W/m°C	0.150 W/m°C

Compressive Strength	
Class CC/500	Class CC/600
fck ≥ 3.00 N/mm² (characteristic value)	fck ≥ 4.00 N/mm² (characteristic value)

Sound Reduction.			
Mass per unit area (kg/m²)	Calculated overall sound insulation Rw (db)	Mass per unit area (kg/m²)	Calculated overall sound insulation Rw (db)
115	38	190	44
135	40	210	45
150	41	230	46
160	42	250	47
175	43		

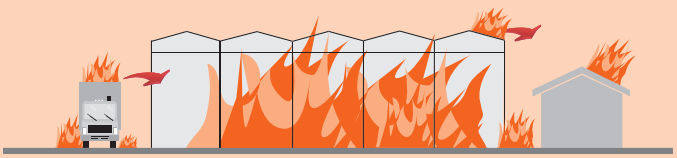
Fire resistance

For many years, fire walls made from HEBEL components have proven themselves in logistic companies and distributions centres. The structural fire protection conceps for these buildings become more demanding. HEBEL is the answer.

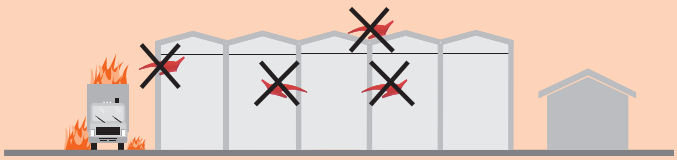
HEBEL cladding panels
A 150 mm thick Hebel cladding panel has 6 hours fire resistance (360 minutes). However, the fire resistance of a wall is determined by the total wall concept (BS 76-21:1987). Please contact our technical service for further detail

HEBEL offers protection.
Aerated concrete inhibits heat transfer through a wall several times better than normal concrete. This protects highly flammable goods from spontaneous combustion.
The thermal inertia of the aerated concrete wall ensures that the temperature is lower on the side facing away from the fire.

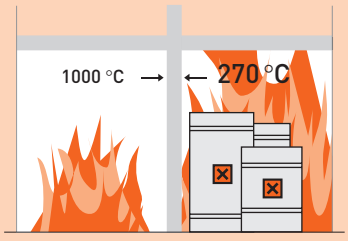
Spread of fire without fire protection walls made from HEBEL aerated concrete



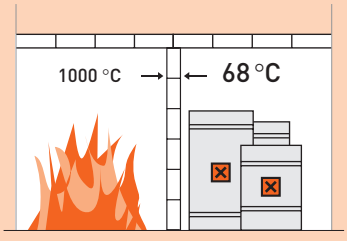
HEBEL aerated concrete provides protection against the spread of fire



Heat transfer during a fire after approximately 6 hours

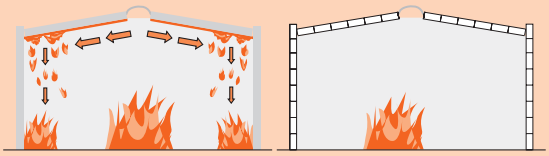


Concrete
150 mm wall thickness



Aerated concrete
150 mm wall thickness

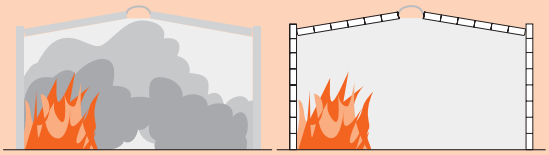
Prevention from secondary fires



Other material :
spreading of fire
through burning material
that falls down or melts

Aerated concrete
does not melt or burn

No smoke occurs upon fire



Other building materials
often emit a lott of smoke

When a fire occurs
Hebel does not emit smoke
or toxic gasses.

Installation

Hebel wall panels are suitable for use on any structure (steel, concrete or wood). Of course, work will proceed more smoothly and the cost benefits will be that much greater if, at the design stage, allowance is made for all of the features of our products.
The wall panels can be mounted horizontally or vertically. Consult the HEBEL application instructions.

Joints

a. Horizontal mounting
Where the wall panels are mounted horizontally, the horizontal joint should de filled with a foam strip (EI < 3h) or with HEBEL thin bed mortar –Ytocol (EI > 3h). Vertical joints can be sealed by an injection of an elastomer sealant or in case of a fire stop wall with rockwool.

b. Vertical mounting
Where the panels are mounted vertically, the joint can be sealed by injection of an elastomer sealant.

Fixing

Fixing systems vary according to the type of framework to which our wall panels are to be fixed or incorporated, and depending on the method of mounting to be used. Fixing accessories are available to order from HEBEL.

Important notes

a. The wall panels are cut to thickness using steel wire. The visible face shows the direction of cut which is apparent as the "grain" of the panel. To avoid significant colour contrasts caused by incident light from the sides, it's advisable to always ensure that wall panels on the same façade or elevation are all mounted " with the grain".

For this purpose, one face of all wall panels- whether horizontal or vertical mount- is marked with an arrow, on the end of each panel, indicating the direction of the main reinforcement (also for sawn panels). The arrow should always be facing the inside of the building.

b. Aerated cellular concrete is a material made from natural raw materials. Slight differences in shade are therefore possible.

hebel

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