

SQL MODULAR BUILDING SYSTEM

Ultrafast and energy-efficient
housing construction



SQL

Simpler. Quicker. Living.



Building A++

ENERGY-EFFICIENT CONSTRUCTION

The mandatory use of energy-efficient building methods is much closer than many people realise. The European Commission has decreed that newly built houses must attain almost zero-energy standards as from 2020. Existing houses must also comply with increasingly stringent regulations in terms of energy performance.

The global construction industry is responsible for a sizeable percentage of all CO emissions

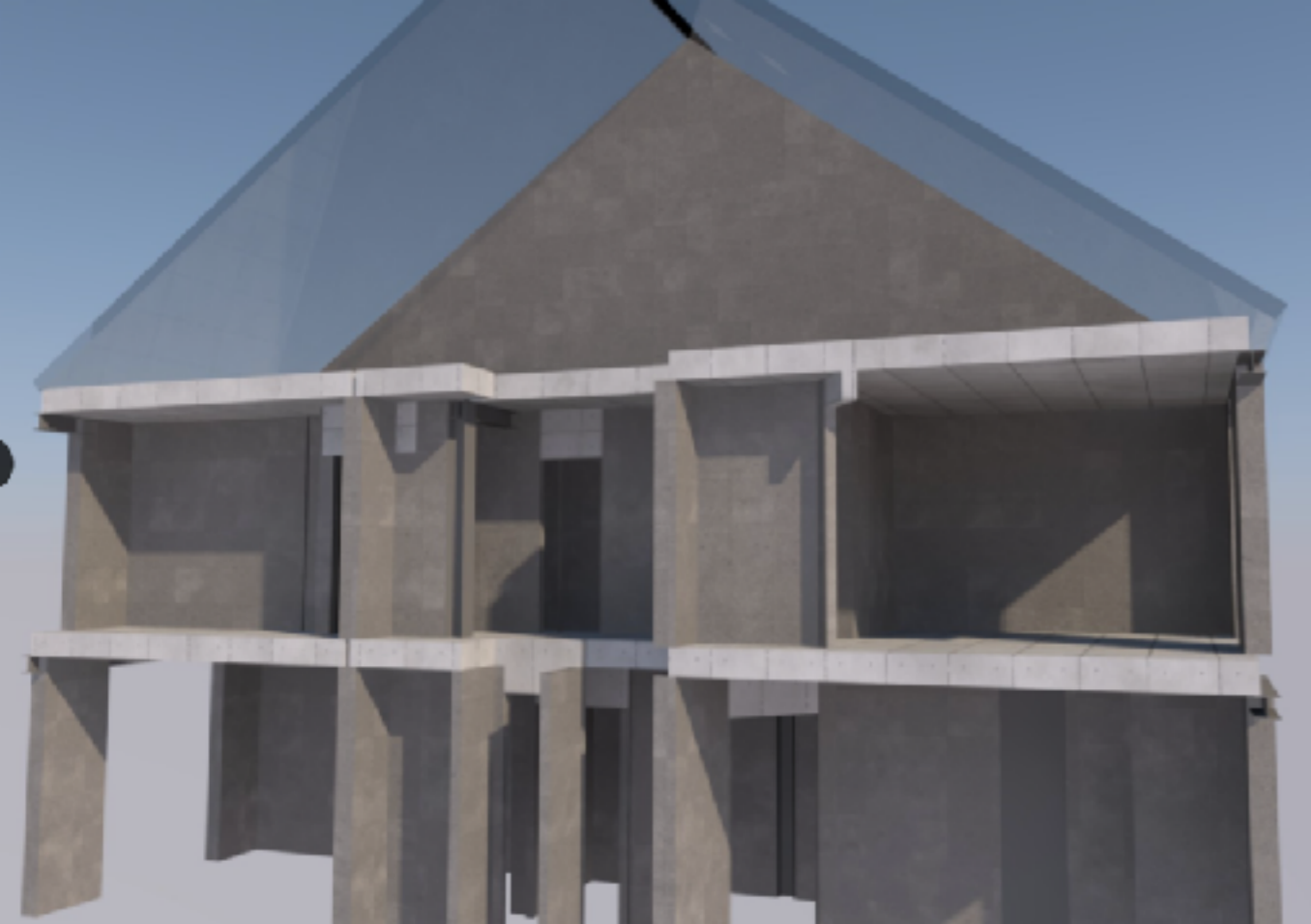
which in turn increase the green-house effect and the associated climate change. If we want to stop these developments, then immediate action has to be taken. All existing building regulations will be subject to heavy scrutiny during the next few years, and the regulations for existing and new housing in terms of energy-performance in particular will be tightened. The objective of these measures is to achieve an overall reduction in energy consumption for houses and other buildings in general.

This is not a problem with SQL. Anyone using the products and building systems developed by

SQL, such as the SQL Modular Building System, will find it easy to comply with both current and future regulations. Aerated concrete

possesses several technical properties that ensure increased thermal insulation, which, combined with additional insulation materials, leads to much higher thermal resistance values. Insulation materials, leads to much higher thermal resistance values.





The secret behind speed, sustainability and quality: **SQL Modular Building System**

The SQL Modular Building System is a sophisticated system for the quick and cost-efficient construction of sustainable, energy-efficient housing. Prefabricated, modular, customised, sustainable and high-quality.

The secret: the characteristics and convenience of SQL aerated concrete. Aerated concrete is a unique building material. It is very light and strong. It contains millions of miniscule air pockets, a feature that provides it with even more beneficial properties: it provides excellent thermal insulation; it accumulates heat: it temporarily stores and gradually releases heat. It has excellent fire resistance values; it is fully waterproof; it is entirely airtight.

Quick and simple

The components of a structure - wall panels, lintels, floor and roof panels and also separation wall panels - are delivered to the building site as modular elements and only need to be assembled. For the building process, this implies: modular customised delivery to order, increased speed and efficiency, compared to traditional



building methods, less building site expenditure. airtight construction and no waste on the building site.

Various building companies have completed constructions up to twice as fast using the SQL Modular Building System instead of a traditional building method. The average structure can be erected within three days! And what's more, the construction quality is significantly better.

The SQL Modular Building System in short a sophisticated system of customised building components:

- Wall panels
- Lintels
- Floor panels
- Separation panels

Plus all of the required accessories:

- Wall designs and specifications
- Adhesive mortar

- Tools
- Expert on-site,
- Training,
- Advice and support



Solid construction The SQL Modular Building System enables the construction of solid, airtight walls.

Compared to the still traditional English cavity-based construction practices which can very well be combined with the system, the SQL Modular Construction System is:

- Quicker: walls are instantly constructed 'to height', after which they only need to be plastered
- More convenient: the entire structure is constructed from the same building material
- More insulating (no thermal bridges), thanks to the thermal properties of aerated concrete;
- Airtight



Living comfortably and saving energy

There is more to the comfort and energy performance of a house than the selection of building materials and the construction process. Comfort and energy efficiency also depend on 'experiencing' the characteristics of SQL aerated concrete in practice:

- More comfort due to the insulating and accumulating properties of aerated concrete
- Always a pleasant indoor climate: cool in summer, warm in winter
- A considerable reduction in heating and cooling costs



COMPLETE CONSTRUCTIVE FREEDOM

and compliance with all regulations

The SQL Modular Building System may be prefab; it certainly is not 'standard'. Design and finishing only have one limitation, namely the imagination of the architect or contractor/client.

Complete freedom in construction and finishing

Whether straight and rectangular or chamfered and slanting, everything is possible. SQL designs, manufactures and supplies the entire range of SQL Shell Construction System components to specification.

Do you want to benefit from solid construction? Or would you rather stick to the traditional cavity-based building methods?



SQL

Simplex Qualitas Living



The SQL Modular Building System is ideal for both and serves as a basis for

- Solid walls with a rendered external finish
- Brickwork outer leaf with cavity wall insulation
- Insulated render or insulated brick strips
- Insulation by means of wall plates finished with timber or other materials.

Adding something special

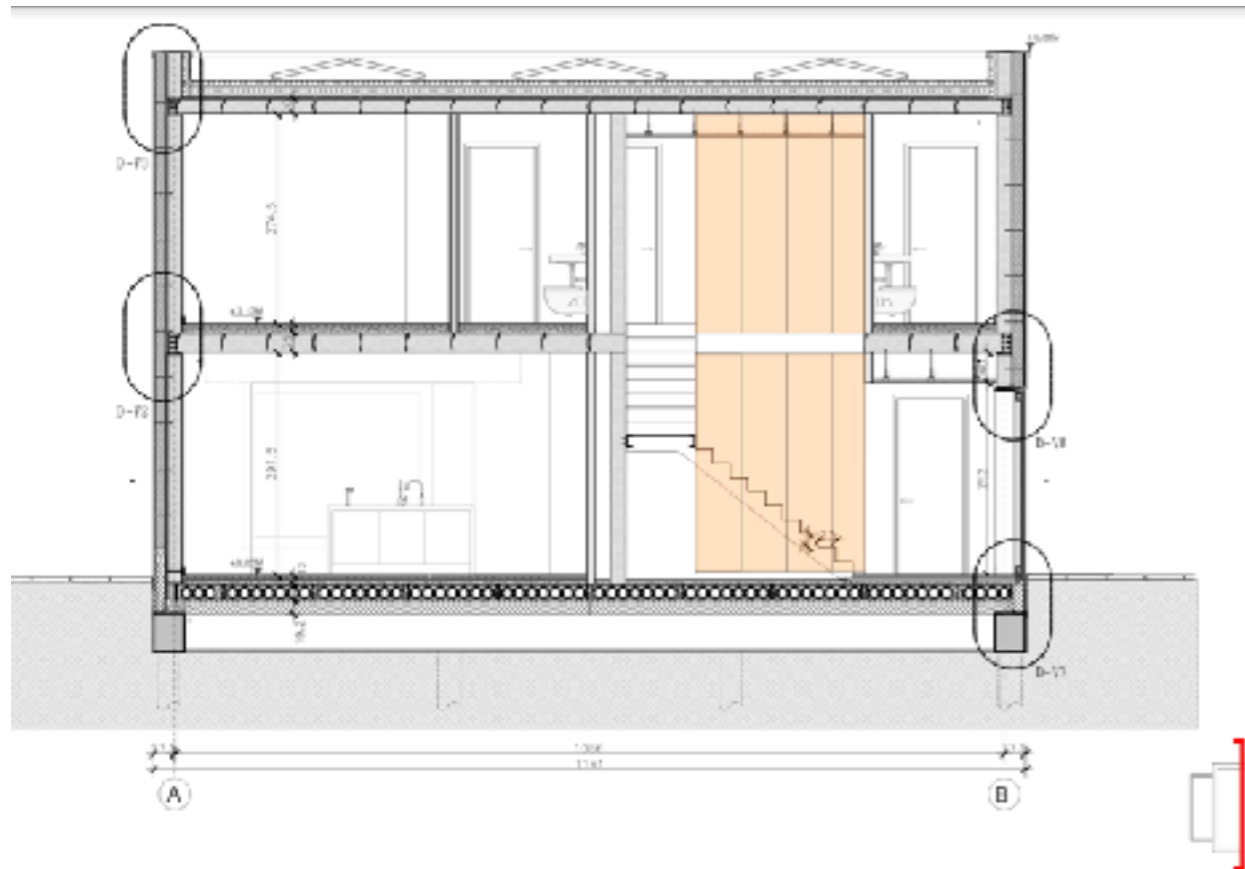
The properties of aerated concrete make it very suitable for the extension or alteration of existing structures.

During renovation and infill development projects, the choice is often made to add a superstructure to existing buildings.

So: it's perfect for every type of housing:

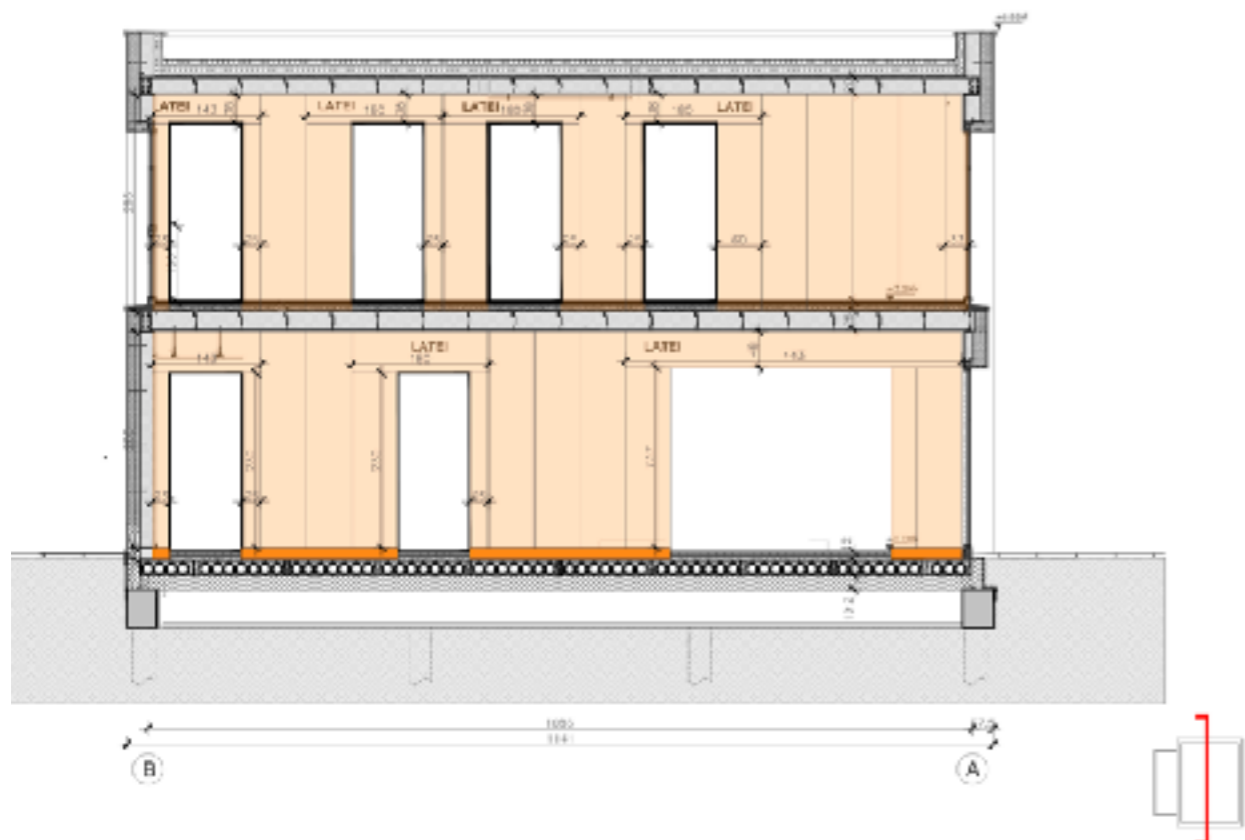
- Detached houses (new developments) in all shapes and sizes.
- Mass-customised housing (new developments).
- Renovations (existing housing), for example extensions or the addition of superstructures.





Compliance with all building regulations

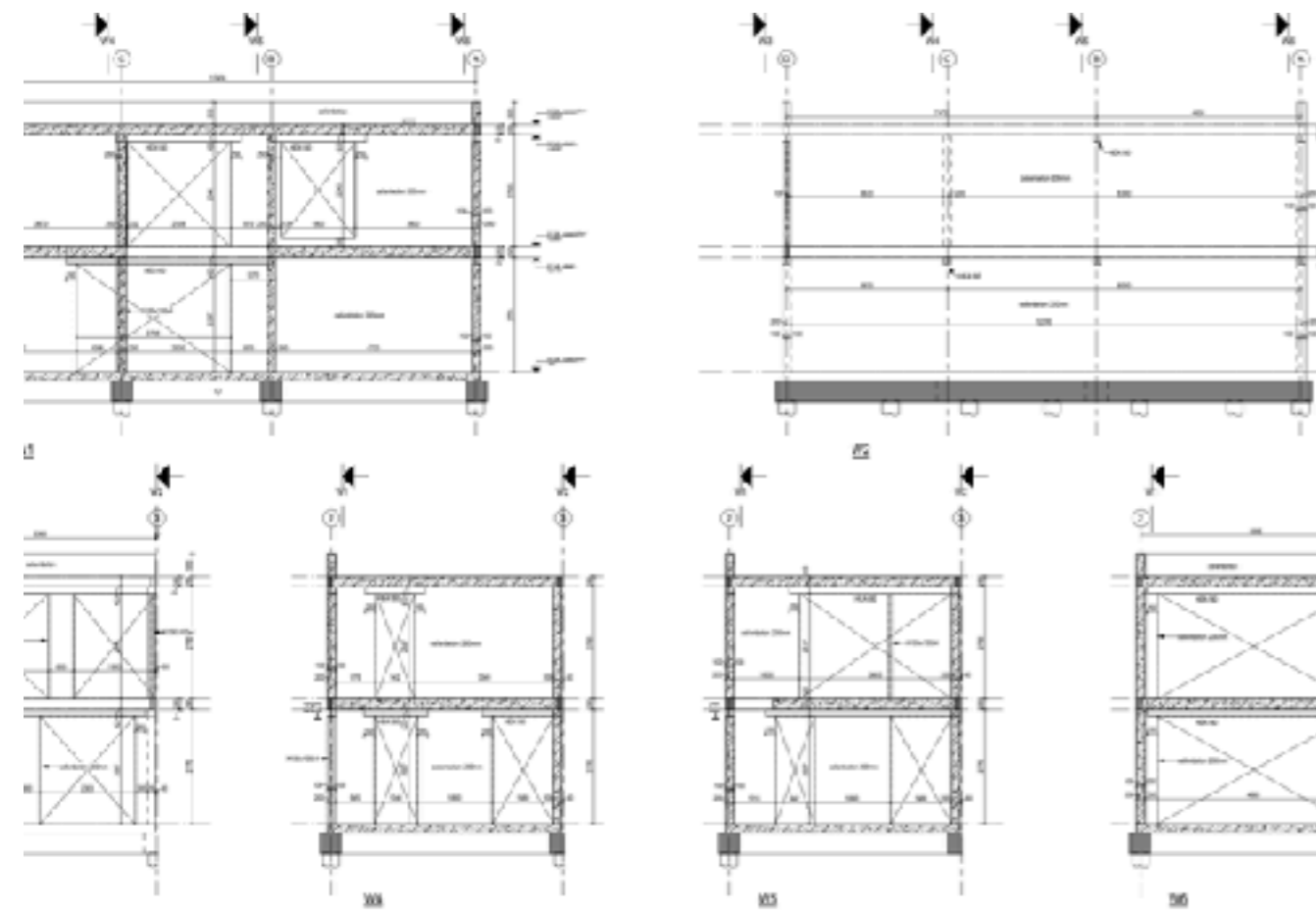
A house constructed from SQL Modular Building System components automatically complies with all requirements in terms of structure and of sound and thermal insulation. However, perhaps even more important are the current and future regulations for energy performance, seeing that the European Commission has decided that new houses must attain almost zero-energy standards as from 2020. This can easily be achieved with aerated concrete.



Quick and simple construction no waste

The SQL Modular Building System offers three distinct advantages on the building site: it is quick and easy to process, hardly requires any storage facilities at all, and no waste is left. In other words, it offers maximum efficiency due to the 'just-in-time' delivery of prefab building components. The result: the average shell is erected within 2-3 days!

Building with the SQL Modular Building System means building with a single, highly versatile building material: aerated concrete. Each component of the shell is pre-



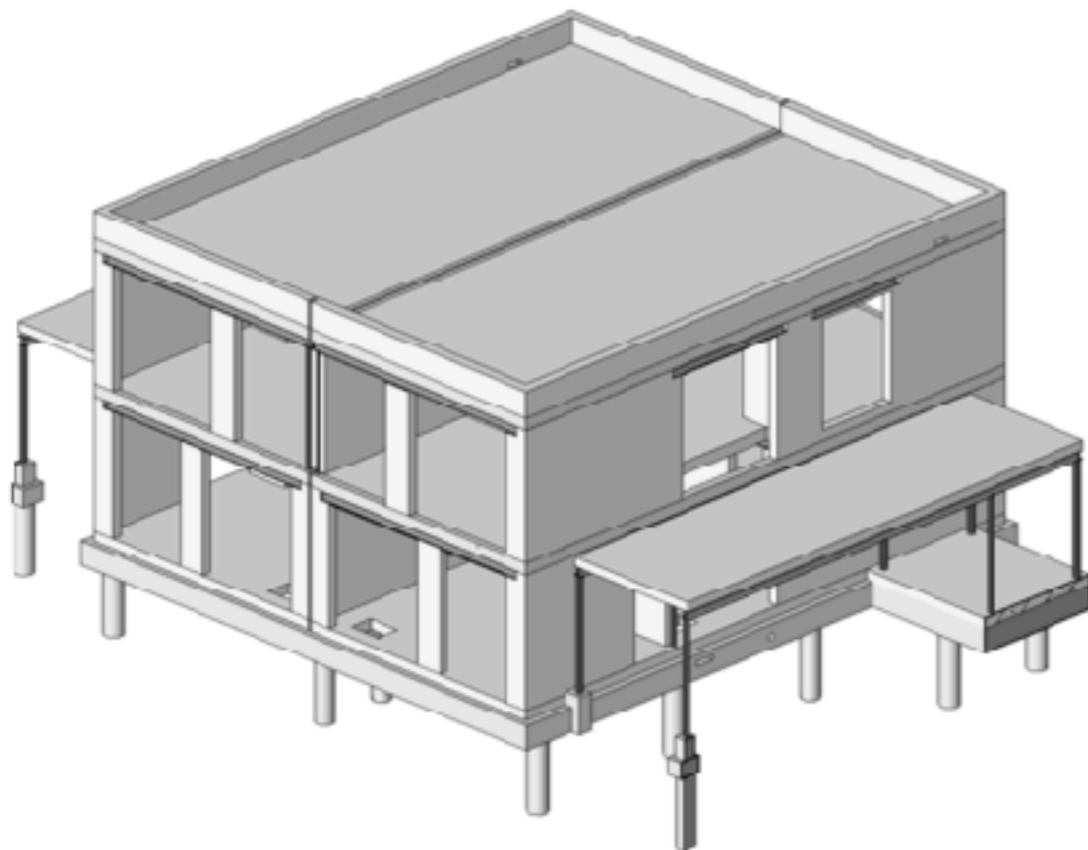
Manufacturing to specification is not only practical, it also means that the system can be used at every possible location or building site, no matter how small. The advantage of the system in terms of convenience is especially apparent in inner cities, for the builders as well as for the residents.

The features of the SQL Modular Building System are:

- One single building material;
- Lightweight;
- Quick assembly;
- Easy to finish.

Hardly any storage, no waste

The SQL Modular Building System is delivered to specification at the building site precisely on time generates no waste, seeing that all components are customised to specification.



Aerated concrete

UNIQUE PROPERTIES



The unique properties (and advantages) of aerated concrete

Aerated concrete is a remarkable building material. It is 100% natural and has excellent structural properties that make it very suitable for construction and unique as a finished product.

Natural and re-usable



Aerated concrete is a natural material consisting of limestone, sand and cement, all of which are amply available today and will be in the future. A small dose of aluminium powder is added to ensure the creation of numerous tiny, sealed air pockets during production. These air pockets are what give aerated concrete most of its unique properties. An additional advantage is the fact that it can be recycled as a natural product.

Optimal thermal insulation and heat accumulation



The millions of miniscule air pockets in aerated concrete make it the best possible insulator: trapped air. This gives it excellent thermally insulating properties and allows it to temporarily store heat. Its low thermal conductivity value ensures the gradual release of the stored heat. This capacity to hold or reject heat is primarily what contributes to added living comfort and less energy consumption.



Perfect for regulating humidity conditions



Aerated concrete is water resistant. It is therefore highly suitable for use in wet spaces such as bathrooms. In addition, aerated concrete is capable of storing and subsequently releasing moisture. This water vapour-regulating capacity ensures perfect indoor humidity conditions in any space. The material effectively regulates condensation generated by cooking, laundry and breathing.

Lightweight



The high aeration value of aerated concrete (its low-volume mass) makes it a lightweight building material, which is much easier and safer to process than other materials. In addition, much lighter foundations and supporting structures can be constructed if justified.

Fire-safe

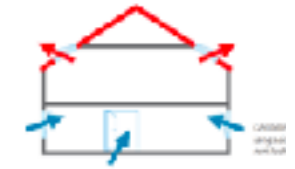


Fire prevention is all about providing protection against the consequences of a fire. In most cases, one of the decisive factors is the speed at which a fire spreads. SQL load bearing aircrete wall panels have been tested and are approved for a fire-resistance up to 360 minutes.





Airtight and no thermal bridges

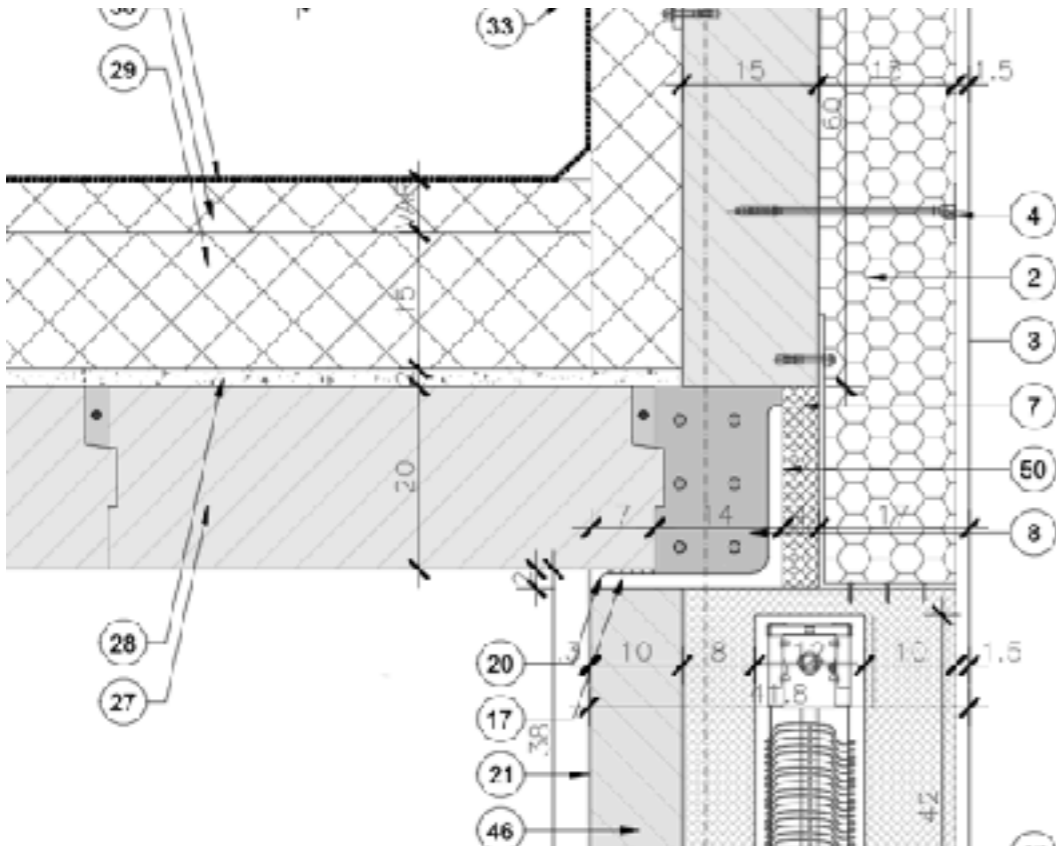


Aerated concrete is an airtight and insulating material. All SQL Modular Building System components are generously glued together, due to which the shell is constructed airtight and prevents thermal bridges without additional provisions or applications. In order to guarantee a completely airtight construction throughout, attention should be paid to the airtight finishing of all openings and windows.

Design and construction This is how the system works

The unique SQL Modular Building System offers complete freedom of design and construction, subject to certain obvious requirements, for example in respect of structural stability. Optimal use of the system is guaranteed if specific basic principles are applied.

SQL modular panels form the basis of the SQL Modular Building System. Other components include SQL floor panels, roof panels, separation panels, blocks and lintels.



Design and construction **This is how the system works**

The unique SQL Modular Building System offers complete freedom of design and construction, subject to certain obvious requirements, for example in respect of structural stability. Optimal use of the system is guaranteed if specific basic principles are applied.

SQL modular panels form the basis of the SQL Modular Building System. Other components include SQL floor panels, roof panels, separation panels, blocks and lintels.

Design

Basic designing principles. In creating the design, proceed as much as possible from the use of standard components. In creating the design, proceed as much as possible from the use of standard components.

Start with a plan for the floor panels based on the following principles:

- Floor area constructed from a combination of 600mm wide panels;

- Maximum length and span of floor and roof panels: 6,00 m;
- Dimension and position from the staircase.

Basic structural principles

To create a stable construction at least one 600mm wide panel is recommended for the return corner. Alternatively stability can be created by using the internal perpendicular walls as a stability wall. The contractor's structural engineer is responsible for the structural stability of the construction. SQL will assist with product calculations and design information.

Floors

SQL Floor panels Using SQL Floor panels increases the speed of the ModularBuilding System. The flat surface and dimensions make it possible to install the wall panels directly on the floor, without the use of a kicker block. The use of SQL floor panels gives the extra benefit of protection against thermal bridging.

Using SQL floor panels for the ground floor needs some attentions:



The modular building systems allows a floor to be installed within hours

Using SQL floor panels for the ground floor needs some attentions:

- installation of a damp proof membrane underneath the floor panels is required
- the area beneath the floor panels needs to be provided with adequate ventilation to avoid the build up of moisture

Alternative ground floor solutions

The best alternatives for SQL Floor panels for the ground floor are:

- solid concrete floors
- prefabricated concrete slabs
- blocks and beams

Concrete floors need to be insulated and to be installed with a damp proof membrane. When using concrete floors it is necessary to install flattened and levelled kicker blocks to create a workable surface for the installation of the wall panels. Using a membrane between the concrete floors and the kicker blocks is also required.

Walls. **SQL Load bearing and non load bearing wall panels**

To increase the advantage of the SQL Modular System it is recommended to use SQL wall panels for the load bearing and non load bearing walls.

Non load bearing partition wall panels

Non load bearing partition wall panels are available in thickness of 125 and 150 mm and in density classes G3/500 or G4/600.

External walls

External walls can be designed with cavity and partial filled insulation or as a solid wall of 300 to 400 mm wide.

Connection between wall and floor slabs. Install on top of all load bearing panels a 30 x 1 mm metal strip; Install the strip at least 30 mm from internal side of the wall. Add a layer of thin bed mortar on both sides of the metal strip just before installing the floor panels.

Connection between separation wall and floor slabs

Connection between floor and partition wall panels needs to be flexible. All junctions and joints must allow for movement. These joints are normally 10 mm wide and should be filled with building foam or mastic; Generally, during construction, a joint width of 15 mm should be maintained between the partition panels and the load-bearing structure; Use special bending anchors to connect the separation panels to the floor.



SQL
Simplex Qualitas Living



Connection between cavity walls. Connection in a cavity wall between SQL wall panels and brick wall can be done using special ACP cavity anchors that can be screwed directly in SQL walls without drilling and plugging.

Dilatation joints

Shrinkage cracks can be prevented by introducing movement joints when the length of a wall exceeds 5 metres. There are two simple methods:

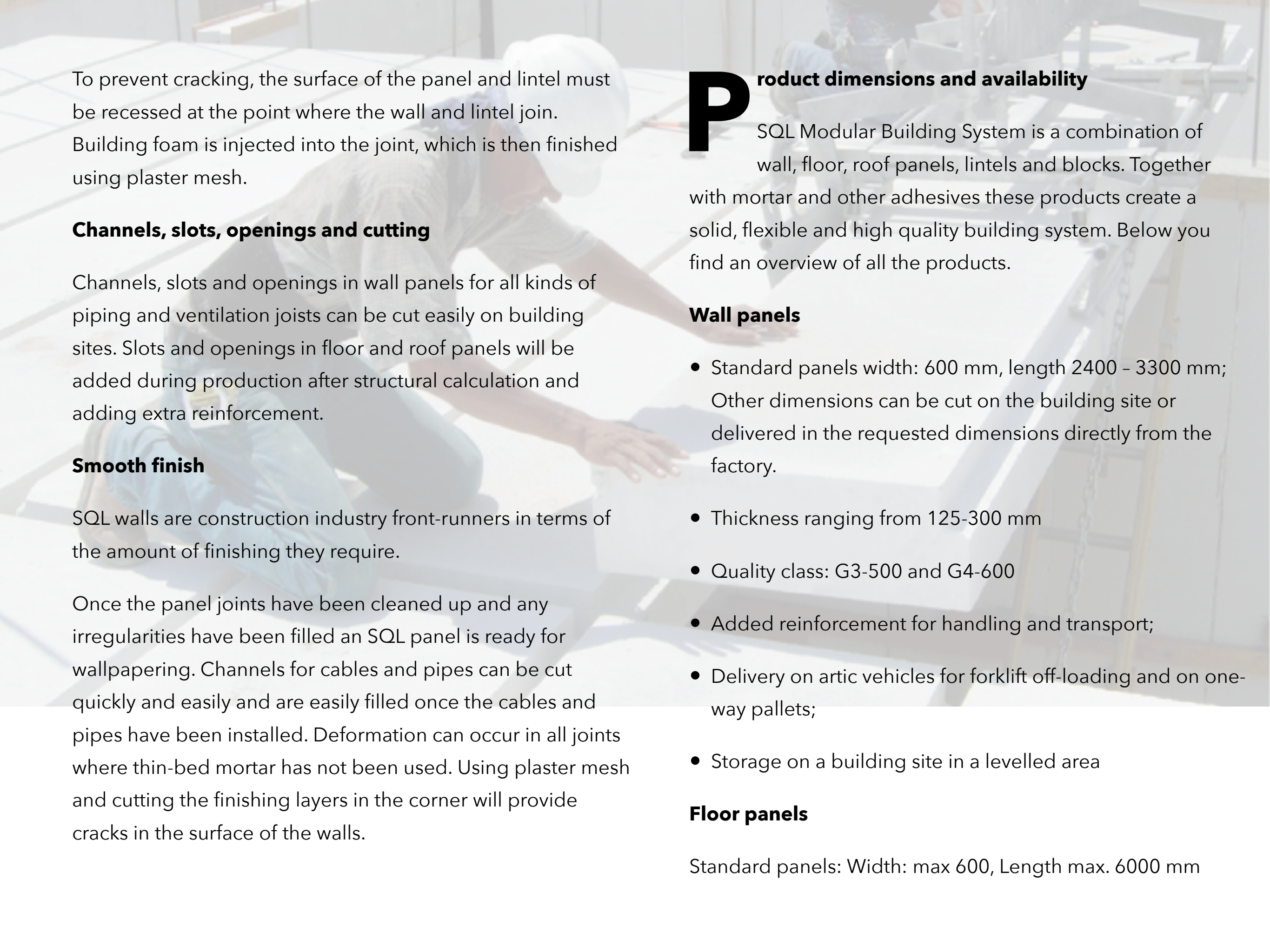
- by inserting an angle bead and finishing with mastic or,
- by recessing the surface and using plaster mesh.

In both cases, the joint is filled with building foam. Walls that are shorter than 5 metres in length do not require movement joints.

Lintels

For the space above the window and door opening we recommend using SQL lintels. Lintels can be used as load bearing and non load bearing solutions. Load bearing lintels need structurally calculated reinforcement. To avoid cracks around openings lintels should be installed with a moving joint on one side. Such a joint can easily be created with DPC foil underneath one bearing part.





To prevent cracking, the surface of the panel and lintel must be recessed at the point where the wall and lintel join. Building foam is injected into the joint, which is then finished using plaster mesh.

Channels, slots, openings and cutting

Channels, slots and openings in wall panels for all kinds of piping and ventilation joists can be cut easily on building sites. Slots and openings in floor and roof panels will be added during production after structural calculation and adding extra reinforcement.

Smooth finish

SQL walls are construction industry front-runners in terms of the amount of finishing they require.

Once the panel joints have been cleaned up and any irregularities have been filled an SQL panel is ready for wallpapering. Channels for cables and pipes can be cut quickly and easily and are easily filled once the cables and pipes have been installed. Deformation can occur in all joints where thin-bed mortar has not been used. Using plaster mesh and cutting the finishing layers in the corner will provide cracks in the surface of the walls.

Product dimensions and availability

SQL Modular Building System is a combination of wall, floor, roof panels, lintels and blocks. Together with mortar and other adhesives these products create a solid, flexible and high quality building system. Below you find an overview of all the products.

Wall panels

- Standard panels width: 600 mm, length 2400 - 3300 mm; Other dimensions can be cut on the building site or delivered in the requested dimensions directly from the factory.
- Thickness ranging from 125-300 mm
- Quality class: G3-500 and G4-600
- Added reinforcement for handling and transport;
- Delivery on artic vehicles for forklift off-loading and on one-way pallets;
- Storage on a building site in a levelled area

Floor panels

Standard panels: Width: max 600, Length max. 6000 mm

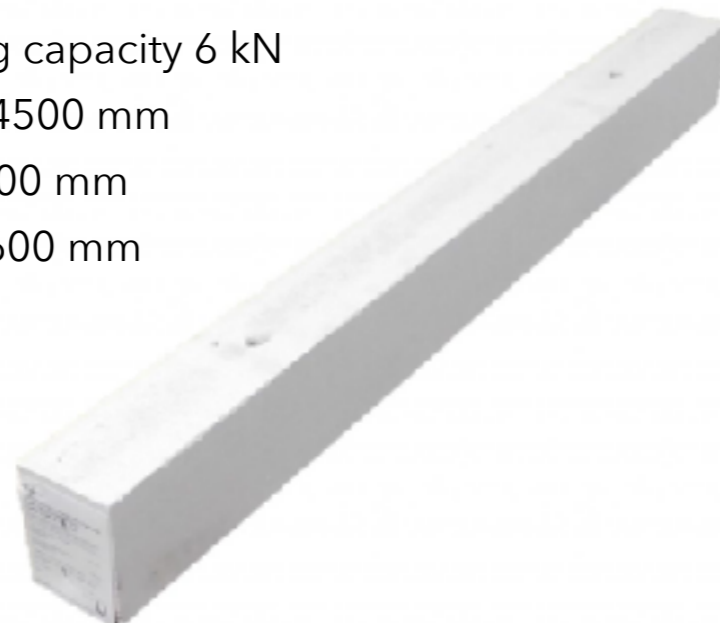
G eneral technical information

- Thickness ranging from 125-300 mm
- Quality class: G3-500 and G4-600
- Other lengths and widths can be delivered directly from the factory.
- Structural reinforcement is calculated according to the span and loading;
- Delivery on artic vehicles for forklift off-loading on returnable beams;
- Storage on building site in levelled and dry area.

Thickness of floor panels is calculated according to the span and required live loads and staircase

Standard Lintels

- Load Bearing capacity 6 kN
- Length 700-4500 mm
- Width 100-300 mm
- Height 150-600 mm



Tolerances

- Length ± 3 mm
- Width ± 2 mm
- Thickness ± 1 mm
- Moisture content on delivery: Max 20%

Physical Properties

Class G4-600

- Coefficient of thermal conductivity 0.16 W/mK
- Rc [m²K/W - 200 mm width] = 1,25
- U-Value [W/m²K - 200 mm width] = 0,80

Class G3-500

- Coefficient of thermal conductivity 0.14 W/mK
- Rc [m²K/W - 200 mm width] = 1,42
- U-Value [W/m²K - 200 mm width] = 0,70

FINISHES AND FIXINGS

Consumables and trim products

SQL also offers an extensive range of consumables and trim products. Surface damage can also be repaired using SQL products. Thin coat plaster can be used to finish SQL interior walls in preparation for wallpapering or a sprayed coating.

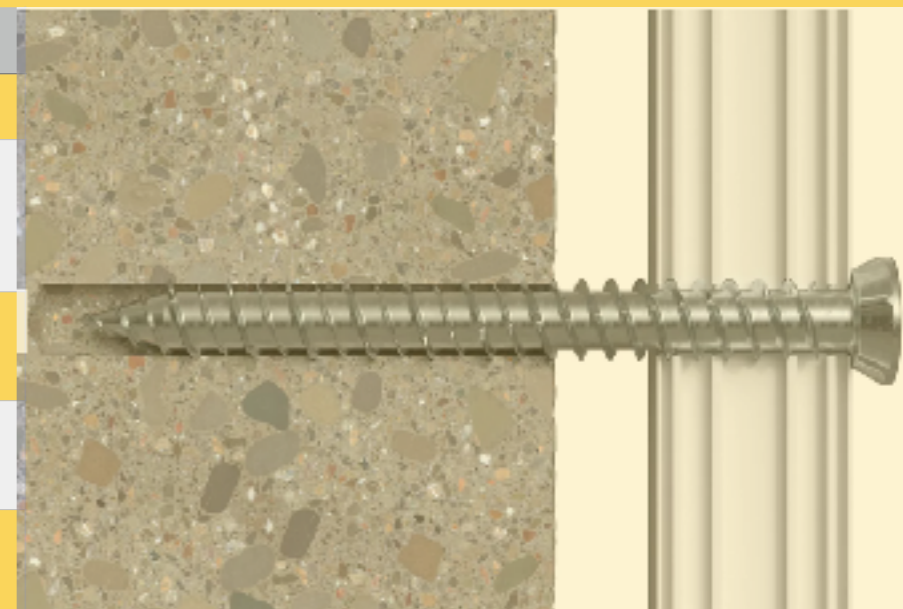
Fixings

As you would expect, it is possible to attach objects to SQL interior walls. This is inherent in the requirement for a masonry-based wall with a high quality finish. However, mirrors, for example, should be hung using a different type of fixing than those used for a washbasin. SQL specifies a wide variety of fasteners that are suitable for use with aerated concrete. SQL interior walls can be subjected to dynamic loads without any undesirable effects. In addition to simple guidelines for hanging objects in the home, specific solutions have also been provided for mounting sanitary products and other objects like handrails in toilets for disabled persons. Contact us for advice about the method and fixings that should be used for hanging heavier objects.



Fixings: light objects - paintings, mirrors, skirting board

Make	Type		F max kN
Toggler Alligator	Alligator	AF6	0,6
Chipboard screw (coarse thread)	Chipboard Screw	4 x 50	0,6
		5 x 60	0,8
		6 x 70	1,1
Fisher	Chipboard Screw	FFS 7,5 x 52	2,7
		FFS 7,5 x 62	2,7
Hilti	Universal Anchor (wood screw)	HUD 0 1,8	1,5
Z-Nails	Z4-foamed Concrete nail	HJZ-Z4 6,0 x 60 gripping length 30	0,5



Fixings: medium-weight objects - stocks, book shelves, coat racks -

Make	Type		F max kN
Fisher	Aircrete anchor	GB8	2,3
		GB10	3,1
Chipboard screw (coarse thread)	Chipboard Screw	6 x 80	1,6
		6 x 120	1,8
Z-Nails	Z4-foamed Concrete nail	HJZ-Z4 8,0 x 100 gripping length 70	1,8
	TSM screw	TSM PB 10 x 110	3,5



Fixings: heavy objects - washbasin, kitchen cabinet or radiator -

Make	Type		F max kN
Kunkel	Aerated concrete anchor	PBD 6 x 20	3,7
		PBD 8 x 20	3,8
Upat (fisher)	Aerated concrete anchor	KTP-K6	2,1
Fisher	Frame Fixing	KTP-K8	2,8
		FUR 8	3,9
Comat	Comat Nail	95-8	2,7
Hilti (G4-600)	Frame anchor	HRD-U10	4,0



The building system supported by the EN Euronorms



Main certification	Construction productive regulation (CPR)	Harmonised standard	Category	Parameter	Year	
CE	EN 12602	2016		Compressive strength	EN 678	2016
				Density class	EN 679	2016
				Flexural strength	EN 1351	
				yield strength reinforcing steel	EN 10080	
				Loadbearing capacity under transverse load	EN 1356	
				Loadbearing capacity under longitudinal load	EN 1740	
				Modulus of elasticity	EN 1352	
				Creep	EN 1355	
				Corrosion protection	EN 990	
				Dimensions	EN 991	
				Parallism of the contact faces	EN 772	
				Additional load	EN 12602	
				Dimensional tolerances	EN 12602	2016
			Dry shrinkage	EN 680		
			Fire classification	testing and classification	EN 13501	
				Reaction to fire	EN 13501-2	
				Resistance to fire	EN 13501-2	
			Thermal resistance	Thermal conductivity	EN ISO 6946	
					EN 12664	
			Acoustic properties	Sound measurements	EN ISO 10140 1,3,5	
				Sound absorption	EN ISO 354	
			Dry shrinkage		EN 680	
				Joint strenght	EN 1739	In plane shear
				Joint strenght	EN 1741	Out of plane shear
			Freeze and thaw	Freeze and thaw	EN 15304	specified according to

For sales & technical advice please contact:

Jan van Eycklaan 2
3723 BC Bilthoven
The Netherlands
Phone: (+31) 30 227 13 52

info@sql-living.nl

Internet
<https://www.sql-living.com/>
<https://www.sql-living.nl/>

2021



Ireland: Cloondaragh Beag Holdings Ltd.

David Connolly
+353 86043 4490
david.connolly@cloondaragh.com

Michael Power
+49 170 5575810
michael.power@cloondaragh.com

Internet
<http://cloondaragh.com/>



SQL

Simplex Qualitas Living