



NEW IN OFFER
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mcr Silboard

self-supporting ventilation
and smoke extraction ducts

INTENDED USE

mcr Silboard is a calcium-silicate fireproof board designed for the construction of e.g. **self-supporting fireproof general (comfort) ventilation ducts and multi-zone smoke extraction and ventilation ducts**, while maintaining the required fire integrity and/or insulation and/or smoke-tightness criteria.

mcr Silboard, due to its physical and mechanical properties, including non-combustible (class A1 acc. to EN), can be used for fire protection of all types of buildings, such as public utility, industrial and historic buildings or smart buildings.

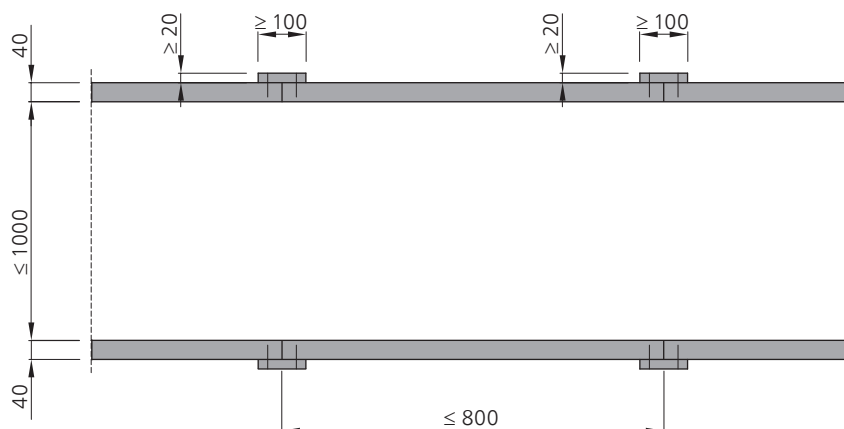


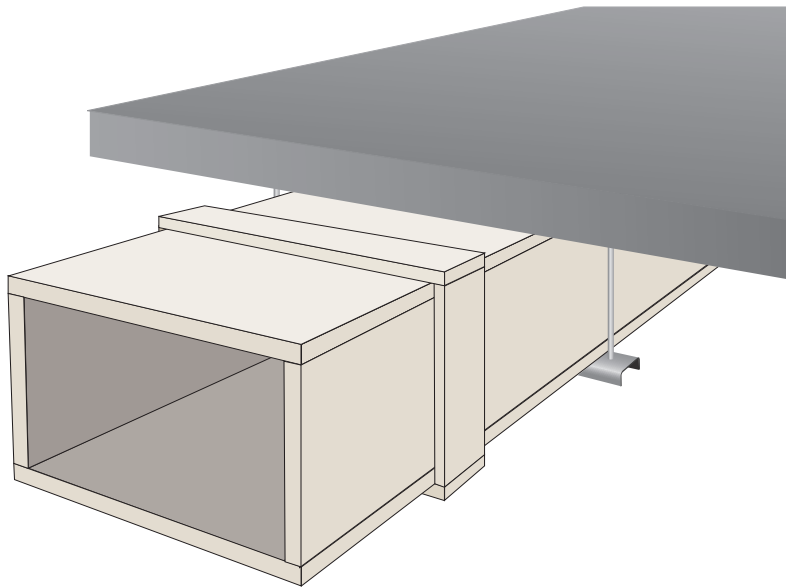
Set for the construction of self-supporting ventilation and smoke extraction ducts is composed of:

- ▶ mcr Silboard boards, 40 mm and 20 mm thick,
- ▶ mcr Sil-MK glue for sealing the board joints and strips of boards,
- ▶ mcr Sil-MU intumescent seals, size 30 x 2 mm for sealing inspection hatches,
- ▶ fireproof mcr Polylack K and mcr Polylack KG intumescent paste for sealing duct penetrations,
- ▶ non-combustible mineral wool with a density of at least 50 kg/m³,
- ▶ steel sections (profiles) and steel threaded bars with nuts and washers for suspending the ducts,
- ▶ steel anchors / dowels for attaching suspension components and strips protecting the duct penetrations made in walls and ceilings.

Vertical and horizontal ventilation and smoke extraction ducts are made in a four-wall system with a cross-section of no more than 1250 x 1000 mm (1.25 m²). They can be used in the environment corresponding to Category Y according to ETAG 018-4, which means the possibility of partial exposure of the board to weather conditions.

Fig. 1 Longitudinal section of ducts





Self-supporting ducts made of 40 mm thick mcr Silboard boards can be used for the penetrations made in the following structural partitions:

- ▶ concrete ceilings with a thickness not less than 150 mm,
- ▶ concrete walls with a thickness not less than 110 mm,
- ▶ masonry walls made of solid ceramic bricks or blocks of cellular concrete, with a thickness not less than 110 mm,
- ▶ masonry walls made of solid silica bricks with a thickness of not less than 110 mm and fire resistance classes not lower than EI 120,
- ▶ lightweight walls made of gypsum plasterboard on steel structure, with a total thickness of not less than 125 mm and fire resistance class not lower than EI 120.

Ventilation ducts made of mcr Silboard boards have been classified in **EI120(ve ho i↔o)S** fire resistance class. They are designed for use in supply/exhaust systems with operating pressures between -500 Pa and +500 Pa. Multi-zone smoke extraction ducts made of mcr Silboard boards have been classified in **EI120(ve-ho)S1500multi** fire resistance class. They are designed for use in fire ventilation systems with working pressures between -1500 Pa and +500 Pa.

Self-supporting ventilations and smoke extraction ducts made of mcr Silboard boards have been classified as fire retardant structures (NRO.)

APPROVAL DOCUMENTS

- ▶ ITB Technical Approval No. AT-15-9783/2016
- ▶ ITB Certificate of Conformity No. 2511/W

KEY FEATURES

- ▶ fire resistance class EIS 120
- ▶ dry and easy system to ensure 'clean' assembly – it can be processed with commonly available tools for woodworking (cutting, drilling and milling)
- ▶ fast pace of work carried out by appropriately trained assembly
- ▶ total resistance to biological corrosion (fungi, bacteria)
- ▶ no toxicity
- ▶ smooth and clean surface of fireproof insulation
- ▶ lower insulation thickness compared to competing systems with similar technical characteristics
- ▶ no need to insulate steel ventilation and smoke extraction duct supporting components

MCR SILBOARD PHYSICAL AND CHEMICAL PROPERTIES

mcr Silboard	40 mm board	20 mm board
Appearance	white / cream colour, top layer floated smooth	
Density	550 ± 15% kg/m ³	
Compression strength	≥ 1,0 MPa	
Resistance to tensile strength perpendicular to the plane	≥ 0,20 MPa	≥ 0,10 MPa
Resistance to tensile strength parallel to the plane	≥ 0,40 MPa	
Fire reaction class	A1	

INSTALLATION OF DUCTS

Self-supporting ventilation and smoke extraction ducts made of mcr Silboard boards are of box structure. The duct walls are made of 40 mm thick mcr Silboard boards. The maximum length of the duct sections is 800 mm.

The boards are joined in corners with steel screws or nails.

Table 1: Dimensions of fasteners – joining boards in corners

screw pitch ≤ 200 mm	nail pitch ≤ 150 mm
5,0 x 70 mm	70 mm

The transverse joints of the boards are covered from the outside by strips of mcr Silboard (band ties), with a thickness of 20 mm and width of not less than 100 mm.

Table 2: Dimensions of fasteners – transverse board joining

thicknesses of the joined boards	screw pitch ≤ 200 mm	nail pitch ≤ 150 mm
20 mm + 40 mm	5,0 x 50 mm	50 mm
40 mm + 40 mm	5,0 x 70 mm	70 mm

All joints of fireproof boards should be sealed with mcr Sil-MK glue.

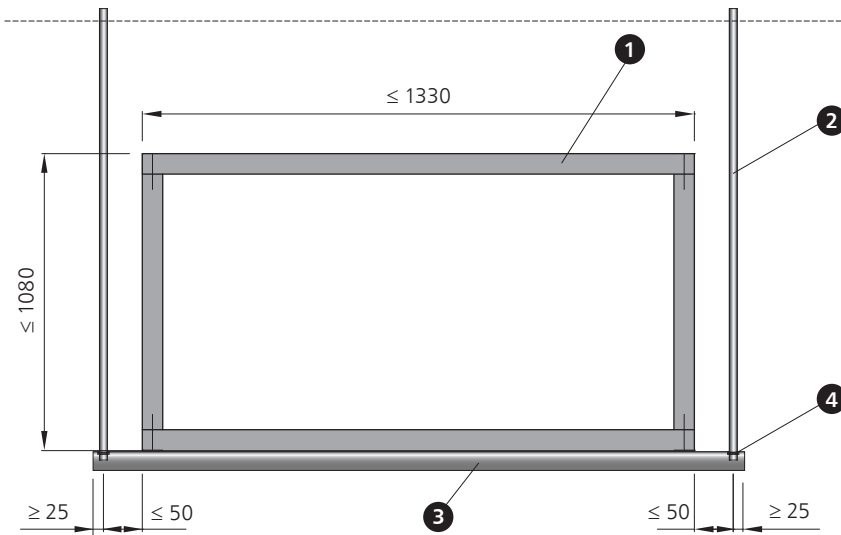
Horizontal ventilation and extraction ducts are suspended to the ceilings by means of suspensions consisting of steel support sections, steel threaded bars with a diameter of at least M8 with nuts and steel expansion anchors. The size of individual components of the suspension system shall be such that the tensile stresses in the vertical suspension components do not exceed 6 N/mm².

Table 3: Suspension systems

duct cross-section area	support profiles (minimum dimensions)
≤ 0,35 m ²	35 x 35 x 2.0 mm L-section or 40 x 40 x 2.0 mm U-section
≤ 1,15 m ²	35 x 35 x 3.0 mm L-section or 40 x 40 x 2.0 mm U-section
≤ 1,25 m ²	35 x 35 x 4.0 mm L-section or 40 x 40 x 2.0 mm U-section

The maximum distance between the suspensions is 1200 mm. Suspension components do not require any additional fire protection.

Fig. 2 Duct suspension methods

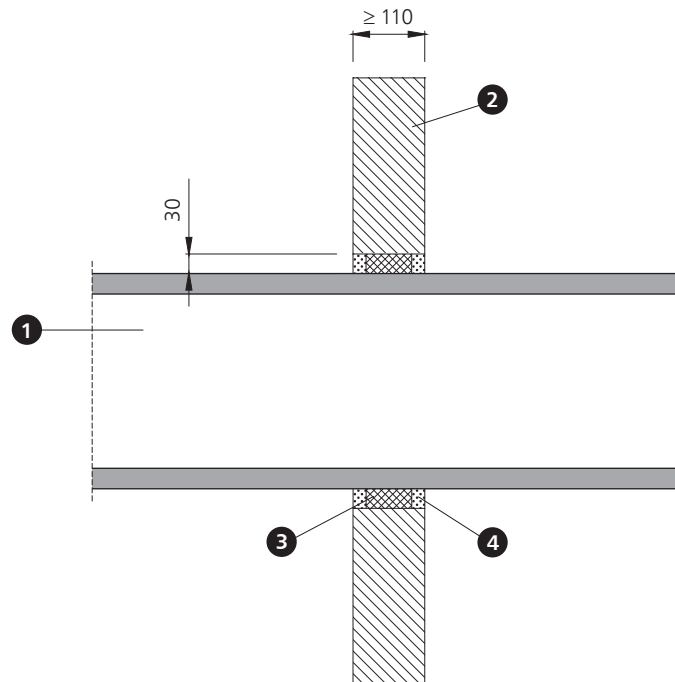


1. duct
2. threaded bar, every 1200 mm max
3. support made of L or U-section
4. steel washer and nut

mcr Silboard duct penetrations in structural partitions can be fireproofed in the following ways:

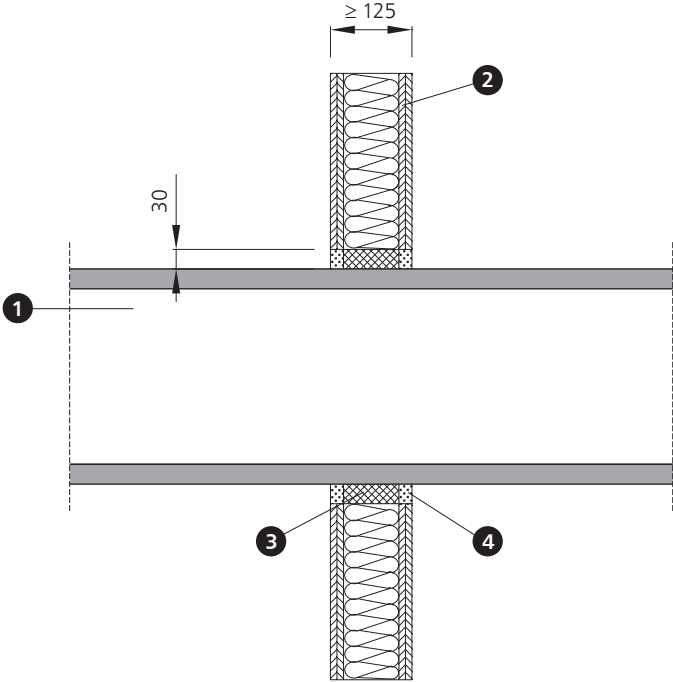
- ▶ a layer of non-combustible mineral wool with a density of at least 50 kg/m³, installed between the outer surface of the duct and the edge of the opening in the ceiling/wall. The penetration is additionally protected on both sides with a 20 mm thick layer of fireproof mcr Polylack K or mcr Polylack KG intumescent material

Fig. 3 Penetration made in concrete/brick walls



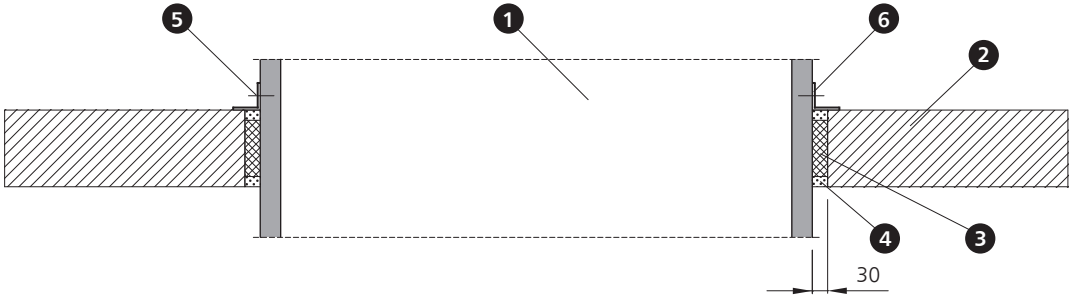
1. duct
2. concrete or brick wall
3. mineral wool, min. 50 kg/m³
4. mcr Polylack K or KG intumescent material, 2 cm on both sides

Fig. 4 Penetration made in lightweight gypsum plasterboard walls on steel structure



- 1. duct
- 2. gypsum plasterboard wall
- 3. mineral wool, min. 50 kg/m³
- 4. mcr Polylack K or KG intumescent material, 2 cm on both sides

Fig. 5 Penetration made in concrete ceilings



- 1. duct
- 2. concrete ceiling
- 3. mineral wool, min. 50 kg/m³
- 4. mcr Polylack K or KG intumescent material, 2 cm on both sides
- 5. washer and steel screw, Ø5.0x40, every 10 cm
- 6. min. 40x40x2 L-section

- strips of mcr Silboard boards size 150 x 40 mm, fixed to the wall/ceiling with steel dowels size 8.0 x 100 mm, spaced of no more than 250 mm apart. The mcr Silboard strips are attached along the outer perimeter of the ducts, on both sides of the partition. The maximum gap between the duct and the edge of the wall/ceiling opening is 30 mm.

Fig. 6 Penetration made in concrete/brick walls

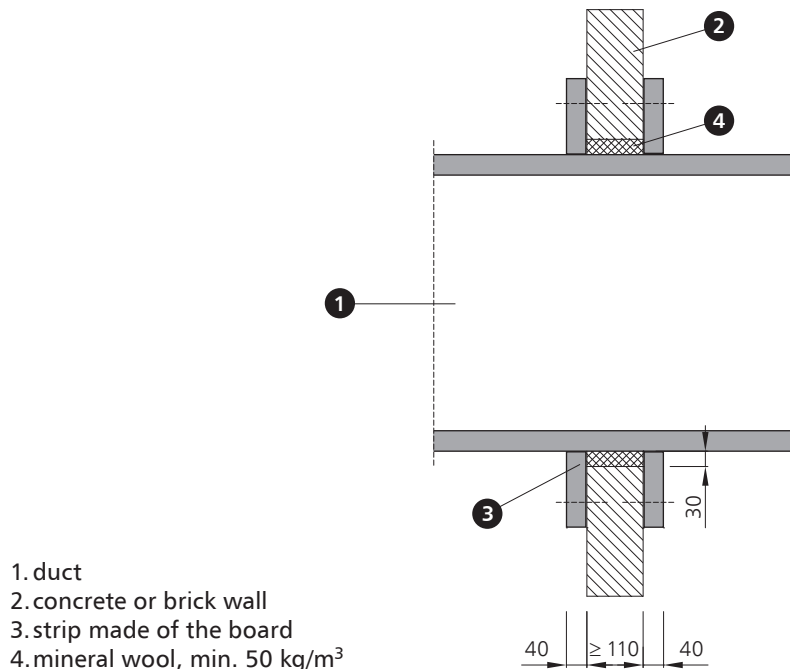
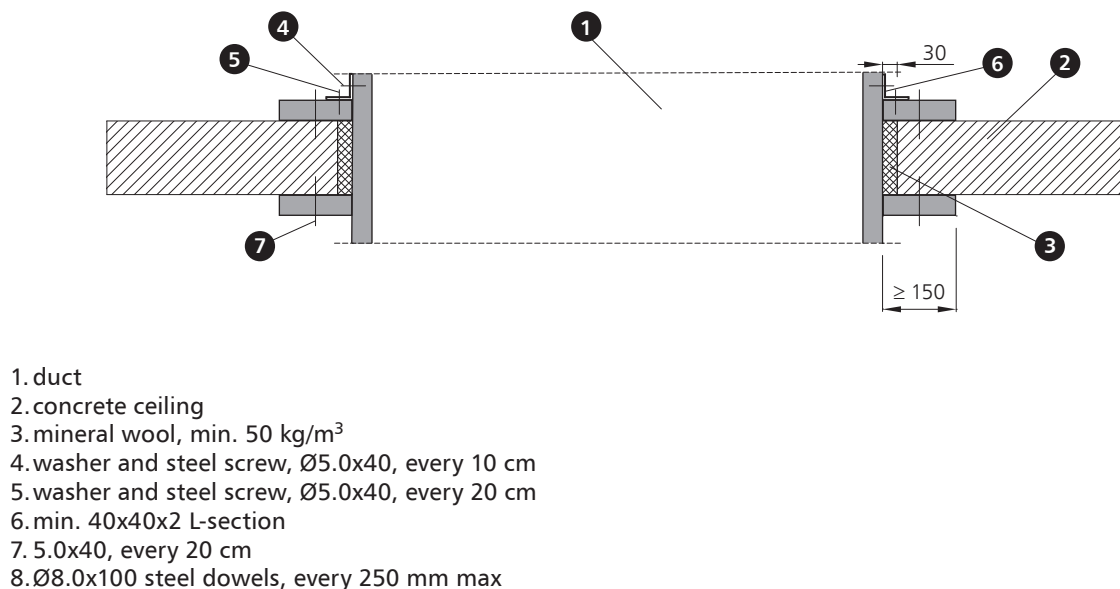


Fig. 7 Penetration made in concrete ceilings



Inspection openings can be made in vertical or horizontal ducts of mcr Silboard boards with a maximum dimension of 500 x 400 mm. These openings are covered with inspection hatches made of two layers of 40 mm mcr Silboard boards, fastened to the duct with 5.0 x 70 mm steel screws. The gap between the edge of the inspection hatch and the edge of the opening in the duct is protected by mcr Sil-MU intumescent sealing.

Note:

In the event of a fire, the length of the ducts changes only slightly, therefore no expansion joints are required. The Technical Approval includes self-supporting ducts with an internal cross-section area of no more than 1,25 m².

FIRE PROTECTION SYSTEMS

- ▶ fire protection of building structures
- ▶ fire ventilation systems
- ▶ smoke and heat exhaust systems



Mercor S.A.
ul. Grzegorza z Sanoka 2
80-408 Gdańsk, Poland
tel. +48 58 341 42 45
fax +48 58 341 39 85
mercor@mercor.com.pl

www.mercor.com.pl