

K201.temp

The Firewin Systems

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# K201.temp Knauf VERMIBOARD Boards for Fire Protection of CFRP Carbon-fibre Strips

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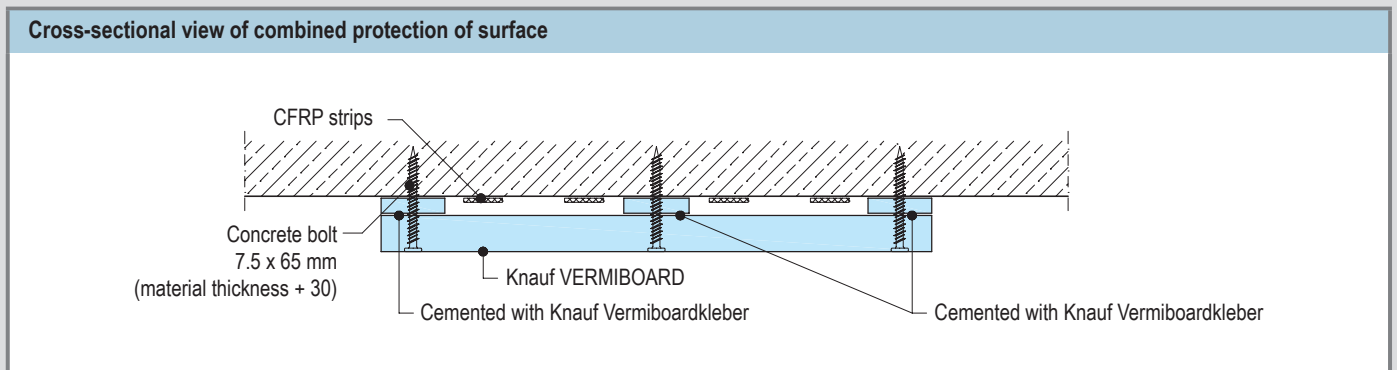
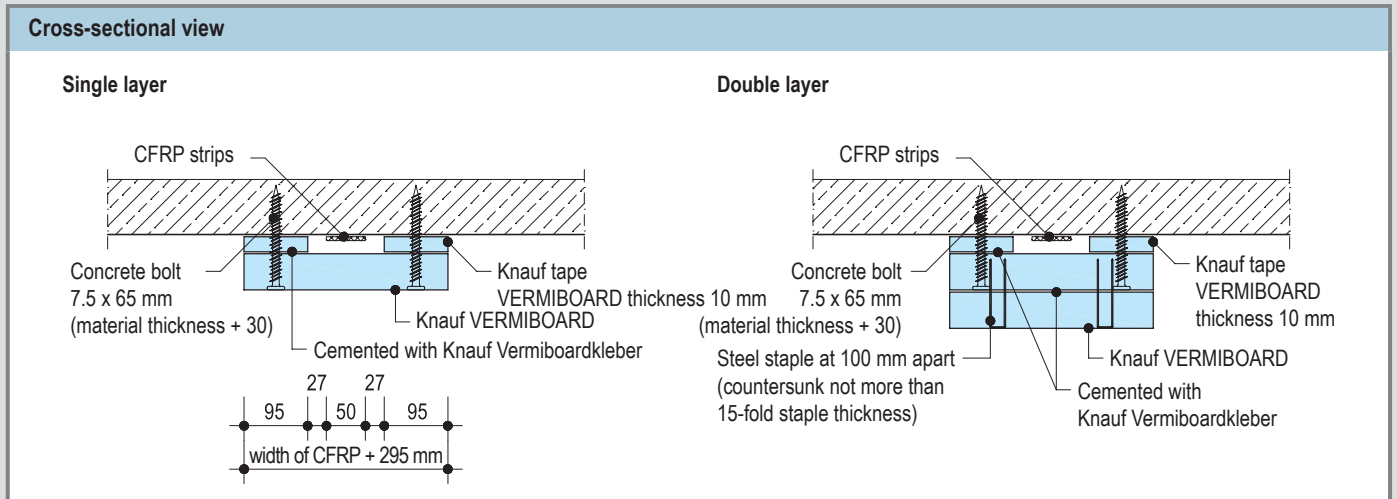
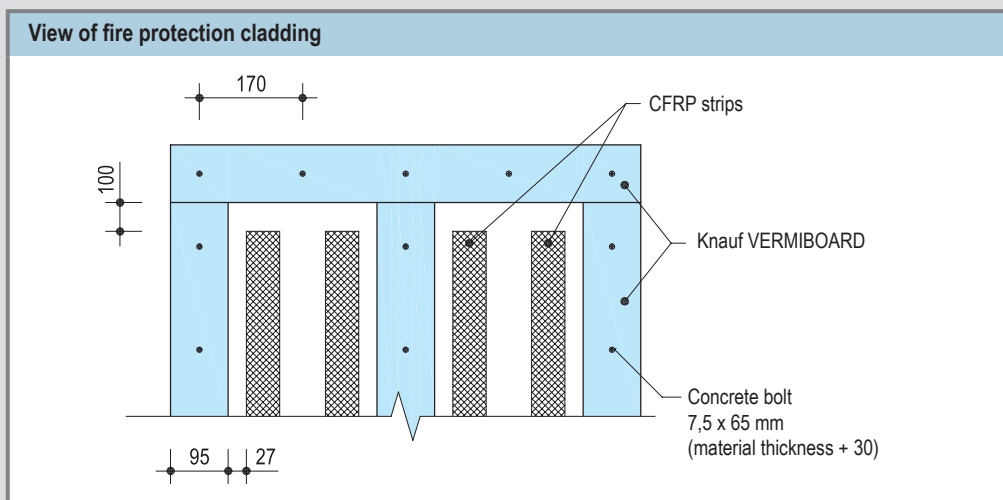


Table for the sizing of Vermiboard boards

Fire resistance rating R (min)	vitrification temperature of adhesives [°C]		
	50	90	130
R 30	70	60	50
R 45	90	70	60
R 60	105	80	65
R 90	125	90	75
R 120	140	100	80

**Knauf VERMIBOARD**  
Layer thickness d (mm)

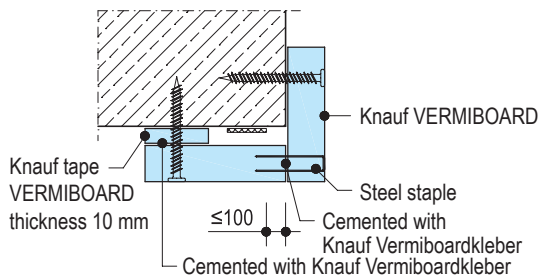
■ From thickness 105 mm improvement of CFRP strips protection from sides is required (default thickness is 100mm). Overlap distance must be the same like height above CFRP strip. It means for example fire protection R 120 - protection of CFRP strips from sides must be at least 140 mm.



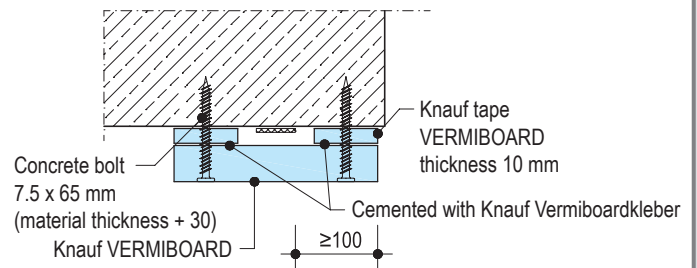
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## Cross-sectional view of edge protection

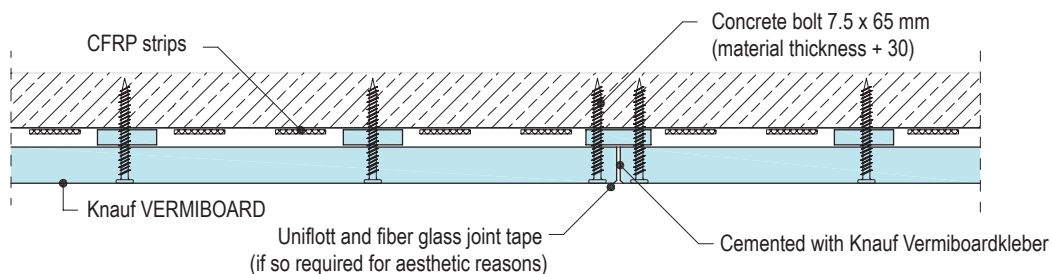
### ■ Distance $\leq 100$ mm



### ■ Distance $\geq 100$ mm



## Vertical section of CFRP fire protection



## Description of the structure and application

The Vermiboard non-combustible boards are designed to provide fire protection to CFRP carbon-fibre strips or plates, so called "wrappings". The boards should protect resin that is used to attach strips or "wrappings" to the concrete substrate from heating to a temperature over 130 °C. Tests show that resin - when heated to this temperature - becomes glassy and loses its adhesive properties. As a result, this temperature was used as a limit value for determining a suitable thickness of Vermiboard boards in order to achieve the required fire protection ratings. All the properties of the cladding apply to both ceiling and wall claddings, and so-called wrappings.

## Installation

Strips made of Vermiboard boards with a thickness of 10 mm are used to form a supporting structure that is attached directly to the building skeleton with 7.5 x 65 mm concrete bolts (material thickness + 30 mm). Fasten Vermiboard strips to the skeleton so that they cannot move. The minimum distance between the supporting structure and the CFRP strips is 27 mm.

Install the first protection layer of Vermiboard boards. The thickness of individual layers are shown in the table. Insert 7.5 x 65 mm concrete bolts (material thickness + 30 mm) into through holes in the supporting structure and fasten the first layer of the boards to the building skeleton. Bolts should be placed at not more than 170 mm apart. Apply Klebepaste to cover screw heads. Install the second protection layer of Vermiboard boards. The thickness of individual layers are shown in the table.

Use steel staples to fasten the second layer to the first layer. The length of staples should be equal to 2.5-fold the layer thickness. Steel staples should be placed at 100 mm apart. Apply joint filler to cover staples. All joints of the individual layers including supporting strips must be overlapped.

## Application of joint filler and surface finishing

Use Knauf Vermiboardkleber to cover staples. If so required for aesthetic reasons, apply Knauf Uniflott, W2 or Knauf Super Finish to the surface that need not be primed. The joints and edges of the boards must always be covered with fibre glass joint tapes. It also possible to apply Knauf paste-like fine or mineral plasters.

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Note

Empty note area for additional information.



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