

Introduction:

VERMICULUX[®] is a non-combustible mineral bound light weight board, designed to provide a high degree of strength, dimensional stability and up to 240 minutes fire protection to structural steelwork, in terms of the loadbearing capacity criteria of BS 476: Part 21: 1987.

The degree of fire protection depends on the A/V section factor and the limiting temperature of the steel, this in turn dictates the thickness of VERMICULUX[®] required.

The partition may be fire rated or non-fire rated.

If the partition connected to the column is non-fire rated then it is probable that the facing boards will either burn or fall away before the end of the specified fire resistance period for the column. It must be ensured as far as practical that the collapse of the facing boards does not damage the column casing.

The following recommendations should be adopted where a partition system is connected to one or both flanges of VERMICULUX[®] protected steel columns. The maximum height of the columns and partitions is 5m.

If it is also required to provide fire insulation across the beam or column in order to maintain compartmentation to the criteria of BS 476: Part 22: 1987 (maintaining insulation to average temperature rise of 140°C, maximum temperature rise 180°C), then the *minimum* thickness of the VERMICULUX[®] board on each side of the beam or column must be as follows:

Fire resistance - minutes	Board thickness - mm
60	20
90	25
120	30
150	35
180	40
240	50

Thicker board may be required to provide the required period of fire protection to the steelwork in terms of the loadbearing capacity to BS476: Part 21:1987

The arrangements shown in Figures 1 and 2 are for applications where the VERMICULUX[®] casing has been erected before the addition of the partition system.

The arrangement shown in Figure 3 assumes that the fixing straps are installed before the VERMICULUX[®] casing.

Note:

Where a limiting temperature has **not** been provided, then Promat will have specified the protection thickness to the default value of 550 C.

However, the user should be aware that this default temperature may not necessarily be adequate, or appropriate, for the proposed use for which the building is intended, and this default temperature specification must be verified with the structural fire designer concerned.

The load on the structure at the time of the fire can also be calculated by treating it as an accidental limit state. If used, this will allow structural fire designers to specify a limiting or failure temperature for a given structural section, to be provided to the fire protection contractor. Where the limiting temperature is provided, Promat will specify the structural steel protection thickness, appropriate to that temperature.

AUTHORITY: Promat Recommendation – Based on In-house Knowledge and Technical Experience

Technical Data Sheet – 090

Page 1 of 3
(Sept 2008)



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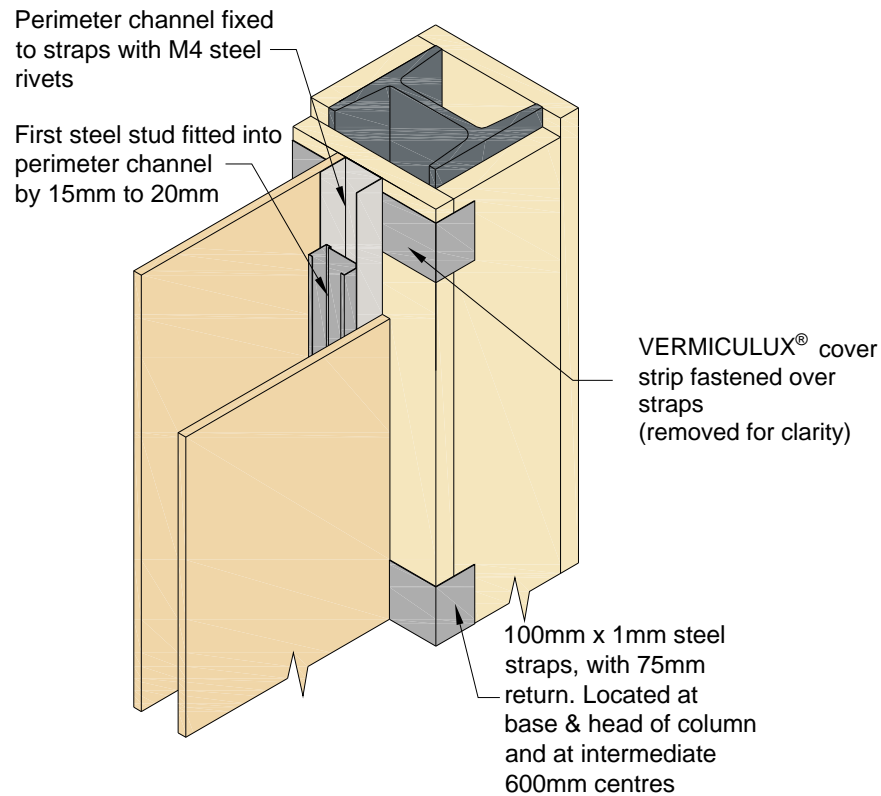


Figure 1

Construction:

Figure 1: Steel straps, made from 100mm x 1mm steel formed around the V Vermiculux® casing with 75mm return, are fastened to the column flanges, through the V Vermiculux®, with two M4 self tapping screws each side. The straps are located at the head and base of the column and at 600mm centres in between. A vertical steel channel is fastened to the straps with M4 steel rivets. The first steel stud is fitted into the channel by 15-20mm. The facing boards are screwed to the first stud, but not to the end channel and should abut to the V Vermiculux® casing. A V Vermiculux® cover strip is fastened over the steel straps on both sides of the partition. If rock wool is fitted in the cavity of the partition then this must also be fitted to the end channel.

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Page 2 of 3
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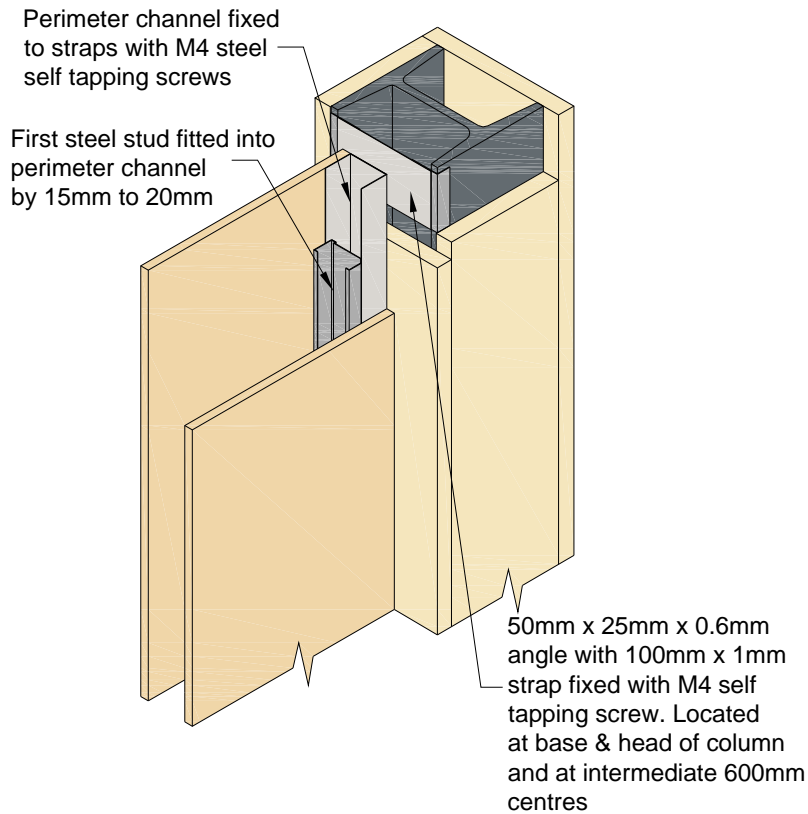


Figure 2

Construction:

Figure 2: Continuous steel angle, 50mm x 25mm x 0.6mm, is fastened to the flange toes of the column with HILTI shot-fired nails at nominal 600mm centres. 100mm x 1mm flat straps are fastened to the angles with 2 off M4 self-tapping screws at either end. The straps are located at the head and base of the column and at 600mm centres in between. A vertical steel channel is fastened to the straps, through the VERMICULUX®, with M4 steel screws. The first steel stud of the partition system is fitted into the channel by 15-20mm. The facing boards are screwed to the first stud, but not to the end channel and should abut to the VERMICULUX® casing. If the partition is fire rated then rock wool, minimum 60kg/m³ density, must be fitted into the end channel.

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Page 3 of 3
(Sept 2008)



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