

VERMICULITE



FLOOR AND ROOF SCREEDS



Guide for using Micafil Vermiculite for lightweight screeds.

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When used as an aggregate with Portland cement, Superfine Grade Vermiculite forms an ultra lightweight concrete, which is simply mixed on site with standard equipment and is easy to blend, handle and place.

- Meets building requirements for thermally insulated floors
- Suitable for floor and roof screeds where low weight, excellent thermal insulation and fire resistant properties are of particular value.
- Low bulk density gives reduced loading and easier placing
- Fire resistant concrete — Superfine Grade is incombustible
- Easy to remove, chase out or cut away
- Inexpensive and freely available nationwide

PROPERTIES OF SUPERFINE VERMICULITE SCREEDS

	6:1 Vermiculite:Cement	8:1 Vermiculite:Cement
Density (Air Dry)	480 kg/m ³	380 kg/m ³
Thermal Conductivity (“k”)	0.12 W/m°C	0.09 W/m°C
Compressive Strength	4 MPa/m ²	2 MPa/m ²
Fire Resistance	Incombustible	

ROOF SCREEDS

Superfine Grade concrete is suitable for concrete flat slab, low pitched and barrel vault roofs, and those constructed of woodwool slabs, hollow tile or precast concrete beams. It is of particular value for renovation of old roofs to improve falls and prevent ponding. All screeds should be protected by a suitable topping and finished to falls for built-up felt or asphalt roofing.

Ventilation

Moisture entrapped in a roof is always a potential source of problems, such as blistering, ceiling stains or mould. Appropriate ventilation should always be provided to allow free water or moisture to escape.

Recommended Thickness

Since the thermal insulation requirement of roof screeds varies considerably with its form of construction, it is only possible to give a general recommendation of minimum thickness of 100 mm for new roofs. However, each design should be calculated using thermal conductivity of 0.094 W/mk for the Superfine Grade concrete. For renovation of existing roofs a minimum thickness of 20 mm Superfine Grade concrete should be used wherever possible, together with a suitable bonding material.

Topping

A sand / cement topping of 10-20 mm should be provided to protect the Superfine Grade concrete. This should be laid monolithically.

FLOOR SCREEDS

DSF concrete can be laid over a wide range of sub-bases to provide an insulated and resilient floor. Its lightweight properties are of particular importance when used over suspended floors or where there is a requirement for infill to accommodate different levels. It may be used to advantage where fire resistance is also important.

Recommended Thickness

For general applications a thickness of 80-150 mm provides a satisfactory base; this may be reduced to 30 mm for levelling purposes. Where the only requirement is to achieve minimum thermal insulation standards, thickness will vary with the shape, size and type of building. Based on a thermal conductivity of 0.12 W/mk, the table below shows the minimum thickness of screed necessary to achieve a U value of 0.45 W/m²K

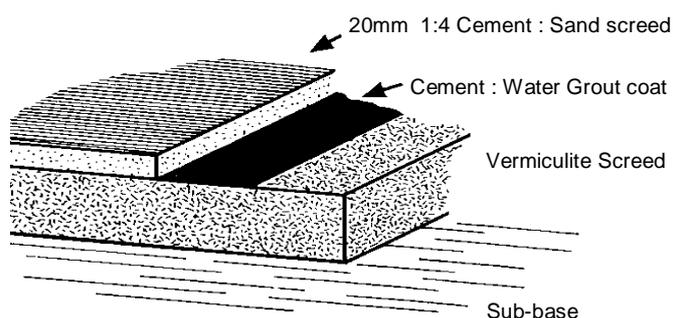
Width of Building (metres)	Length of Building (metres)	Thickness of Vermiculite Screed (mm)		
		Detached	Semi-detached / End-terrace	Mid-terrace
Up to 10	Up to 10	165	129	83
10-15	Up to 10	129	108	*
	10-15	80	*	
15-20	Up to 15	115	100	
	15-20	41	*	
Above 20	15-20	108	96	
	Above 20	*	*	

Protective Topping

As with some other lightweight concrete screeds, it is necessary to provide protection of the Vermiculite screed with a dense cement/sand topping. This distributes the floor loadings and prevents abrasion and other damage. There are two separate methods of applying this topping :

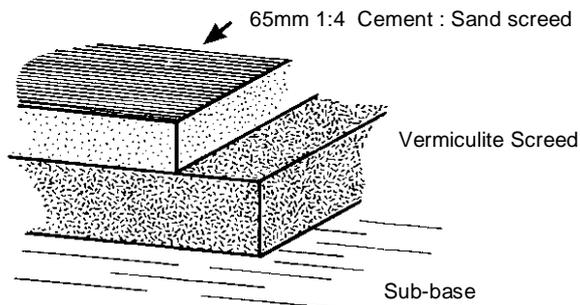
1. Monolithically bonded topping

Immediately the concrete is laid, a cement grout is brushed into the surface followed by a 15mm (max. 20mm) sand/cement topping. This system relies on the screed and topping bonding and drying together to provide mutual support. Great care must therefore be taken to ensure this bonding is achieved.



2. Unbonded topping

The vermiculite screed is allowed to harden. A 65 mm sand / cement topping is applied over the dried vermiculite screed making no attempt to bond the layers. This will be self supporting.



Because of different shrinkage rates toppings between 20mm and 50mm are unlikely to be satisfactory.

MIXING

Always ensure batch measurements are accurate and water is clean. A forced action mixer such as a paddle mixer is preferable, alternatively a RTD type concrete mixer no larger than 10/7 may be used.

Combine Superfine Grade Vermiculite and cement and mix for 1 minute, add water and mix for a further minute. If mixing by hand, blend Superfine Grade Vermiculite and cement and then add water using a watering can with a fine rose. The object is to coat the Vermiculite granules with a cement slurry without the mix becoming sloppy. Mortar plasticisers may be used to manufacturers instructions.

Use		Roof Screeds	Floor Screeds
Mixing Ratio by Volume		8 : 1	6 : 1
Materials per m ³ placed	Superfine Vermiculite	12 bags	12 bags
	Cement	8 bags*	12 bags*
	Water	264 litres	276 litres
Batching	Superfine Vermiculite	1 bag	1 bag
	Cement	¾ bag*	1 bag*
	Water	22 litres	23 litres

* refers to a standard 25kg bag

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