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Mastic asphalt flooring

General

All grades of mastic asphalt for flooring are available coloured red or black.

The total thickness of the mastic asphalt flooring should be appropriate to the traffic conditions.

Usually the mastic asphalt should be laid in one coat, but multi-coat work should be used where a waterproofing membrane is specified. Multi-coat work should be used for regulating courses.

Separating membrane

Where a particular separating membrane is specified / required, it will normally comprise of either Black Sheathing Felt or Glass Fibre Tissue, loose laid with 50mm laps.

The purpose of the separating membrane is to separate the mastic asphalt from the base to allow for any relative movement between them. It also helps to prevent the formation of blisters and 'blowing' of asphalt.

Grade I. Special hard flooring

Grade I flooring should be laid in one coat within the range of 15mm to 20mm thick. It can be used in hospital wards, schools, shop floors to take moveable racks, offices and domestic floors. Grade I flooring can also be used as an underlay for other floor finishes.

Grade I flooring is designed for situations of relatively high ambient temperatures, i.e. 25°C to 30°C but not below 10°C.

Grade I flooring should be planned so that the mastic asphalt is not restricted in any way during the cooling period, and that no large adjacent bay areas are laid at the same time where excessive cooling shrinkage could occur. Care should be taken to avoid restraint at door thresholds, at internal and external angles of walls or partitions and around stanchions, pipes, machines bases etc. Appropriately positioned battens, set slightly away from the vertical surface involved, will allow free movement of the mastic asphalt at these points, the mastic asphalt coat being completed after removal of the battens.

Grade I flooring should not be laid when the ambient temperature is below 10° C, nor should it be laid in areas where it is likely to be subjected in service to ambient temperatures below 10°C. In such situations Grade II or Grade III flooring should be used.

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Grade II. Light duty flooring

Grade II flooring should be laid in one coat within the range of 15mm to 20mm thick. It is suitable for a wide range of floor conditions where point loading will not occur or where shallow indentations are acceptable. It is suitable for shop floors to take fixed racks, light assembly factory floors for foot traffic only or domestic floors with no point loading. Grade II flooring can also be used as an underlay for other floor finishes. Minor shrinkage may occur to this grade during the cooling period.

Grade III. Medium duty flooring

Grade III flooring should be laid in one coat within the range of 20mm to 30mm thick. It is a general purpose flooring suitable for medium duty industrial floors, floors subjected to heavy foot traffic, hospital corridors and heated sports halls. Minor shrinkage may occur to this grade during the cooling period.

Grade IV. Heavy duty flooring

Grade IV flooring should be laid in one coat within the range of 30mm to 50mm thick. It is intended for situations where the floor is subjected to mechanical trucks, trolleys, severe abrasion, heavy static loads or impact.

The percentage of coarse aggregate added to Grade IV material may be varied within the limits given in Table 5 of BS 6925, in proportion to the thickness to be laid Minor shrinkage may occur to this grade during the cooling period.

Table 2

Susceptibility of mastic asphalt floors to chemical and temperature attack

Substance	Result
Agency	Susceptibility to attack
Acids	Normal grades of mastic asphalt are subject to attack by acids, but special grades are available to withstand dilute solutions at normal ambient temperatures.
Alcoholic liquors	Normal grades of mastic asphalt are not generally subject to attack by dilute alcoholic liquors.
Alkalis	Alkali solutions of low concentration, at normal temperatures, have little or no effect on mastic asphalt. Alkali solutions above 30°C, particularly of high concentration, will affect mastic asphalt.
Brine (sodium and calcium chloride) and sulphate salts	Under normal ambient temperature conditions mastic asphalt is unaffected by these agencies.
Complex industrial liquors	Laboratory tests are essential to ensure that a suitable grade of mastic asphalt is used.
Dairy products and milk	Where hygienic conditions are maintained by adequate cleansing, a normal grade is suitable.
Mineral, animal and vegetable oils, fats, greases and some polishes	Mastic asphalt floors are subject to attack by these oils, fats and greases and additional protective coating will be required.
Sugar, syrup, sugar solutions etc	Mastic asphalt is unaffected by dry sugar or solutions of low concentrations at normal temperatures. Syrups, molasses and other concentrated solutions will affect mastic asphalt at all temperatures.
Water	Mastic asphalt is unaffected unless frequently in contact with hot water. Under such circumstances, a high temperature grade asphalt should be used.Alternating hot and cold water frequently discharged on to the floor may cause cracking.

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Table 3

Grades and thicknesses of mastic asphalt for underlays and wearing surfaces for various uses

BS 6925 Grade	I	II	III	IV	Paving to BS EN 13108-6
Recommended thickness (and see BS 8204: Part 5)	15-20mm	15-20mm	20-30mm	30-50mm	25-50mm
Underlays for other floor coverings	●	●			
Hospital Wards	●				
Hospital Corridors (according to traffic)		●	●		
Schools	●				
Shops (floors to take moveable racks)	●				
Shops (floors to take fixed racks)		●			
Offices	●				
Factory Floors - light		●			
Factory Floors - medium			●		
Factory Floors - heavy				●	
Loading Sheds - internal				●	
Loading Sheds - external					●
Breweries				●	
Railway Platforms - internal				●	
Railway Platforms - external					●
Domestic Floors (either as a finished floor or an underlay)	●	●			
Heavily foot-trafficked floors or passageways - internal			●		
Heavily foot-trafficked floors or passageways - external					●
Unheated buildings					●

Notes:

1). This list is by no means comprehensive and is intended to give only an approximate guide to the selection of the appropriate grade for specific purposes.

2). For special requirements such as suspended floors where wet processes are used, two coats are normally necessary, the bottom coat to be waterproofing grade to BS6925 Type R 988 limestone aggregate and the wearing coat to be in accordance with the above table.

3). Mastic asphalt as an underlay to receive other floorings such as rubber, linoleum, thermoplastic tiles, wood blocks: not less than 15mm in one coat.

4). As varying conditions of humidity frequently affect cork, close collaboration between the cork supplier and the mastic asphalt contractor should be established when cork is used as the floor covering.

5). Grade I flooring should not be laid at temperatures below 10°C nor be subjected to ambient temperatures below 10°C. If these conditions cannot be met, consideration should be given to using Grade II.

6). In the case of Grade IV material the percentage of coarse aggregate to be added may be varied within the limits stated in Table 5 of BS6925 according to the thickness to be laid.

See also Special Grades and their applications.

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Mastic asphalt flooring/waterproofing

On ground-supported and suspended concrete bases, where wet processes are to be used, mastic asphalt should be laid in two coats, the first coat being an underlay or waterproofing mastic asphalt. This system should be used in toilet and shower compartments on suspended concrete slabs over accommodation areas, wet process areas and in breweries and food factories.

Effects of temperature

Mastic asphalt is a thermoplastic material. Its resistance to indentation will be reduced with increase in temperature. As they are liable to be damaged at very low temperatures, flooring grades should never be used externally or in unheated buildings. For these locations a paving grade mastic asphalt should be used.

Regulating courses

On old or uneven floors a mastic asphalt regulating course may be used provided the total thickness permits. The mastic asphalt manufacturer should be consulted prior to the commencement of work regarding the feasibility of providing a regulating course, and the grade and build up of mastic asphalt to be used.

Drainage of floor areas

(falls and channels to shed water)

Where wet processes or regular cleansing of the floor is a user requirement, careful consideration must be given to the provision of adequate falls to channels and gullies to prevent ponding.

Falls are essential where acid and chemical resisting mastic asphalt is laid, in order to facilitate washing down. In shower rooms similar provisions are essential.

The arrangement of falls and the location of drainage outlets are interdependent and should be considered carefully at the design stage. Adjustment of finished levels will be difficult at a later stage.

Where channels are needed, they should be formed in the base and lined with appropriate material. It is recommended that falls of not less than 1 in 60 should be provided both over the general floor area and in channels (see detail 9).

Where a mastic asphalt is an underlay to ceramic tiling or similar pavings, and surface drainage is required, it is essential that the gullies are located at the level of the mastic asphalt waterproofing. An adequate number of outlets should be provided, of a type suitable for use in conjunction with mastic asphalt.

Special applications

General

Where particular conditions have to be met and where mastic asphalt conforming to Type F1076 of BS 6925 does not fulfil certain specific requirements, special proprietary grades of mastic asphalt should be used.

Chemical and acid resistant flooring

Grades of mastic asphalt manufactured with limestone aggregate will be readily attacked by acids. Each situation should be considered individually and the fullest technical information obtained, including the nature and concentration of the liquors, the degree of spillage expected and the temperatures involved.

The majority of solvents will attack mastic asphalt. Table 3 gives guidance on the suitability of mastic asphalt for use in contact with common substances. If the substance in question is not listed in this table, advice should be sought from the mastic asphalt manufacturer.