May 2019

A Specifier's Design Guide for Mastic Asphalt Flooring

Hard Wearing Flooring Solutions:
From Heavy Industrial to Light Domestic Applications

IKO

Flooring

Introduction

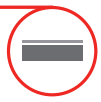
Mastic asphalt floors are manufactured to achieve performance characteristics from light domestic use through to heavy industrial duty. They can be the final finish or used as an underlay for tiles, carpeting, etc.

Mastic asphalt floors provide a hard wearing, durable surface which act as a damp-proof membrane. Once fully cooled they can take traffic immediately.

Mastic asphalt floors are normally laid with a matt or natural float finish.

Index

Bases



Most forms of solid construction will provide a suitable base for IKO Flooring Asphalts.

Concrete

Concrete surfaces, free from cracks or indentation, provide an excellent base for the application of flooring asphalt. They should be designed and constructed in accordance with the recommendations in BS 8204: Part 1. In the case of uneven concrete, a levelling coat of asphalt or sand cement screed may be necessary.

Concrete Beams and Hollow Tiles

If the mastic asphalt flooring is installed on a base consisting of precast concrete beams, hollow beams or hollow tiles, a sand and cement screed - designed in accordance with BS 8204: part 1 - may be required.

Stone Flags, Quarry Tiles or Brick Floors

Old floors of these types can form a good base to install asphalt flooring. However, it may be necessary to provide a levelling coat of asphalt to take up irregularities in the surface.

Timber Boarding

Asphalt can be laid over timber boarded floors providing the structure is free from deflection. Minor deflection can be catered for by the inclusion of a 10mm cushion coat of roofing or tanking asphalt. In all cases, a separating membrane of black sheathing felt is required.

Metal Floors

After the surface has been prepared, a thin coat of bituminous primer must be applied. The asphalt is laid directly without using a separating membrane and to compensate for deflection, a 10mm roofing or tanking layer should be specified as a cushion coat.

Separating Membrane

The purpose of a Black Sheathing Felt or Glass Fibre Tissue 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.

The separating membrane is laid loose with 50mm laps. Correct selection of the separating membrane is very important and further information can be found under 'Typical Specifications' section on page 7.

Types of Mastic Asphalt Flooring

Mastic asphalt provides a hard wearing flooring solution for heavy industrial to light domestic applications. IKO's Mastic Asphalt Flooring grades (IKO Floorstar) are manufactured to the requirements set out in the British Standard specification.

IKO Floorstar is available in four grades; light, medium, heavy duty and special hard providing the freedom and versatility to cover most flooring requirements.

Standard Grades

IKO Systems	Waterproofing	British Standard	Ideal for use in the following	Product Code	Page
Special Hard	Floorstar S	BS 6925: 1988 Type F 1076/2/1	• Hospital wards • Schools • Shop floors to take movable racks • Offices • Domestic floors • Showrooms	42000000	7
Light Duty	Floorstar L	BS 6925: 1988 Type F 1076/2/11/B	• Underlays for other floor coverings • Schools • Shop floors to take movable racks • Light assembly factory floors (foot traffic only) • Domestic floors	42010000	8
Medium Duty	Floorstar M	BS 6925: 1988 Type F 1076/2/111/B	• Medium duty industrial factory floors • Heavily foot-trafficked floors • Hospital corridors • Heated sports halls • Car showrooms	42170000	8
Heavy Duty	Floorstar H	BS 6925: 1988 Type F 1076/2/1V/B	• Heavy duty industrial factory floors • Internal loading sheds • Breweries	42080000	9

Flooring for Unheated Buildings

For unheated buildings or buildings that are subject to rapid temperature changes (e.g. sports halls and warehouses), special flooring/paving grades are available which are less sensitive to temperature variations.

Additional system options and guarantee levels are available.
Contact your local IKO Business Manager for further information.

Mastic Asphalt Flooring

The application of mastic asphalt flooring should be carried out in accordance with the recommendations of BS 8204: Part 5. Mastic Asphalt Underlays and Wearing Surfaces - Code of Practice.

Application of Mastic Asphalt Flooring

Preparation

If the asphalt is delivered in blocks and melted down on site any additional coarse aggregate is incorporated at this stage. Alternatively the asphalt can be delivered molten in a hot charge transporter in which case any coarse aggregate is incorporated during manufacture.

Laying

The area to be covered is divided into bays of convenient size. The molten asphalt is then spread by means of a wooden float. Timber or metal gauges are used to obtain the required thickness.

Asphalt flooring is normally laid in one coat and special care is taken in effecting junctions between bays to provide a smooth and even surface. For suspended floors where wet processes occur, two coats are normally necessary - the first coat being an underlay of roofing or tanking asphalt. (See page 9 Suspended Floors).

Falls to Clear Water

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

Protection of the surface

The floor should not be subjected to traffic until the mastic asphalt has cooled to ambient temperature. The finished asphalt surface should be protected against damage from following trades and special care should be taken to avoid spillage of solvents, diesel fuel or paints.

Concrete, mortar, cement grout or plaster should not be mixed directly on the flooring.

Design Requirements

To ensure accurate tendering, the following information should be provided by the specifier:

I. Type of floor that the mastic asphalt will be put on and the nature of traffic.

II. Loaded weight of any trolleys, stating size of wheels and type of tyre.

III. Maximum weight of standing loads and area of contact with floor.

IV. Details of any acids, other chemicals, greases, oils or solutions, including concentration and temperature, which may come into contact with the floor.

V. Ambient temperature range within the building.

This is particularly relevant on suspended floor applications where the slab may attain a relatively high temperature.

Mastic asphalt is a thermoplastic material. Its resistance to indentation will be reduced when the temperature increases. As they are liable to be damaged at very low temperatures, flooring grades should never be laid externally.

VI. Details of floor finishes e.g. non-slip surface etc.

VII. Any falls or drainage facilities required.

VIII. Details of applied finishes and adhesives.

IX. Details of fixtures and fittings, particularly where these penetrate the asphalt.

For advice on individual specifications, please contact Technical Services on 01257 256 888.

Typical Specifications

The following information helps the specifier to select the correct grade of mastic asphalt flooring and the appropriate type of separating membrane.

Special Hard - IKO Floorstar S

Product code 42000000
BS 6925: 1988
Type F 1076/2/1

Suitable for the following

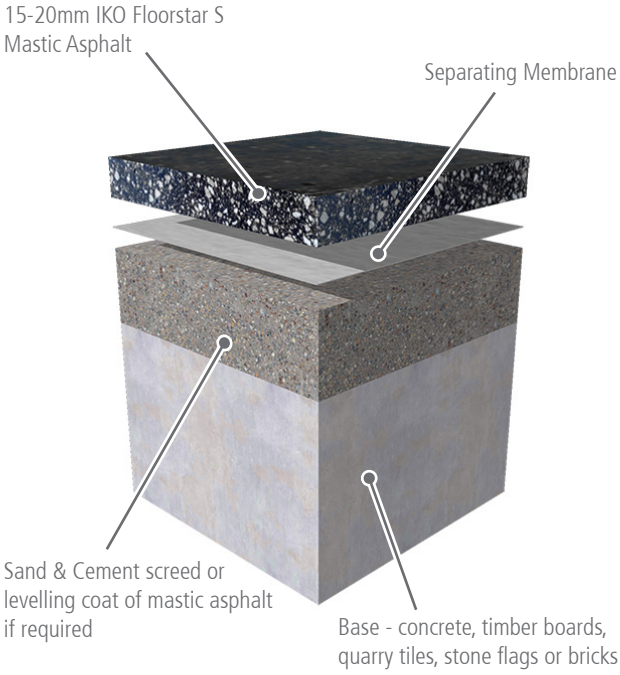
- Hospital wards (see note 1)
- Schools (see note 1)
- Shop floors to take movable racks (see note 1)
- Offices (see note 1)
- Domestic floors (see note 1)
- Showrooms (see note 2)

Note 1. For domestic floors mastic asphalt flooring may be used as a finished floor but as it is affected by fats, grease and vegetable oils it is intended only as an underlay to vinyl, tiles etc. in kitchens.

Note 2. For commercial showrooms subject to rapid changes of temperature (e.g. areas with large sliding doors), it is important that the specifier should contact Technical Services.

Note 3. The surface can either be sand-rubbed or natural float finished.

Specify IKO Floorstar S be installed in one 15-20mm thickness coat.



Base*	Separating Membrane
Concrete to BS8204 Part 1 with DPC below	Black sheathing felt or glass fibre tissue
Concrete to BS8204 Part 1 without DPC below	Glass fibre tissue
Timber boards (free from deflection)	Black sheathing felt
Quarry tiles, stone flags and bricks laid direct to earth	Glass fibre tissue

* A levelling coat of mastic asphalt may be required or a sand/cement screed.

Recommended Application Practices

To ensure accurate tendering, the following information should be provided by the specifier:

I. The base to receive the asphalt must be sound and of a sufficiently even and accurate finish to permit the laying of the asphalt to constant thickness without 'bridging'.

II. Special Hard grades are more susceptible to the effects of thermal shock and must not be laid in open or unheated buildings when the ambient temperature is below 10°C or likely to fall below this value subsequent to installation. Rapid or uneven cooling caused by draughts of air from external openings must be avoided.

III. Where the installation area requires multiple bays, these should be laid alternately to minimise the area of flooring cooling at any one time. In such cases, the remaining bays should not be laid until the contiguous ones have cooled to an ambient temperature.

IV. The laying should be planned so that the asphalt is not pinned in any way during the cooling period. Pinning is likely to occur at door thresholds and changes in wall direction that give an internal angle to the asphalt, or around stanchions, pipes, machine bases, etc.

Appropriately positioned battens, set slightly away from the vertical surface involved, will allow free movement of the asphalt at these points. The asphalting should be completed after the battens are removed.

Technical Services can advise on any situation not represented in the following pages, please contact on 01257 256 888.

Typical Specifications

The following information helps the specifier to select the correct grade of mastic asphalt flooring and the appropriate type of separating membrane.

Light Duty - IKO Floorstar L

Product code 42010000
BS 6925: 1988
Type F 1076/2/11/B

Suitable for the following

- Underlays for other floor coverings
- Schools
- Shop floors to take fixed racks
- Light assembly factory floors (foot traffic only)
- Domestic floors

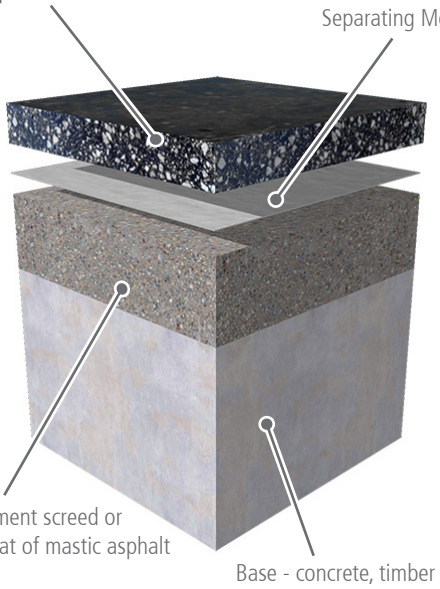
Note. If the flooring is installed in open or unheated buildings during the winter months or the temperature is expected to drop below 10°C, the use of IKO Floorstar L is accepted for domestic use, but its reduced resistance to indentation must be recognised.

Specify IKO Floorstar L be installed in one 15-20mm thickness coat.

Base*	Separating Membrane
Concrete to BS8204 Part 1 with DPC below	Black sheathing felt or glass fibre tissue
Concrete to BS8204 Part 1 without DPC below	Glass fibre tissue
Timber boards (free from deflection)	Black sheathing felt
Quarry tiles, stone flags and bricks laid direct to earth	Glass fibre tissue

* A levelling coat of mastic asphalt may be required or a sand/cement screed.

15-20mm IKO Floorstar L Mastic Asphalt



Medium Duty - IKO Floorstar M

Product code 42170000
BS 6925: 1988
Type F 1076/2/111/B

Suitable for the following

- Medium duty industrial factory floors (see note)
- Heavily foot-trafficked floors
- Hospital corridors
- Heated sports halls
- Car showrooms (consultation with IKO Asphalt Technical Team essential)

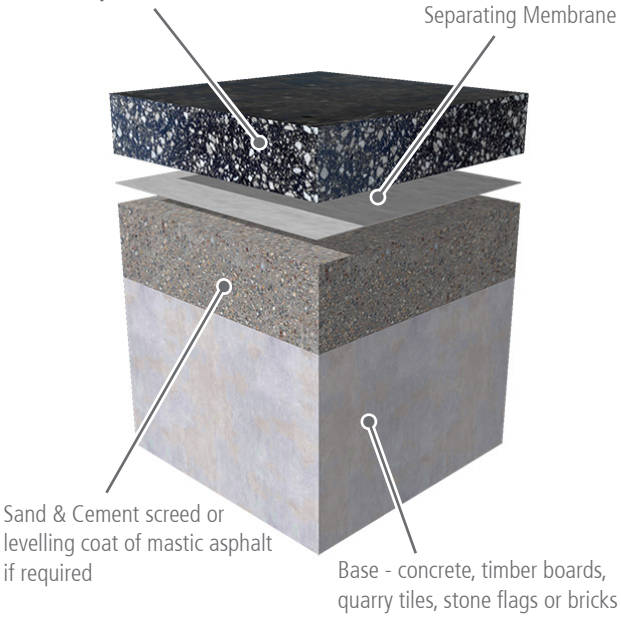
Note. The term 'medium industrial' indicates its suitability for continuous foot-trafficked floors, light hand trucks and trolleys. The surface can either be sandrubbed or natural float finished.

Specify IKO Floorstar M be installed in one 20-30mm thickness coat.

Base*	Separating Membrane
Concrete to BS8204 Part 1 with DPC below	Glass fibre tissue
Concrete to BS8204 Part 1 without DPC below	Glass fibre tissue
Timber boards (free from deflection)	Black sheathing felt with 10mm IKO Roofstar Underlay
Quarry tiles, stone flags and bricks laid direct to earth	Glass fibre tissue

* For industrial buildings, the base should be checked for load bearing strength.

20-30mm IKO Floorstar M Mastic Asphalt



Heavy Duty - IKO Floorstar H

Product code 42080000
BS 6925: 1988
Type F 1076/2/1V/B

Suitable for the following

- Heavy duty industrial factory floors (see note 1)
- Internal loading sheds
- Breweries (see note 2)

Note 1. The term 'heavy industrial' refers to floors subjected to mechanical trucks, trolleys, severe abrasion, heavy standing loads and floors subjected to impact. IKO Floorstar H is ideal for situations such as heavy engineering works, warehouses and most types of factory premises. The surface of the mastic asphalt flooring is usually sand rubbed to give a non-slip finish.

Note 2. As many varying conditions are present in breweries, such as rapid temperature changes, or washing with acidic detergent etc., contact Technical Services..

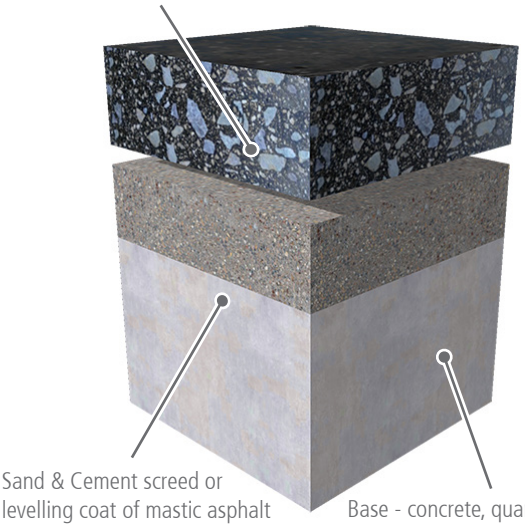
Specify IKO Floorstar H be installed in one 30-50mm thickness coat.

Base*	Separating Membrane
Concrete to BS8204 Part 1 with/without DPC below	Installed direct to base without membrane
Concrete if contaminated or cracked, or suspended for wet process	Glass fibre tissue (consult technical services)

* It is essential that the base the mastic asphalt is laid on should have adequate load bearing strength.

IKO FLOORSTAR H grades are designed to have 6mm coarse aggregate incorporated to from 30-40% of the mastic as laid according to thickness. In the case of block deliveries, this is incorporated during re-melting on site. In the case of hot charge deliveries, it is incorporated at the factory.

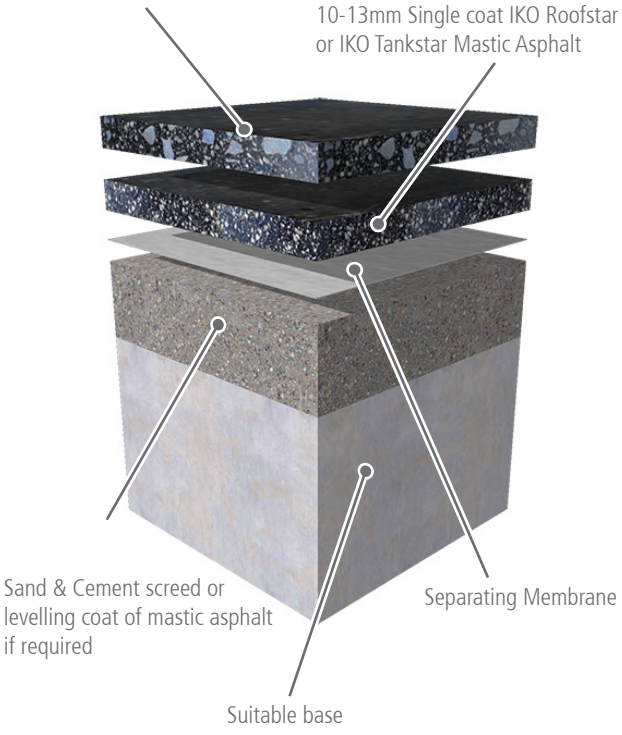
30-50mm IKO Floorstar H
Mastic Asphalt - sand rubbed



Suspended Floors - Wet Process

For special requirements such as suspended floors where a wet process is used, two coats are normally necessary. The first coat should be installed as a 10-13mm thick waterproof membrane (IKO Roofstar or IKO Tankstar) and depending on the type of traffic; the wearing surface can be IKO Floorstar S, L, M or H.

IKO Floorstar S, L, M or H
Mastic Asphalt

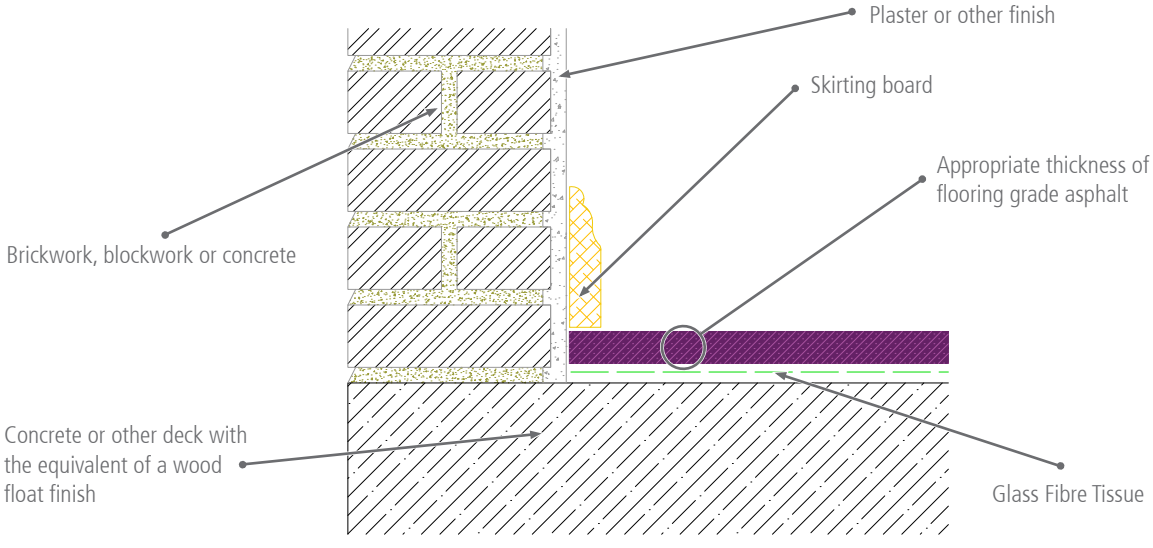


For advice on individual specifications, please contact Technical Services on 01257 256 888.

Typical Detail - Skirtings

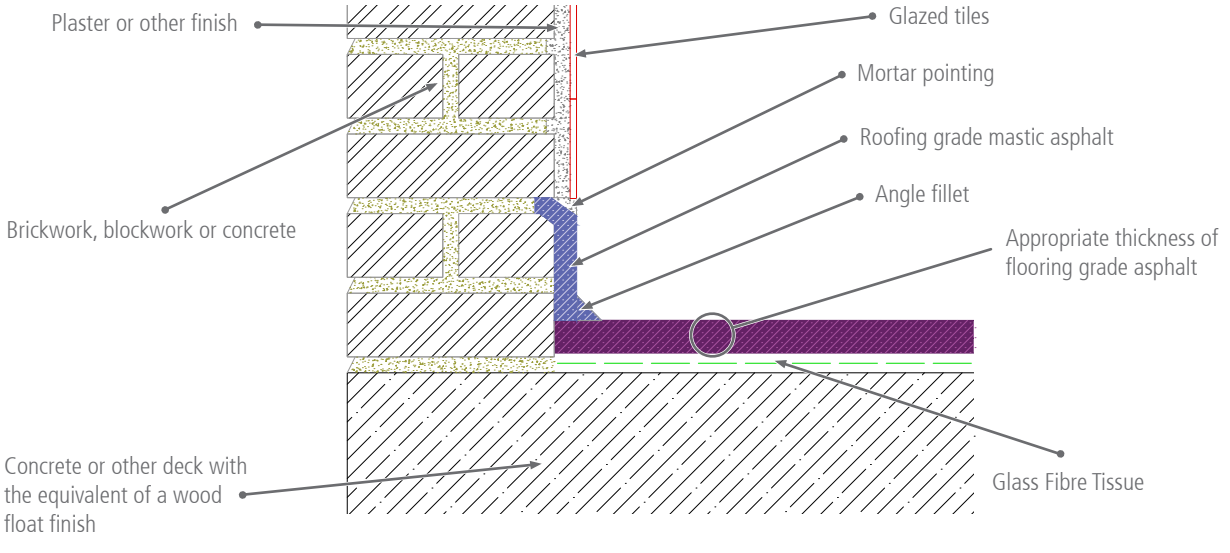
Asphalt Flooring with Skirting Board

The most commonly encountered detail is shown below.



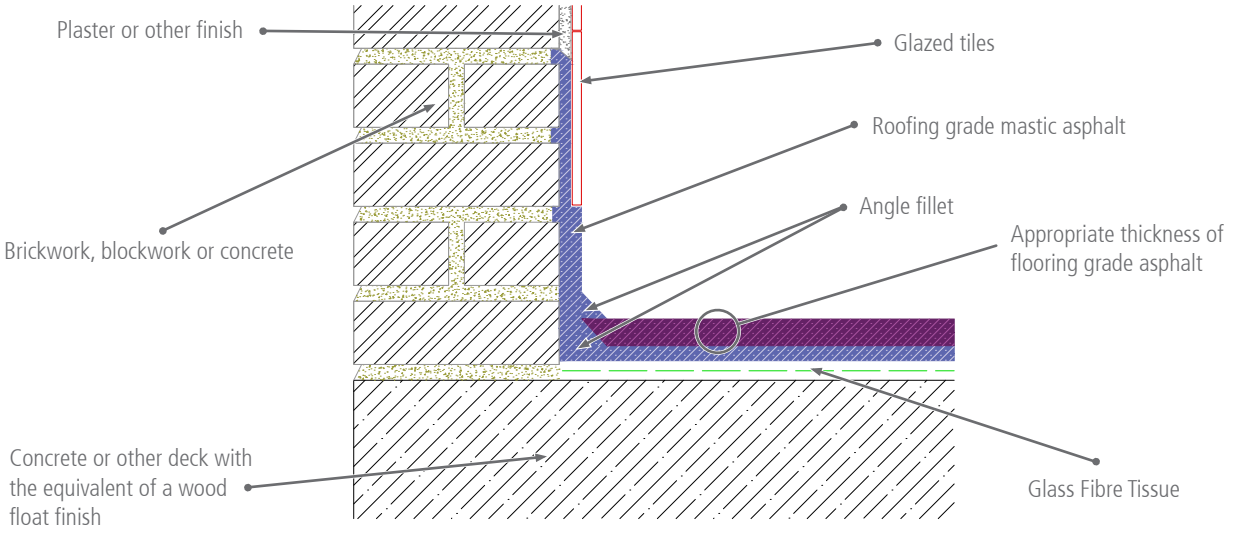
Asphalt Skirting to Tiled Wall

Asphalt skirtings are normally formed in roofing asphalt with a 2 coat angle fillet at the base. The detail illustrated below is suitable for areas subject to occasional washing.



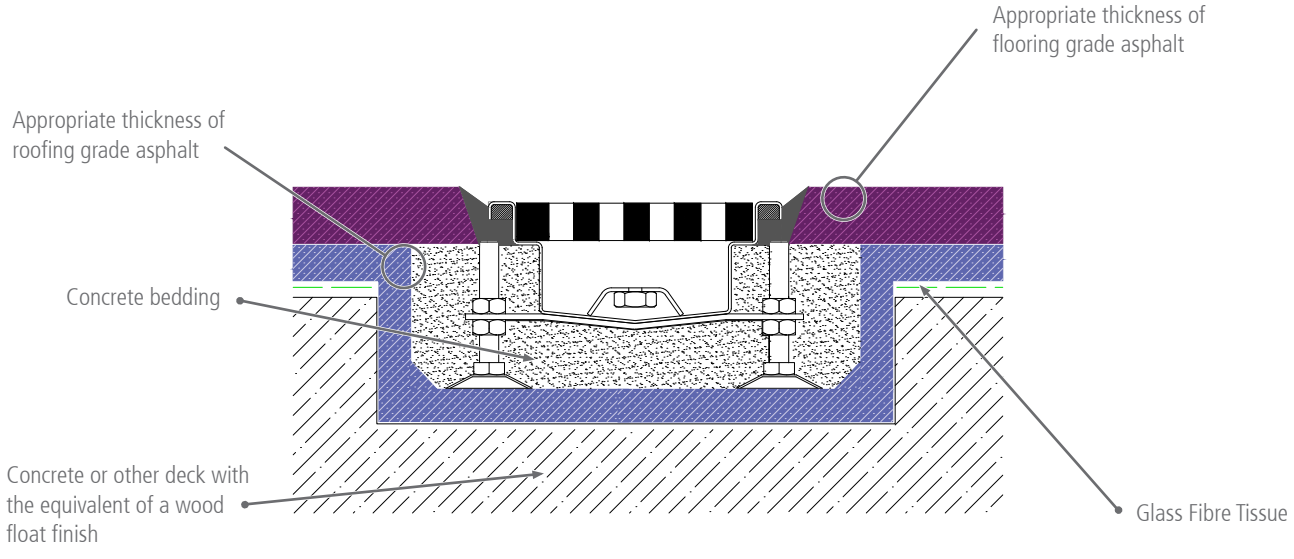
Asphalt Flooring to Shower Baths

For areas subject to concentrated exposure to water (e.g. shower baths) the following details apply. Treads and risers can be formed in asphalt or with nonslip tiles and tile risers. When the tiles are used, it is recommended that an underlay of roofing or tanking asphalt should be applied before the tiles are fixed.



Asphalt to Flooring Channels with Metal Gratings

Where wet process or regular cleaning of the floor is a user requirement it is essential that careful consideration must be given to the provision of adequate falls to channels and gullies to prevent ponding. A linier drain would be used to allow continuation of the asphalt waterproofing while providing satisfactory drainage.



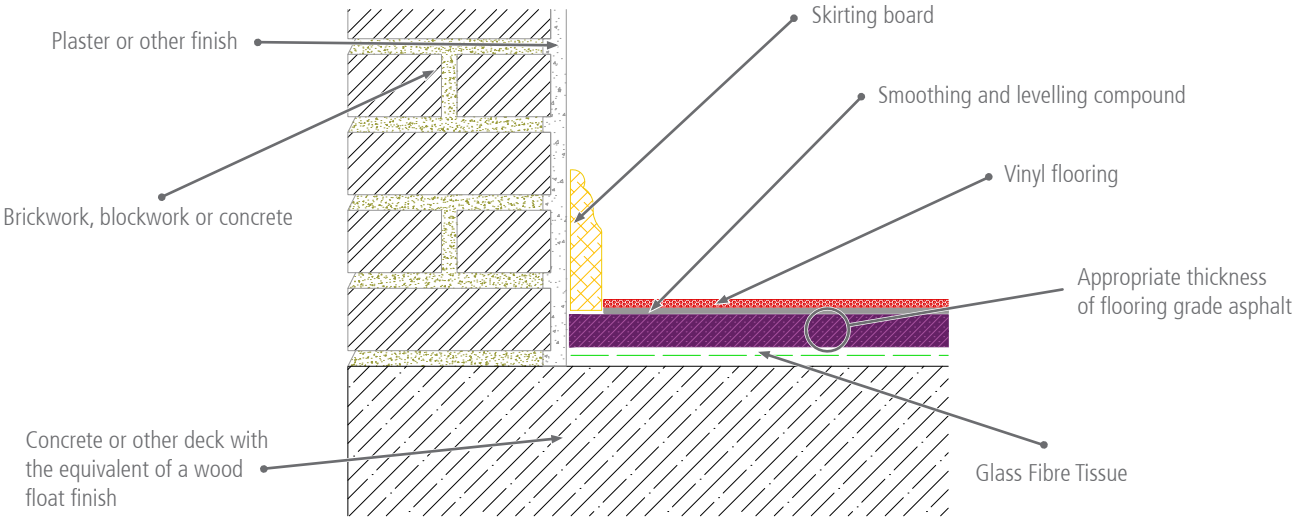
Typical Detail - Decorative Floor Finishes

Asphalt Flooring with Decorative Sheet or Tile Finish and Skirting Board

IKO Floorstar L and S are often used as underlays for carpets, tiles, woodblock, thin vinyl sheeting and cork etc.

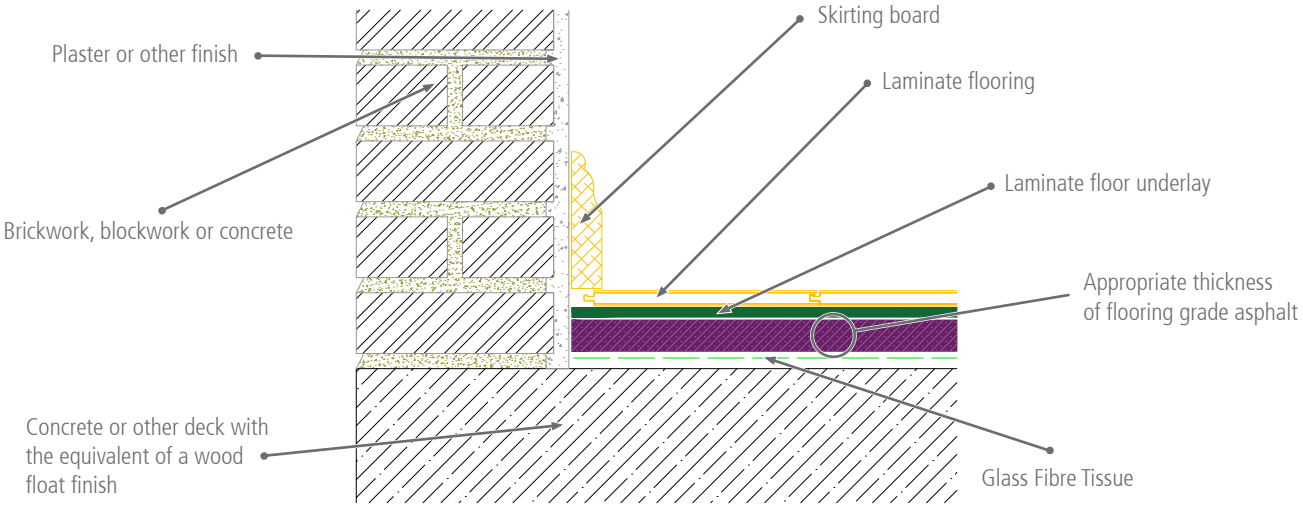
One of the main advantages of using IKO Floorstar as an underlay is that the desired floor finish may be laid within a few hours of mastic asphalt installation, eliminating waiting time for the floor screed and concrete floor to dry out.

This is a great advantage for refurbishment projects as it is possible to install mastic asphalt on one day and complete the final floor finish on the next, causing minimum disturbance to the building occupiers.



Asphalt to Flooring Overlaid with Wood Blocks

As varying conditions of humidity frequently affect cork and woodblocks, close collaboration between the cork or woodblock supplier and the mastic asphalt contractor should be established when these materials are used as floor finishes.



Typical Detail - Decorative Floor Adhesives

It is important to use manufacturer's recommended adhesive for the floor finish material as the adhesive needs to be compatible with mastic asphalt flooring when applied direct. Any new adhesives should be made sure that they are suitable for use in conjunction with mastic asphalt. A latex screed may be required between the asphalt flooring and the final floor finish.

Repairs and Maintenance

The following information provides guidance on how to maintain mastic asphalt floors and the key considerations to take into account when designing floors with movement joints

Movement Joints

If the base where asphalt is applied on consists of movement joints, some allowance should be made. Movement joints should not be located at low points of falls or near the gullies or channels if the floor will be cleaned by washing down or exposed to excess water.

If a proprietary movement joint system is used, it is essential to ensure that it is capable of handling the expected type of traffic and degree of movement. The joint system must be compatible with mastic asphalt and a secure and watertight joint should be made between the movement joint and the combined mastic asphalt waterproofing and flooring.

Where joints in the concrete base or screed are liable to move they should be carried through the base, screed and the mastic asphalt to the floor surface via a proprietary movement joint profile. These vary in depth and thickness.

Movement joint profiles should also be used between mastic asphalt and other types of flooring, and centrally over supporting beams and walls of suspended floors.

Maintaining your IKO Mastic Asphalt Flooring

A mastic asphalt flooring requires regular attention to obtain the maximum service and maintain the best decorative effects. The user should follow the advice of the asphalt manufacturer or a reliable flooring contractor to select the suitable cleaning agents and polishes for the maintenance of the floor finish. Polishes should be of the emulsion type, free from solvents. Polishes containing wax in a paste form with a solvent should not be used.

Superficial dirt can normally be removed by washing or scrubbing with warm water and suitable detergents. Where there is much dirt on the flooring, the addition of a small quantity of washing soda to the warm water may be desirable. After the dirt has been removed, the floor should be mopped with clean water. It is essential that all oils, fats and greases must be removed as soon as possible.

When hosing down, a constant water temperature should be maintained with the water temperature not exceeding 40°C.

All repair work to a mastic asphalt surface must be performed by a specialist mastic asphalt contractor. If it is necessary to remove an area of mastic asphalt, the line of the cuts should be covered with molten mastic asphalt until the underlying material has softened. The asphalt should not be removed until this has taken place. In no circumstances should a hammer and chisel be used to cut cold mastic asphalt. An angle grinder may, however, be used as an alternative.

Odour

Mastic Asphalt Flooring is odourless after laying.

Table of Weights (approximate)

The table below gives guidance on the weight of mastic asphalt flooring at different laid thicknesses together with approximate rate of coverage per tonne of material.

Asphalt Thickness	Kg/m²	M² per Tonne
10mm	22	40
13mm	29	32
15mm	33	27
20mm	44	20
25mm	55	16
30mm	66	13
40mm	88	10

Vapour Resistivity

The vapour resistivity of mastic asphalt flooring is very high and can be assumed to be not less than 100,000 MN/g. Complies with BRE Report BR414-Protective measures for housing on contaminated land. Additionally mastic asphalt is listed as an approved Radon barrier in BRE Report BR211 (1999 edition) Radon: Protective Measures for New Buildings.

Biological Attack

Mastic Asphalt Flooring is vermin proof and rot proof.

Resistance to Water

Mastic asphalt roofing is impervious to water.

Biological Attack

Mastic asphalt roofing is vermin-proof and rot-proof.

Toxicity

Mastic asphalt is non-toxic and does not contain tar.

Disposal

Mastic Asphalt manufactured by IKO can be categorised as 'non-hazardous' using the Hazardous Waste Assessment Methodology.

Category No. 17 03 02 'bituminous mixture not containing coal tar and tarred products'. - Hazardous. Waste Directive (HWD, Council Directive 91/689/EC).

Recycling

Mastic asphalt can be fully recycled.

UK Manufactured

IKO PLC have been manufacturing British made products for over 130 years and continue to invest in UK manufacturing; developing and producing new products to service market demand directly from the various manufacturing plants here in the UK. Manufacturing in the UK comes with a number of excellent benefits, for example, quality control, speed of response and answer to market requirements and decreased CO_2 emissions from transportation.

IKO PLC

Prospect Quarry
Grangemill
Matlock
Derbyshire DE4 4BW
www.ikogroup.co.uk

Sales Support

t: 01257 256 865

f: 01257 251 855
sales.uk@iko.com

Technical Services

t: 01257 256 888

technical.uk@iko.com

Member of the IKO Group

May 2019