

## SOLAR PROTECTION

Various methods of reducing solar gain may be adopted, and should follow the laying of the mastic asphalt without undue delay.

In a warm roof construction it is essential to provide efficient solar protection to the mastic asphalt which should be applied as soon as possible after the mastic asphalt has been laid.

On horizontal surfaces this should be by the application of one of the following:

- a) Stone chippings of limestone, granite, gravel, calcined flint, calcite, feldspar or similar of 10-14mm nominal size, free from dust, bedded in a suitable compound
- b) Stone aggregate of 20mm nominal size, loose laid, but secured around outlets etc.
- c) Porous concrete tiles bedded in hot bitumen
- d) Light coloured pedestrian tiles bedded in a compound in accordance with tile manufacturers' recommendations particularly when continuous foot traffic is expected
- e) Concrete paving slabs bedded in cement, sand, mortar on a loose laid isolating membrane
- f) Solar reflective paint, applied in accordance with manufacturer's recommendations.

On horizontal surfaces it is recommended that items a), b), c), d) or e) are used. However, if a solar reflective coating in accordance with item f) is preferred, maintenance will be necessary in accordance with the paint manufacturer's requirements.

## COLD ROOF CONSTRUCTION

On a cold deck terrace/balcony roof where point loading is anticipated, a suitable tile should be laid in accordance with manufacturer's instructions. Alternatively, other forms of paving may be laid in a cementitious bedding on an isolating membrane.

## VERTICAL AND SLOPING SURFACES

On vertical and sloping surfaces, exposed upstands, kerbs etc. a suitable solar reflective paint may be used.

### Detail considerations

#### GENERAL

Whilst ponding is not detrimental to the life of mastic asphalt it is generally desirable that falls are incorporated in flat roofs to assist in the discharge of rainwater and to minimise ponding.

All flat roof surfaces should be laid to cross falls and/or falls to ensure proper drainage as recommended in BS 6229:1982. Rainwater outlets should be sited at low points in the general roof area well clear of other penetrations, where possible.

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## MOVEMENT JOINTS

It is normally only necessary to provide movement joints in a mastic asphalt roof membrane where one is provided in the structure. High point of the falls should always be located at any movement joints.

Where it is considered necessary to provide movement joints in the roof structure, these should be of the twin kerb type with a suitable metal or butyl rubber capping.

Flush movement joints in mastic asphalt should be avoided where possible. Where they are unavoidable, care should be taken to ensure that a secure bond can be made between the joint and the roof covering.

The roof deck on either side of the movement joint should be adequately stiffened to avoid excessive differential deflection. The movement joints should be continuous through vertical upstands, walls and edges of buildings.

If a proprietary flush movement joint is used on car park or pedestrian walkways/terraces, ensure that it is capable of accepting the expected type of traffic and degree of movement, that its materials are compatible with mastic asphalt and that secure joint can be made between it and the mastic asphalt, in accordance with the expansion joint manufacturer's recommendations.

## KEYING TO VERTICAL SURFACES

### KEYING TO VERTICAL AND SLOPING CONCRETE SURFACES

Where smooth formwork has been used, the laitance, or any release agent from the formwork, should be removed by needle gun, wire brushing or other suitable mechanical means. Prior to asphaltting, the prepared surface should be treated with an application of high-bond primer in accordance with the manufacturer's instructions.

Alternatively, expanded metal lathing fixed to smooth concrete may be used to provide the necessary key. However, this is not a preferred option.

On lightweight aggregate concrete and lightweight concrete blockwork, mechanically fixed expanded metal lathing, on sheathing felt, should be used to provide the necessary key (see Table 1).

### KEYING TO BRICKWORK SURFACES

The horizontal joints in brickwork should be flush pointed and the brickwork treated with an application of high-bond primer in accordance with the manufacturer's instructions.

Engineering bricks do not provide an adequate key for mastic asphalt and should only be used in association with an application of high-bond primer to manufacturer's instructions and mechanically fixed expanded metal lathing (see Table 1).

Where mastic asphalt is to be applied to old brickwork, the surface should be cleaned and high-bond primer applied.

Where blistering or loss of bond is encountered the use of sheathing felt and expanded metal lathing, mechanically fixed at not greater than 150mm centres, should be considered.

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## KEYING TO STONEMWORK SURFACES

The type of key required depends entirely on the kind of stone and on the type of stonework. The surface of the stone, where possible, should be lightly roughened in order to provide a suitable key, or the use of high-bond primer should be considered.

## KEYING TO TIMBER SURFACES

To provide an adequate key for mastic asphalt laid on vertical timber surfaces and those of slope greater than 10°, and also at junctions formed with such surfaces, a continuous layer of metal lathing should be securely fixed by means of nails or staples. The expanded metal lathing should be fixed over the sheathing felt at maximum 150mm centres in all directions.

## KEYING TO METAL SURFACES

All metal surfaces such as pipes, metal standards etc. should be treated with high-bond primer in accordance with the manufacturer's instructions. Alternatively, expanded metal lathing, strapped or spot welded, may be used to provide the necessary key.

Where pipes penetrate timber, metal or wood wool roof decks, or where pipes carry hot materials or require to be isolated, an appropriate sleeve should be provided in order to isolate the mastic asphalt from the pipe.

**Table I**

Treatments for vertical and sloping surfaces to receive mastic asphalt

<b>TREATMENT</b>	
BLACK SHEATHING FELT	1
BITUMEN COATED EXPANDED METAL LATHING	2
HIGH-BOND PRIMER	3
MECHANICALLY PREPARED SURFACE	4

  

<b>SURFACE</b>	<b>TREATMENT REQUIRED</b>
FACING BRICKS (FLUSH POINTED)	3
ENGINEERING BRICKS (FLUSH POINTED)	3 AND 2
TIMBER	1 AND 2
SMOOTH CONCRETE (ALTERNATIVE 1)	4 AND 3
SMOOTH CONCRETE (ALTERNATIVE 2)	3 AND 2
TEXTURED CONCRETE (COARSE AGGREGATE)	3
LIGHTWEIGHT AGGREGATE CONCRETE	1 AND 2
LIGHTWEIGHT AGGREGATE BRICKWORK	1 AND 2
METAL PIPES AND THE LIKE (ALTERNATIVE 1)	3
METAL PIPES AND THE LIKE (ALTERNATIVE 2)	3 AND 2

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## SKIRTINGS TO BRICKWORK AND CONCRETE

Skirtings should be tucked into a chase or groove at the top edge, and should be a minimum 150mm above all roof finishes. Skirtings should be applied in two coats to a thickness of 13mm.

Skirtings over 300mm are regarded as vertical work and should be applied in three coats to a thickness 20mm.

On old or irregular brickwork or blockwork it is usually necessary for the skirtings to be applied in three coats, the first coat being a 'dubbing out' coat to correct irregularities in the wall followed by the standard two coat work. The total thickness should be between 15mm and 20mm. Cement and sand render can be used as an alternative for 'dubbing out' to correct irregularities. Particular care should be taken to ensure proper adhesion of the first coat of mastic asphalt. The exposed uppermost part of the mastic asphalt skirting should be formed with a splay to shed rainwater, even though a metal flashing may be fixed to cover the exposed part. A splayed arris is formed when mastic asphalt is continued through the wall to form a horizontal damp-proof course.

## FILLETS

Fillets should be formed with a solid angle of roofing grade mastic asphalt, in two coats, with a minimum of 40mm on the face, at approximately 45°.

## CHASES

Chases should be provided in brickwork and concrete and should be 25mm x 25mm. The lower nib of the chase should be carefully removed in order to maintain a full thickness of mastic asphalt at this point. The chase should be pointed as soon as practical after asphaltting using cement, sand and mortar containing a suitable polymer admixture such as styrene butadiene rubber or acrylic.

## MARGIN INFILL

In a warm roof construction a minimum 25mm margin should be created between the edges of the thermal insulation boards and the skirting/upstands. The margin should be solidly filled to provide support to the skirting and angle fillet, and to eliminate voids at these junctions.

With a majority of thermal insulation materials, the margin should be infilled with mastic asphalt. However, where temperature susceptible materials are used, an earth damp cement, sand mix should be used.

Where substantial thicknesses of thermal insulation boards are used, the width of the margin should be increased as necessary to ensure that a solid infill is achieved.

## VERGES

### EDGE TRIMS

Suitable preformed roof edge trims may be applied at edges of roofs, using a section designed for use with mastic asphalt. Materials adversely affected by thermal movement should be avoided.

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## UNDERCUT DRIP

A mastic asphalt apron with an undercut drip may be provided on masonry constructions, the mastic asphalt being applied in two coats to a thickness of 13mm.

## EAVES GUTTERS

Where the roof falls into an eaves gutter, the asphalt should be finished over a lead or other suitable flashing set into a rebate in the substructure. The flashings should be welted at the back and the depth of rebate should allow for the full thickness of mastic asphalt to be maintained over the welt. Pre-formed edge trims would not normally be used at this detail.

A lead detail should be designed and installed in accordance with The Lead Sheet Manual, Volume I, Lead Sheet Flashings.

## FIXING ACCESSORIES

### RAINWATER OUTLETS

Rainwater outlets should be no higher than the immediate surrounding finish and be mechanically secured to prevent movement. Adequate provision should be made for surface water run-off before the waterproof membrane is completed.

The type of outlet used should be suitable for use in conjunction with mastic asphalt.

### ROOF VENTS

Roof vents may be specified to assist the drying process of lightweight cementitious screeds although reliance should not be placed on them (see BS 6229:1982)

## Site work

### PREPARATORY SITE WORK PRIOR TO ASPHALTING

Before commencing laying the mastic asphalt, the following should be checked:

- a) The base has been properly laid to the specified falls, tolerances and finishes, the equivalent of a wood float finish being required on horizontal concrete screeds or slab
- b) All chases have been properly cut
- c) All outlets have been installed, fixed and located at the correct height relative to the base
- d) Vertical surfaces have been properly prepared
- e) Movement joints have been correctly installed.

### ACHIEVING REQUIRED QUALITY OF WORK

In order to achieve the required quality of work, steps should be taken to ensure that:

- a) Design and specification decisions are taken, recorded and transmitted by the designer
- b) The design intentions are understood and achievable in the given circumstances
- c) The work is regularly monitored to assure conformance.

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