

# TECHNICAL INFORMATION

## HERITAGE LIME SAND MORTARS

### Product Data Sheet No. 100/04

#### INTRODUCTION

Tarmac Heritage Lime Sand Mortars are factory produced Lime:sand mortars for use in masonry to provide a worn, weathered, historic or traditional open textured mortar joint. The lime content of heritage mix is high and is historically appropriate as lime was commonly employed on traditional masonry prior to the introduction of Portland Cement. Heritage LSM Mortar is proportioned at approximately 1:3 Lime Sand.

Tarmac Heritage Lime Sand Mortars are not intended to be used without cement. The mixes must therefore be gauged and mixed with the appropriate type and quality of cement before use.

Tarmac Heritage Lime Sand Mortars are available from plants situated throughout mainland United Kingdom and are available in bulk or bagged form. Heritage LSM mortars are available in coloured form, in which case controlled amounts of pigments are added and these are carefully selected and guaranteed against fading.

Tarmac Heritage Lime Sand Mortars conform to and are tested using the methods in BS 4551. Heritage Lime Sand Mortars should be used in accordance with the recommendations in the Eurocode 6, BS EN 1996, BS EN 13914 and BS 8481

Where Heritage Lime Sand Mortars are required in coloured form, the pigments used by Tarmac not only conform to BS EN 12878, but also consist exclusively of synthetic iron oxides which are guaranteed against fading. Carbon black is not included in any of the pigments used by Tarmac.

#### DESCRIPTION

##### COMPOSITION AND MANUFACTURE

Tarmac Heritage Lime Sand Mortars are factory produced using quality lime and fine aggregate (sand) of appropriate grading, normally with the inclusion of an air entraining admixture to improve working properties and durability.

Factory mixing of pigment into Heritage Lime Sand Coloured Mortars ensures controlled and even dispersion which would be very difficult to achieve with site additions.

Heritage Lime Sand Mortars are supplied in bulk tippers, bulk bags and standard bags to two different mix specification ready for gauging on site with cement as appropriate.

##### DENSITY

Typical test results	Density kg/m <sup>3</sup>
Without Air Entrainment	1850 – 2000
With Air Entrainment	1700 – 1850

\* All figures are based on the LSM when correctly gauged and mixed with cement.

##### PERFORMANCE

We would recommend you consider gauging 9 or 10 parts Heritage Mortar to 1 part OPC or white cement, though this can depend on degrees of exposure and the environment.

This gauging affords the material a degree of early strength without detracting from the essential benefits of a lime rich mortar.

For more details contact:  
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The information given in this technical data sheet is based on our current knowledge and is intended to provide general notes on our products and their uses. Tarmac endeavour to ensure that the information given is accurate, but accept no liability for its use or its suitability for particular application because of the product being used by the third party without our supervision. Any existing intellectual property right must be observed.

## MIX TYPES

There are two different Heritage Lime Sand Mortars available from Tarmac.

Type	Heritage LSM	Heritage LSM Extra
% Particle size distribution between 2 – 4mm	10%	20%

\* Typical values, dependant on the specification of the local sands available

## FIRE PROTECTION

Tarmac Heritage Lime Sand Mortar contains less than 1.0% organic material and is classified in accordance with BS EN 13501-1 as Class A1 without testing (Commission Directive 96/603/EC).

## EFFECT OF FREEZE THAW DAMAGE

In cold conditions, adequate precautions must be taken against frost, see Tarmac Site Guide No. 6. No anti-freeze chemicals or accelerating admixtures should be added to the delivered mortar.

## COMPATIBILITY

Tarmac mortars are compatible with all normal building materials. However, any cement based material will be alkaline and may attack aluminium or zinc when wet.

## DURABILITY

No problems should occur if the correct mortar has been specified and accurately gauged with cement on site. Pigments are carefully chosen and guaranteed against fading.

## HEALTH & SAFETY

There is a real danger of contact dermatitis or serious burns if skin comes into contact with wet cement mixes such as fresh concrete, mortar or screed. Wear suitable protective clothing and eye protection. Where skin contact occurs either directly or through saturated clothing wash immediately with soap and water. For eye contact, immediately wash out eyes thoroughly with clean water. If swallowed wash out mouth and drink plenty of water. For further information refer to Tarmac Safety Data Sheet Lime Base Mortars.

## APPLICATIONS

### USES

Tarmac Heritage Lime Sand Mortars may be used in any masonry, where good consistence, durability and other benefits of a lime based mortar are required.

## ERGONOMICS

The figures given below are intended as a guide only and may vary depending on unit size, depth of frog, perforations, wastage and other factors.

## BRICKLAYING

One tonne of Tarmac Heritage Lime Sand Mortar when gauged with cement on site will be sufficient to lay approximately 1,000 bricks (The actual figure may range between 850 and 1,200 bricks).

For modular size bricks this can reduce to 700/750 bricks per tonne.

1m<sup>2</sup> brickwork requires 57 imperial size bricks

1m<sup>2</sup> brickwork requires 60 metric size bricks

1m<sup>2</sup> brickwork requires 50 – size 200 mm x 100 mm x 100 mm modular bricks

1m<sup>2</sup> brickwork requires 33 – size 300 mm x 100 mm x 100 mm modular bricks

## BLOCK LAYING

One tonne of Tarmac Heritage Lime Sand Mortar when gauged with the correct amount of cement on site will be sufficient to lay approximately 600 blocks nominal size 450 mm x 225 mm x 100 mm.

This is equivalent to about 60m<sup>2</sup> of single skin blockwork.

## SPECIFICATION OF MORTAR

Mortars should conform to the appropriate part of BS EN 998 for Lime:sand mortars.

When mortar is specified the following factors should be considered and details stated, as appropriate.

- Mortar strength class (Designation or class), e.g. iii.
- Fine aggregate (sand) specification, e.g. BS EN 13139
- Colour reference, if applicable, e.g. Y3.
- Method of mixing, e.g. Factory site gauged.
- Quality requirements, e.g. Third party accredited producer.
- Type of cement.
- Mortar admixtures, normally to BS EN 934.

Note: Tarmac – Y reference coloured mortars contain only 100% synthetic iron oxides to ensure durability and retention of colour. Other coloured mortars may contain inferior carbon based pigments which are not recommended due to lack of stability and durability.

## DELIVERY AND STORAGE

Tarmac Heritage Lime Sand Mortar should be tipped

on to a clean banker board with a sealed base and sheeted when not in use. Sheeting is particularly important in the case of coloured mortar to protect against rain and weathering. In warm weather it would be advisable to protect the surface of the mortar and keep it damp, to help prevent the formation of lumps through rapid drying and carbonation. Do not tip new deliveries on to the remains of the previous load.

For convenience, Heritage Lime Sand Mortars are also available in bulk bags which should also be covered to protect the material in storage. For smaller jobs, or when material is to be stored for longer periods, Heritage Lime Sand Mortars are available in standard size plastic bags at some of the supplying factories.

Please contact your local sales office.

### **CEMENT GAUGING/SAMPLE PANELS**

It is strongly advised that the same brand, type, strength and source of cement is used throughout the contract and that site gauging is carried out accurately by weight or by volume using gauge boxes.

It is recommended the Heritage Lime Sand Mortar is gauged at 9 or 10 parts Heritage Mortar to 1 part OPC or white cement, though this can depend on degrees of exposure and the environment.

Tarmac cannot guarantee an even and uniform distribution of the coarse particles within Heritage Lime Sand Mortar on the surface of the mortar joint, once the joint has been brushed finished.

We would recommend the building of a sample panel first to view the joint profile and the distribution of the larger particles sizes on the surface of the mortar joints. 25kg samples bags can be provided of either mix either in natural or coloured. This process will help to assist the specifier and customer in a practical sense.

When using Heritage Lime Sand Mortars a joint profile that compresses the joint surface could be inappropriate. A joint technique to consider in this respect is a slight rake i.e. when the mortar has 'taken up' sufficiently – remove 2 or 3 millimetres from the joint face with a piece of shaped wood/metal and brush off with a medium/soft bristle brush. This technique starts to expose the sharp aggregate and after weathering gives a quite authentic grainy appearance. An alternative is a flush, struck off joint also brushed off. If either of these joints are considered it is important the vertical (perp) joints are fully filled.

### **GAUGING WATER & TOOLING**

Use clean water and do not introduce admixtures without checking with the Tarmac technical department. Uniformity of colour is important and therefore care should be taken to ensure that the mortar is mixed to a regular consistency. This is best achieved by machine mixing.

Variations in the technique or the time at which the mortar joint is tooled can also have an effect on the final colour.

### **MASONRY**

Stacked bricks and blocks should be protected and kept dry. Do not use saturated bricks, especially with coloured mortar, as this can cause disfiguration of the building, delayed setting of the mortar and in winter, attack on the masonry by frost.

In windy conditions partially constructed brickwork should be propped.

In hot weather it may be necessary to slightly wet certain types of porous bricks. Blocks to control suction (see Site Guide 7).

Bed and point brickwork in one operation to obtain maximum durability of the joints. The top course of new work should be protected against the weather by covering at all items during construction. This is even more important with cavity walls or where perforated bricks are used.

Where cavities are completely filled to improve thermal insulation a greater onus is placed on workmanship and care should be taken to ensure that all bed and cross joints are properly filled to prevent rain penetration. Careful consideration should be given to the design and specification of brickwork capping and parapets if problems are to be avoided. Mortar strengths of class (i) M12 or (ii) M6 should be used depending on the strength and type of brick used and all mortar joints must be fully filled to eliminate voids in brickwork. It is recommended that if perforated bricks are used in capping the perforations should also be fully filled for the same reason. Flush, tooled mortar joints are recommended for horizontal or sloping surfaces to assist in shedding water from the masonry.

The Brick Development Association should be consulted regarding choice of suitable bricks and recommended minimum number of courses above the damp proof course where cappings are used. Since cappings and parapet brickwork are subjected to greater extremes of moisture and thermal movement, serious consideration should be given to increasing the frequency of the movement joints in these areas.

## MAINTENANCE

### BRICKWORK

Prevention is better than cure, but any stains appearing on brickwork can be removed by the application of various proprietary cleaning agents.

### TECHNICAL SUPPORT

Tarmac provides a comprehensive sales and technical advisory service to specifiers and customers.

A quality system has been implemented throughout the company since 1975 and quality procedures are in conformity with BS EN ISO 9001:2000. All Tarmac factories hold third party certification from the British Standards Institution. Details of the certification status of individual factories may be obtained from our technical helpdesk.

### PRICES AND CONDITIONS OF SALE

Prices vary according to mix design, quantity and delivery location. For specific quotations contact your nearest Tarmac Office.

All quotations given, orders placed and materials supplied are subject to the Conditions of Sale available via download from the Tarmac website [www.tarmac.com](http://www.tarmac.com) or upon request from your nearest Tarmac Area Office

### AVAILABILITY

Heritage Lime Sand Mortars are available direct from factories located strategically throughout mainland United Kingdom. For a list of mortar factories contact your local Tarmac Area Office.

When ordering please state the following:

1. Mix composition and purpose of use (in the case of LSM mortars the inclusion or exclusion of air-entrainment should be considered – normally recommended).
2. Mortar colour and code number (if applicable).
3. Date and time of delivery – 48 hours should normally be allowed for delivery.

## DELIVERY TO SITE

Type of Mortar:

**LSM natural and coloured**

Bulk loads in tipper trucks generally of 10 – 20 tonnes capacity. Also available in bulk bags and standard bags.

**Bulk bags and standard bags can help reduce wastage and prevent contamination.**

REFERENCES*	
British Standards Institute	
BS EN 197:Part 1: 2011	Cement-Part 1: Compositions, specification and conformity criteria for common cements.
BS EN 934: Part 3: 2009 +A1:2012	Admixtures for concrete, mortar and grout. Admixtures for masonry mortars. Definitions, requirements, conformity and marking and labelling
BS EN 13501: 1: 2007 +A1:2009	Fire classification of construction products and building elements. Part 1: Classification using test data from fire reaction tests
BS EN 459: Part 1 : 2015	Building lime: Definitions, specification and conformity criteria.
BS EN 12878 : 2014	Pigments for colouring of building materials based on cement and/or lime specifications and methods of test.
BS EN 13139 : 2002	Aggregates for mortar.
PD 6682-3 : 2003	Aggregates-Part 3: Aggregates for mortar – Guidance on the use of BS EN 13139
BS 4551 : 2005 +A2:2013	Mortar – Methods of test for mortar – Chemical analysis and physical testing
BS EN 13914-1:2005	Design, preparation and application of external rendering and internal plastering – part 1, external rendering
BS EN 13914-2:2005	Design, preparation and application of external rendering and internal plastering – part 2, design consideration and essential principals for internal plastering
BS 8481 : 2006	Design, preparation and application of internal gypsum, cement, cement and lime, plastering systems. Specification
BS EN 1996-1-1:2005+A1:2012	Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures
BS EN 1996-1-2:2005	Eurocode 6. Design of masonry structures. General rules. Structural fire design
BS EN 1996-2-2006	Eurocode 6. Design of masonry structures. Design considerations, selection of materials and execution of masonry
BS EN 1996-3-2006	Eurocode 6. Design of masonry structures. Simplified calculation methods for unreinforced masonry structures
NA to BS EN 1996-1-1:2005+A1:2012	UK National Annex to Eurocode 6. Designs in masonry structures. General rules for reinforced and unreinforced masonry structures
NA to BS EN 1996-1-2:2005	UK National Annex to Eurocode 6. Design of masonry structures. General rules. Structural fire design
NA to BS EN 1996-2-2006	UK National Annex to Eurocode 6 Design of masonry structures. Design considerations, selection of materials and execution of masonry
NA to BS EN 1996-3-2006	UK National Annex to Eurocode 6. Design of masonry structures. Simplified calculation methods for unreinforced masonry structures
BS EN 998:2010	Specification for mortar for masonry
BS EN 998 Part 1:2010	Rendering and plastering mortar

BS EN 998 Part 2:2010	Masonry mortar
PD 6678:2005	Guide to the specification of masonry mortar
BS EN 1015	Methods of test for mortar for masonry (A multi-part Standard)
Building Research Establishment*	
Digest 362	Building Mortar
Tarmac*	
Tarmac Safety Data Sheet	
Mortar Product Data Sheet No. 100/01	Tarmac Ready to Use Mortars
Site Guide No. 1	Tarmac LSM Mortars
Site Guide No. 4	Tarmac SB Admixture
Site Guide No. 6	Winter working recommendations for mortar.
Site Guide No. 7	Summer working recommendations for mortar
Tarmac General Mortar and Mix Design Manual	

\*Current version applicable to all references