

The benefits of factory produced lime:sand mortar for masonry



General Information

When correctly gauged with cement, on-site prior to use, factory produced lime:sand mortars offer many benefits to users:

Excellent Workability

Correctly gauged factory produced lime:sand mortar can be handled with ease. It flows easily, assisting the mason to fill the mortar bed and perpend joints. The high workability and cohesive properties enable the mason to produce a better quality finish. Wastage through droppings is also minimised.

High Water Retentivity

Correctly gauged factory produced lime:sand mortar reduces the effects of suction from bricks and blocks so that its excellent workability is maintained during laying. It also ensures complete contact between mortar and unit, thus producing water-tight joints.

Table 1: Mix designation, compressive strength and cement gauging

Traditional mortar designation	BS EN 998-2 mortar class	Mortar by volume Cement:lime:sand	Factory produced by volume lime:sand	Site mixing Cement:factory produced		
				By volume	By weight kg:tonne	
					With air entrainment	Non air entrainment
i	12	1:1/4:3	1:12	1:3	-	250
ii	6	1:1/2:4 - 4 1/2	1:9	1:4 - 4 1/2	190	170
iii	4	1:1:5 - 6	1:6	1:5 - 6	150	125
iv	2	1:2:8 - 9	1:4 1/2	1:8 - 9	100	90

Mortar mixes conform to BS EN 998-2, when tested by the methods given in BS EN 1015 and BS 4551.

NB Mortar class (compressive strength) as defined in the National Annex to BS EN 998-2:2003, clause NA.1

Strength Development

Factory produced lime:sand mortars correctly gauged with cement meet the strength requirements given in BS EN 998-2 and BS 5628 with an adequate safety factor.

The cement produces early strength, but after this the lime continues to carbonate giving increased strength and durability to the masonry.

Elasticity

Correctly gauged factory produced lime:sand mortars have a degree of elasticity so that the inevitable small movements of buildings during and after completion can be taken up without excessive cracking.

Healing of Cracks

Under certain conditions mortars may develop fine cracks. Cracking of lime based mortars is minimal, but any that do occur tends to be self-healing. Rain water takes a little lime into solution and this is deposited into the cracks as the water evaporates. This is converted into calcium carbonate by carbon dioxide from the air and the crack is healed. Laboratory research and site testing programmes have shown that this phenomenon, referred to as “autogenous healing”, provides continued and improved resistance to wind and rain penetration.

Coloured Mortars

Factory produced lime:sand mortars are available in a wide range of colours. Accurately controlled addition of pigments ensures consistent colour throughout the contract.

Environmental Considerations

Damp walls increase the heat loss from a structure leading to higher heating costs. Lime based mortars can reduce rain penetration caused by poor adhesion of mortar to bricks and thus give drier external walls.

British Standard Code of Practice 5628 states that lime based mortars resist rain penetration through external walls more effectively than any other mortars.

Improved Whole Life Costing

The permanent weatherproofing which resists wind, rain, freezing, thawing and wetting and drying cycles, leads to lower energy usage. This is provided by lime based mortars accurately gauged with cement, which adhere tenaciously to the masonry units. This durable bond, together with the mortar's self healing property eliminates repointing and minimises maintenance.

Efflorescence

Some building components contain soluble salts and the water in a structure can transfer these to the external surface. As the water evaporates the salts may be deposited to give an unsightly appearance. By reducing the amount of water which can enter the structure in the first place, lime based mortars can help reduce the risk of efflorescence.

References

BS EN 197-1	Cement composition, specification and conformity criteria for common cements
BS EN 459-1	Building lime. Definitions, specifications and conformity criteria
BS EN 998-2	Specification for mortar for masonry - Part 2: Masonry mortar
BS EN 1015	Methods of test for mortar for masonry
BS EN 12878	Pigments for the colouring of building materials based on cement and/or lime. Specifications and methods of test
BS EN 13139	Aggregates for mortar
BS 4551	Methods of testing mortars, screeds and plasters
BS 5628	Code of practice for use of masonry
PD 6678	Guide to the selection and specification of masonry mortar
PD 6682-3	Aggregates for mortar - Guidance on the use of BS EN 13139

British Standards are currently being revised in line with European requirements. The new standards are at varying stages of preparation and/or publication, for a full list of British and new European Standards see the MIA data sheet of technical references.



There is a real danger of contact dermatitis or serious burns if skin comes into contact with wet mortar. 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.

The relevant codes of practice, standards and statutory regulations must always be observed.

The information in this data sheet may be freely copied with acknowledgement to the Mortar Industry Association. Current issue numbers of all MIA publications are available from the MIA website.



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Promoting quality factory produced mortar

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