

CHAPTER 9

Mortars



MORTARS

Mix proportions

The proportion of each material in the mix should suit the type of work being done. Strength requirements and mix proportions, recommended by the Cement and Concrete Institute, are given in table below.

Mortar must not be used after it has started to set, which usually occurs about two hours after it has been mixed. One man – particularly if he is a weekend builder – can probably lay a little more than 60 bricks an hour. If you are working on your own or with one assistant, it is better to mix a number of small batches as they are required than to mix a one-bag batch. Do not use too thick a layer of mortar between bricks or blocks; this is wasteful and may lead to cracking.

Mortar class

In general terms the classes of mortar may be used as follows:

Class I

Highly stressed masonry incorporating high-strength structural units such as might be used in multi-storey load-bearing buildings; reinforced masonry.

Class II

Normal loadbearing applications, as well as parapets, balustrades, retaining structures, and freestanding and garden walls, and other walls exposed to possible severe dampness.

In practice, Class II mortars are used for most applications.

Although SABS 0249:1993 refers to a Class III mortar, it is so seldom used that it has been omitted from the table below.

Other proportions may be used if these can be shown by test to be satisfactory.

Use of building limes

The use of limes added to cement mortars is recommended as the improved workability and water retentivity will lead to superior brick to mortar adhesion, with improved resistance of the brickwork to rain penetration.

Mortar Strength Requirements and Mix proportions

Mortar class	Minimum required compressive strength at 28 days, MPa		Quantity of sand ¹ per 50kg bag of cement,ℓ		Quantities of materials required per m ³ of mortar (not including wastage)			
	Preliminary laboratory tests	Works tests	Common ² cement 32,5 · 42,5	Masonry ³ cement 22,5X	Common ² Cement, bags 32,5 · 42,5	Sand m ³	Masonry ³ Cement, bags 22,5X	Sand m ³
I	14,5	10	130ℓ	100ℓ	9,0	1,15	10,5	1,1
II	7	5	200ℓ	170ℓ	6,5	1,25	7,25	1,22

¹ Sand is estimated at a 5% moisture content.

² Common cement complying with SANS 50197-1: Strength class 32,5 or 42,5.^a

³ Masonry cement complying with SANS 50413-1: Strength class 22,5X.^b

^a The addition of lime to common cements is optional - For class I mortar use between 0-10 litres and for class II mortar use between 0-40 litres. (Lime shall not be used to replace a portion of the cement mix)

^b The addition of lime to masonry cements is not permitted

Example:

Class II Mortar (1:6) =

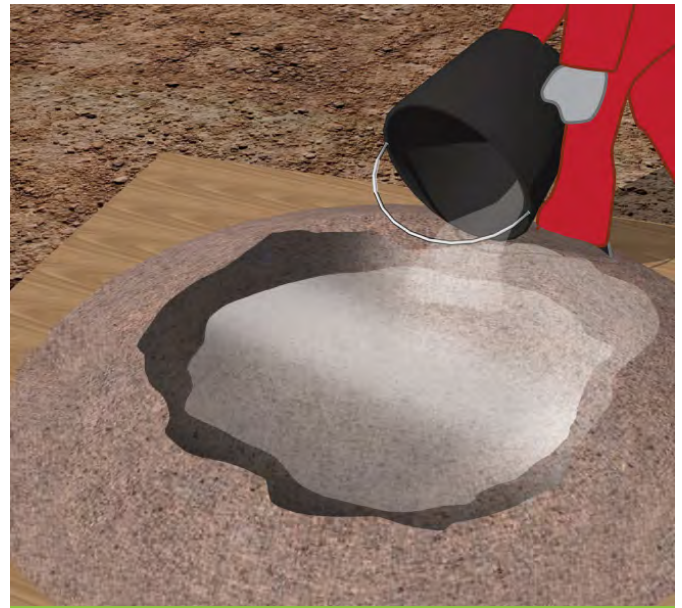


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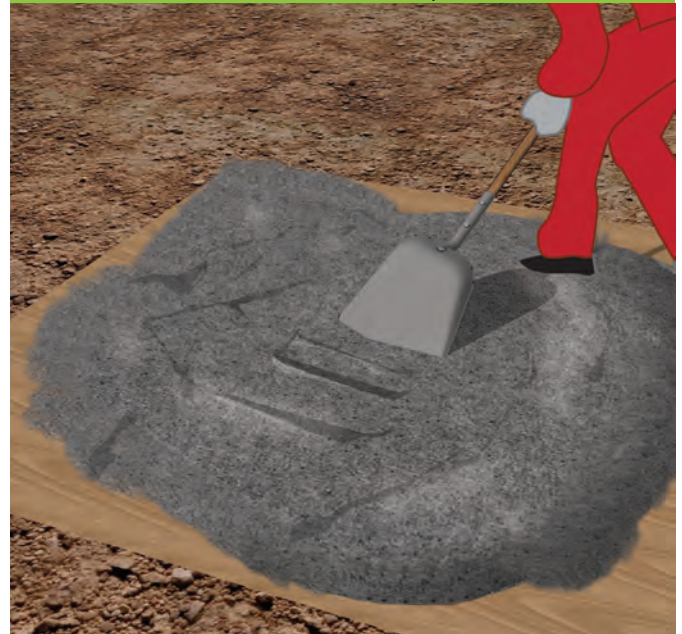
8.13 - The bucket of cement is emptied on top of the six buckets of sand and the bucket of lime.



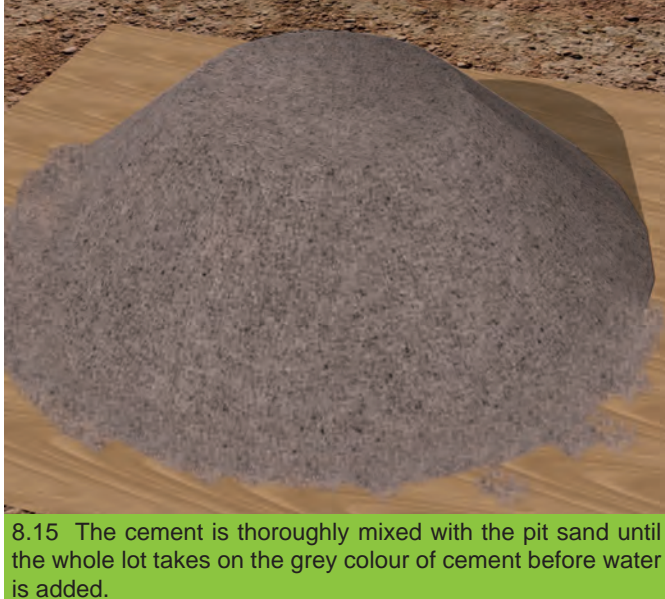
8.16 - A dam is formed and the water is poured into the centre.



8.14 - Spread the cement over the mixture.



8.17 The dry mix is mixed with the water and worked through with a shovel to the right consistency.



8.15 The cement is thoroughly mixed with the pit sand until the whole lot takes on the grey colour of cement before water is added.

