Concrete, plaster & mortar mixes for builders

All cement sold in South Africa must meet the requirements of SANS 50197 for Common cement or SANS 50413 for Masonry cement and the National Regulator for Compulsory Standards (NRCS) requirements as detailed in NRCS VC9085. Bags should be clearly marked with the strength grade, notation indicating composition and a Letter of Authority (LOA) number issued by the NRCS. An LOA is issued for each cement type from each source. To verify valid LOA numbers contact the NRCS on 012 428 5199 or www.nrcs.org.za.

Note that Masonry cements complying with SANS 50413 are not permitted to be used in concrete.

Notes on the use of this leaflet

1. The amount of water added to a mix must be enough to make the mix workable and plastic.
2. Common cement complying with SANS 50197 may be used for concrete, plaster or mortar.
3. Stone for concrete should be 19 mm or 26 mm size.
4. Proportions might differ from those given in this leaflet when using higher classes of cement – Contact the manufacturer for advice.
5. If you use a wheelbarrow for measuring, it should be a builder's wheelbarrow which has a capacity of 65 litres. The aggregate should be levelled off with the top of the wheelbarrow using a straight edge or plank.
6. Cement should preferably be batched by the bag. (Batching by the bag is more accurate and involves less wastage than batching smaller volumes in tins or drums.) The small-batch proportions given in this leaflet have been adjusted for the bulking of cement during volume batching in small containers.
7. The batches described in this leaflet do not guarantee any particular strengths. Where specific strengths are required trials should be done in which the strength is tested by making cubes and testing them in a reputable laboratory.
8. All quantities supplied in the notes below the tables are rough estimates and for more accurate values trials on site should be carried out.

1. Concrete

1.1 Large batches: use only common cement complying with SANS 50197

Low-strength concrete suitable for: house foundations.

Cement	Concrete sand	Stone
2 x 50 kg bags		
100 kg	**3 ½ wheelbarrows**	**3 ½ wheelbarrows**

To make 1 cubic metre of concrete you will need: 290 kg cement + 0,65 cubic metres sand + 0,65 cubic metres stone.

Medium-strength concrete suitable for: house floors, footpaths and driveways

Cement	Concrete sand	Stone
2 x 50 kg bags		
100 kg	**2 ½ wheelbarrows**	**2 ½ wheelbarrows**

To make 1 cubic metre of concrete you will need: 385 kg cement + 0,62 cubic metres sand + 0,62 cubic metres stone.

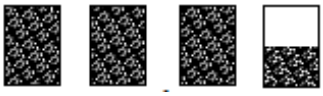
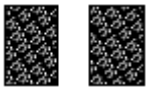
High-strength concrete suitable for: precast concrete, heavy-duty floors

Cement	Concrete sand	Stone
2 x 50 kg bags		
100 kg	**2 wheelbarrows**	**2 wheelbarrows**

To make 1 cubic metre of concrete you will need: 460 kg cement + 0,60 cubic metres sand + 0,60 cubic metres stone.

1.2 Small batches: use containers such as buckets, drums or tins.
Use the same size of container for measuring all the materials in a batch.

Use only common cement complying with SANS 50197.

	Cement	Concrete sand	Stone
low-strength concrete	 **1**	 **3 ½**	 **3 ½**
medium-strength concrete	 **1**	 **2 ½**	 **2 ½**
high-strength concrete	 **1**	 **2**	 **2**

2. Plaster – external

(Complying with SANS 2001 – EM1: 2007)

2.1 Large batches: using common cement complying with SANS 50197

Cement	Plaster sand
2 x 50 kg bags	
100 kg	**5 wheelbarrows**

To plaster 100 square metres (15 millimetres thick) you will need: 700 kg cement + 2,25 cubic metres sand.

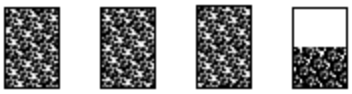
Using masonry cement complying with SANS 50413 class MC 22,5X or MC 12,5. Do not use class MC 12,5X.

Cement	Plaster sand
2 x 50 kg bags	
100 kg	**4 wheelbarrows**

To plaster 100 square metres (15 millimetres thick) you will need: 850 kg cement + 2,25 cubic metres sand.

2.2 Small batches: use containers such as buckets, drums or tins.

Use the same size of container for measuring all the materials in a batch.

Cement type/standard	Cement	Plaster sand
common cement SANS 50197	 **1**	 **4,5**
MC 22,5X or MC 12,5 SANS 50413	 **1**	 **3,5**

3. Plaster – internal

(Complying with SANS 2001 – EM1: 2007)

3.1 Large batches: using common cement complying with SANS 50197

Cement	Plaster sand
2 x 50 kg bags	
100 kg	**6 wheelbarrows**

To plaster 100 square metres (15 millimetres thick) you will need: 600 kg cement + 2,3 cubic metres sand.

Using masonry cement complying with SANS 50413 class MC 22,5X or MC 12,5

Cement	Plaster sand
2 x 50 kg bags	
100 kg	**5 wheelbarrows**

To plaster 100 square metres (15 millimetres thick) you will need: 700 kg cement + 2,25 cubic metres sand.

Using masonry cement complying with SANS 50413 class MC 12,5X.

Cement	Plaster sand
2 x 50 kg bags	
100 kg	**3 wheelbarrows**

To plaster 100 square metres (15 millimetres thick) you will need: 850 kg cement + 2,25 cubic metres sand.

3.2 Small batches: use containers such as buckets, drums or tins.

Use the same size of container for measuring all the materials in a batch.

Cement type/standard	Cement	Plaster sand
common cement SANS 50197	 **1**	 **5**
MC 22,5X or MC 12,5 SANS 50413	 **1**	 **4,5**
MC 12,5X SANS 50413	 **1**	 **2,5**

4. Class I mortar

(Complying with SANS 2001 – CM1: 2012)

4.1 Large batches:

Using common cement complying with SANS 50197

Cement	Building sand
2 x 50 kg bags	
100 kg	**4 wheelbarrows**

To lay 1 000 bricks you will need: 200 kg cement + 0,55 cubic metres sand.

Using masonry cement complying with SANS 50413 class MC 22,5X.

Cement	Building sand
2 x 50 kg bags	
100 kg	**2 wheelbarrows**

To lay 1 000 bricks you will need: 350 kg cement + 0,5 cubic metres sand.

4.2 Small batches:

Use containers such as buckets, drums or tins. Use the same size of container for measuring all the materials in a batch.

Cement type/standard	Cement	Building sand
common cement SANS 50197	 **1**	 **3,5**
MC 22,5X or MC 12.5 SANS 50413	 **1**	 **2**

5. Class II mortar

(Complying with SANS 2001 – CM1: 2012)

5.1 Large batches:

Using common cement complying with SANS 50197

Cement	Building sand
2 x 50 kg bags	
100 kg	**6 wheelbarrows**

To lay 1 000 bricks you will need: 150 kg cement + 0,6 cubic metres sand.

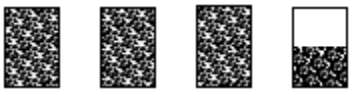
Using masonry cement complying with SANS 50413 class MC 22,5X or MC 12.5. Do not use class MC 12.5X.

Cement	Building sand
2 x 50 kg bags	
100 kg	**4 wheelbarrows**

To lay 1 000 bricks you will need: 200 kg cement + 0,55 cubic metres sand.

5.2 Small batches:

Use containers such as buckets, drums or tins. Use the same size of container for measuring all the materials in a batch.

Cement type/standard	Cement	Building sand
Common cement SANS 50197	 **1**	 **5**
MC 22,5X or MC 12.5 SANS 50413	 **1**	 **3,5**

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