BAG MIXES FOR CONCRETE

TABLE 1: CEMENT TYPE: NPC 32,5 OR 42,5 GRADE CEMENT

Strength	Cement Grade	Mix proportions by volume				Quantities per m^3 of concrete		
		NPC Cement	Sand (damp)	Stone (19mm)	Approx Yield	50kg bags	River sand (Damp) (m^3)	Stone (m^3)
LOW 10-15 MPa	32,5	2 Bags	3,5 wb	3,5 wb	0,35m^3	5,8	0,65	0,65
		1	3,0	3,0	4,6			
	42,5	2 Bags	4,0 wb	4,0 wb	0,39 m^3	5,1	0,67	0,67
		1	3,5	3,5	5,3			
MEDIUM 20-25 MPa	32,5	2 Bags	2,5 wb	2,5 wb	0,26 m^3	7,7	0,62	0,62
		1	2,0	2,0	3,3			
	42,5	2 Bags	3,0 wb	3,0 wb	0,30 m^3	6,6	0,64	0,64
		1	2,5	2,5	4			
HIGH 25-30 MPa	32,5	2 Bags	2,0 wb	2,0 wb	0,22 m^3	9,2	0,60	0,60
		1	1,75	1,75	3			
	42,5	2 Bags	2,5 wb	2,5 wb	0,26 m^3	7,7	0,62	0,62
		1	2,0	2,0	3,3			

Note:

1. Volume mixes indicated beneath 2 bag mixes are for small batches using containers of equal volume
   e.g. 1 tin cement : 2 tins sand : 2 tins stone, yielding 3,3 tins concrete when mixed with water.
2. For concrete quantities in excess of 10m^3 or for higher strength concrete, it is recommended that a specialist be contacted.

TABLE 2: APPLICATIONS

Strength	Application
LOW	Lightly-loaded footings & foundations; house foundations; blinding; mass fill; infill concrete in masonry
MEDIUM	Reinforced foundations & slabs; domestic and office floors on the ground; garden footpaths; domestic driveways; infill concrete in reinforced masonry
HIGH	Concrete roads & industrial driveways; heavy duty floors on the ground for workshops; cattle sheds; precast units; suspended structural beams & slabs

BAG MIXES FOR PLASTER

TABLE 3: CEMENT TYPE: NPC 32,5 OR 42,5 GRADE CEMENT

Application	Cement	Plaster Sand (damp)	Approx Yield	Quantities for 100m² of wall, and 15mm thick plaster (No allowance for waste)	
				Cement (bags)	Sand (m³)
MIX A Foundation walls, constantly wet conditions, aggressive soils	2 Bags 1*	4,0 wb 3,5*	0,22m³ 3*	13,8	1,8
MIX B Internal walls	2 Bags 1*	6,0 wb 5*	0,30m³ 4*	9,9	1,9
MIX C External walls above DPC	2 bags 1*	5,0 wb 4*	0,26m³ 3,3*	11,5	1,85

Note:
Hydrated builder's lime can be added to the above 2 bag mixes as a workability improver in the following quantities: Mix A: 0-20 litres and Mix B: 0-80 litres Mix C: 0-80 litres

BAG MIXES FOR MORTAR

TABLE 4: CEMENT TYPE: NPC 32,5 OR 42,5 GRADE CEMENT

Application	Cement	Building Sand (damp)	Approx Yield	Quantities per m³ of mortar (No allowance for waste see notes TABLE 8)	
General purpose Mortar for masonry	2 Bags 1*	6,0 wb 5,0*	0,30m³ 4,0*	6,6 bags cement	1,3m³ building sand

Note:
0-80 litres of hydrated builder's lime can be added to the above 2 bag mix as a workability improver.

GENERAL NOTES FOR MORTAR & PLASTER

1. Mixes having an asterisk (*) are for small batches using equal volume containers, e.g. 1 tin cement : 5 tins sand, yielding 4 tins of material when mixed with water.
2. A 25kg bag of builder's lime has a volume of 40 litres.
3. Make batches small enough to be used up in about two hours. Never retemper old stiffened mortar or plaster by mixing in more water.
4. Excessive suction in clay bricks should be controlled by wetting the bricks before plastering or layering. Concrete masonry units should not be wet when used.

BAG MIXES FOR SCREEDS

TABLE 5: CEMENT TYPE: NPC 32,5 OR 42,5 GRADE CEMENT

Mix proportions by volume				Proportions per m^3	
Cement type	Quantity of cement	Concrete sand (damp)	Approx Yield	Quality of cement perhaps should be quantity?	Concrete sand (damp)
All NPC except CEMII/A 32,5 N	2 Bags 1*	4,0 wb 3,5*	0,22 m^3 3*	9, 1 bags	1,2 m^3
(Preferred) NPC CEMII/A 32,5 N (Alternative)	2 Bags 1*	3,5 wb 3*	0,20 m^3 2,5*	10,0 bags	1,1m^3

GENERAL NOTES FOR SCREEDS

1. Sand cement screeds are commonly used as a means of providing a smooth flat floor surface, especially in residential and office buildings. They are essentially light-duty flooring elements and are not suitable for industrial premises.
2. The sand should be a "concrete" sand and not a plaster sand, but to facilitate finishing, particles larger than 5mm should be sieved out. It may also be necessary to blend a small amount of plaster sand, say 25%, with the concrete sand to achieve a smooth finish.
3. Mixes having an asterisk (*) are for small batches using equal volume containers, e.g. 1 tin cement: 3,5 tins sand, yielding 3 tins screed when mixed with water.
4. The mix should not be dry or semi-dry as this will make full compaction very difficult and result in a weaker screed. The mix should be nearly as soft and plastic as a cement plaster.
5. Best results are achieved by immediately covering the screed with plastic sheeting after finishing. The sheeting should be kept in place for not less than 7 days. To avoid the temporary variations in the colour, which may occur when sheeting is laid directly on wet screed, support the sheeting on raised timber battens. Do not allow wind to blow under the sheeting. Alternatively, keep the screed wet by sprinkling with water for 7 days.

CONCRETE BRICK & BLOCK MIXES
SMALL SCALE MANUFACTURE

The best mix can be found only by carrying out trial mixes. The aim is to find a mix that will produce bricks / blocks that have an acceptable texture and are strong enough but as economical as possible.

Aggregate: cement ratio
The aggregate : cement ratio is dependant upon the available aggregates, the type of equipment used, the cement type and the age at which the units will be moved.
The following trial mixes should be assessed with available cement and aggregates to meet the manufacturer's requirements.

TABLE 6: CEMENT TYPE: NPC 32,5 OR 42,5 GRADE CEMENT

Cement (50kg bags)	Wheelbarrows of aggregate
1	3
1	4
1	5

For hardening to occur, cement must have access to water. Once the concrete is allowed to dry, no further hardening takes place. The large surface area of bricks / blocks makes them extremely prone to drying out and adequate curing cannot be overemphasised. This can be achieved by either covering the blocks with plastic sheeting to prevent moisture loss, or spraying with water. Blocks / bricks should be cured for at least 7 days.