

# CONCRETE

## HOW MUCH DO I NEED?

Before starting, make sure that you have sufficient materials to complete the job.

To calculate quantities required, measure the area to be concreted and multiply the length x width x depth.

So, for an area measuring 10m (length) x 15m (width) x 100mm (depth), the calculation is 10m x 15m x 0.1m = 15m<sup>3</sup>.

Always allow 10-15% wastage; thus 15m<sup>3</sup> becomes, say, 17m<sup>3</sup>. Also, if the sand is damp, you may need to reduce the amount of water required by up to 20%. Add the water slowly, to keep the concrete mix as "firm" as possible.

APPLICATION / PURPOSE	MIX BY VOLUME				MATERIALS (required to make up 1m <sup>3</sup> of concrete)		
	Cement	Sand	Coarse Aggregate	Water	Cement (20kg bags)	Sand (m <sup>3</sup> )	Coarse Aggregate (m <sup>3</sup> )
High Structural Strength Grade concrete for thin reinforced walls, slender reinforced columns, fence columns, heavy duty floors.	1	1.5	3	0.66	21 (=420kg/m <sup>3</sup> )	0.5	1
Commonly adopted mixture for reinforced concrete beams, floor slabs, driveways and paths.	1	2.5	4	0.66	16 (=320kg/m <sup>3</sup> )	0.5	1
Footings for domestic buildings and walls.	1	2.5	5	0.75	14 (=280kg/m <sup>3</sup> )	0.5	1
Toppings for two-course concrete paths.	1	1	2	0.66	28 (=560kg/m <sup>3</sup> )	0.5	1

- NOTE:**
1. All the above mixes yield an amount of concrete slightly more than the quantity of coarse aggregate in the mix.
  2. Sand should be clean, well-graded, free from excessive clay, organic material and fine silts.
  3. The often-used engineering term "water-cement ratio" is a ratio of weights. For example, a typical W/C of 0.5 equates to a 'mix-by-volume' ratio of about 0.66
  4. Always consult a qualified engineer for the design and specification of concrete for structural elements.