GUIDE ON SOIL SELECTION FOR BLOCK PRODUCTION

Hydraform blocks can be produced with a sandy soil with a clay content between 5-20% and silt content of 5-25%. Blocks can even be produced with higher clay and silt contents, but you need to determine the plasticity index to see if the soil is suitable for block production. Generally soils with low clay and silt portions, below 10%, will be difficult to handle when coming out the machine. Soils with high clay and silt content, above 35-40%, will need to be blended with a sandy soil.

The soil must be free of organic material, must not contain harmful quantities of salts and should contain just sufficient clay to bind the block so that they may be handled immediately after manufacture without disintegrating. Generally the soil should comply with the grading and plasticity requirements set out below.

Soil Range	% by mass passing the 0.075 mm sieve (silt and clay fraction)		Plasticity Index (maximum)	Estimated block strength (after curing)
	Min	**Max**		
A	10%	35%	15	4 MPa (using soil range A)
B	10%	25%	10	7 MPa (using soil range B)

Soil range A – This should produce a block with a compressive strength of ± 4 MPa.
Soil range B – This should produce a block with a compressive strength of ± 7 MPa.

Soils with a higher plasticity (over 15) are acceptable provided that the material has been pre-treated with lime; laboratory testing will confirm the required dosage and additional curing time required.

Water must be clean and should not contain any harmful quantities of acid, alkalis, salts, sugar or any other organic or chemical material. Potable water will normally be satisfactory.

The cement content required will normally be in the range of 4 to 7% by mass of the dry soil for 4MPa blocks and 7 to 10% by mass of dry soil for 7 MPa blocks.

Initial volume batching ratios are set out below; these are refined after the block Strength has been tested by an approved laboratory on fully cured blocks.

ESTIMATED VOLUME BATCHING QUANTITIES FOR INITIAL TRIAL MIXES

% Cement (by volume)	Estimated Block Compressive strength	Cement 50kg bag (33 litres)	65 litre Wheel barrows	Cement volume	Soil Volume	Yield (blocks)
5% 8%	4 MPa 7 MPa	1 Bag 1 Bag	10 6	1 1	20 12	± 70 ± 40