

Slab thickness(mm)	Joint spacing(mm)	Dimension A(mm)
100	300	20
125	375	25
150	450	30
200	600	40

It's not necessary to reinforce the slab panels with steel rods or mesh. The soil beneath the slab should be well compacted before placing the concrete.

#### Equipment:

Block-yard equipment consist essential of a means of moulding blocks, concrete mixer and various general purpose tools and equipment. These discussed below:

#### Block-making equipment:

There are two basics types equipment, depending on the method of moulding the blocks. For both types, equipment includes small hand-operated devices which have limited output and range of electrically-powered machines of high output:

- Stationary machine that mould blocks, one or more at time on pallets.
- Egg-layer machines that mould blocks on a concrete slab.



The following tables gives some advantage and disadvantage of both:

Types of machines	Factors
Stationary	A relatively small space is needed for production
	Block machine can be under cover
'Egg- layer'	Pallets are necessary. For most systems, enough pallets are therefore an expensive item initially. They also involve ongoing expense as damage (or stolen) pallets have to be replaced. Some hands-operated machines for making bricks need only a few pallets because bricks are removed from the pallets directly after moulding.
	A fair large slab is needed for the production of blocks. The slab is expensive and increases the size of the site necessary for block yard.
	Pallet are not necessary.

For both types, equipment available includes small hands –operated (which have limited output) and a range of electrically-powered machines of high output.

#### Concrete mixer:

It is possible to make blocks on a small scale without a concrete. Hand mixing has the advantages of reducing the amount of capital required and providing employment, but it may limit output and is not always thorough. Hand mixing should be done with shovels on a concrete slab or flat steel sheet. Never mix directly on the ground because this results in contamination of the mix.

A pan mixer is the only type of machine mixer suitable for block yards, Pan Mixers with forced mixing action, can cope with semi-dry mixes used for making blocks.

Drum Mixers do not work because they can not mix semi-dry concrete.

The output of the mixer should match that of the block-making machine, a mixer of adequate capacity a mixer of adequate capacity for making hollow units may have sufficient capacity for solid units.



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Your Guide to  
**Concrete Brick &  
Block making**



The small scale manufacture of concrete bricks and blocks for masonry is well suited to small businesses. Production can be done in the open, the process is simple and the equipment is relatively inexpensive.

The aim of this publication is to provide information that is needed in setting up and running a block-yard to manufacture concrete bricks and blocks on a small scale.

Aspect dealt with include: selecting and establishing a site, selection of equipment materials for block-making, trial mixes and production.

Bricks and blocks are masonry units are referred to as such in TBS standards, units may be solid or hollow. The difference between bricks and blocks is size. In this brochure we refer to blocks thought, but the same principle applies to bricks.

### **Selecting a site:**

*In selecting a site, consider the following:*

#### **Location**

This should be consider in relation to the supply of raw materials, market for blocks, location of the labour force, Security and availability of service such as roads, water; sewerage, electricity.

#### **Access:**

The site must be accessible to trucks delivering materials and collecting finished blocks.

#### **Ground Slope:**

Ideally, the site should be as level as possible. Steep slopes make handling and production difficult. Terracing a steep slope is expensive.

#### **Size:**

The site should be big enough for aggregate stockpiles, cement storage, production, block stacking, staff facilities, offices and on-site access. The details are below;

#### **Aggregate stockpiles:**

- Aggregates must be stockpiled in such a way that they do not become contaminated by soil, leaves, or any other foreign materials.
- Different aggregates must be kept separately and rainwater must be able to drain away.
- Ideally, aggregates should be stockpiled on a concrete slab. If this is not possible, the layer of aggregates in contact with the soil should not be used for production.
- Aggregates must not be stockpiled under trees.



#### **Cement:**

The best way to store cement is in a silo. However, for most small-scale block-yards, cement is usually delivered in bags. The bags should be stored as follow;

- Store in weatherproof room.
- Stack on tarpaulin or on closely spaced wooded strips so that the cement does not absorb moisture.
- The store room must be big enough to hold at least a week's supply of cement.

#### **Production area:**

The size of the production area depends on the methods of producing blocks.

- A stationary machine which forms blocks on pallets, needs a relatively small area, with a space around it for the operator
- A mobile 'egg-layer' machine needs a fairly large space on which blocks are made.

#### **Stacking Area:**

This area which should be big enough to stack at least two weeks' worth of production, is necessary for curing and drying the blocks. It is normally not necessary to pave this area. To avoid muddy conditions, a layer of aggregates about 100mm thick should be placed over the stacking area.

#### **Staff facilities:**

These should include toilets, ablutions facilities and possibly, change rooms. Facilities should meet minimum requirements of local authorities, if applicable.

#### **Offices:**

It may be necessary to have an office or area where the administrator work is done.

#### **On-site access:**

Pathways and road ways between the different parts of the yard should be wide enough for barrows, trolleys or tracks and may have to be paved or covered with aggregate to make them usable in wet weather. Paving will be necessary where trolleys are to be used to move blocks.

### **Construction of a slab (where blocks are made).**

#### **Area:**

A flat concrete slab, big enough for at least one days production, is required. As a guideline, a 50m<sup>2</sup> area is suitable for the production of 1000 bricks or 200 blocks.



#### **Slope:**

Normally, block production is carried out in the open and the concrete slab should have a minimum slope of 1 in 100 to ensure proper drainage.

#### **Thickness:**

The minimum thickness of the slab is normally 25mm. However, in the case of temporary works or works using a small hand machine, a thickness of 100mm could be used. Large production machines may require a minimum slab thickness of 150mm.

#### **Joints:**

To prevent uncontrolled cracking of the slab, it should be divided into panels. Panels should be squared or as close to square as possible. A construction joint is shown below. The half around keyway prevents differential settlements of adjacent slabs. The dimension 'A' of the half around is indicated in the table below.

The maximum jointing space depends on the thickness of the slab. The joint spacing for different slab thicknesses is given in the table below: