



# Aggregate Concrete Blocks Safe Handling and Correct Use

## Introduction

Much can be done to improve the safe handling and use of concrete blocks by following simple and straightforward good working practices and giving adequate consideration to health and safety aspects at the appropriate stage in the construction programme.

Careful consideration of the blocklayer's working area can also contribute significantly to safe working.

### Points to take into consideration include:

- Minimise manual handling by delivering units as close to the place of use as safety considerations permit
- Move units in packs and by mechanical means whenever possible
- Load units out to above knee height
- Ensure that normal protective equipment appropriate to construction sites is both provided and used
- Ensure that appropriate eye protection and dust suppression or extraction measures are provided when mechanical cutting or chasing units.

## Legislation

The Manual Handling Operations Regulations places duties on employers to carry out a risk assessment on all manual handling tasks. The Construction (Design & Management) Regulations places duties in the form of a mandatory Health & Safety system, on clients/designers/contractors.

### Interpretation of Legislation

To provide practical guidance for meeting the requirements of these two Regulations the Health & Safety Executive (HSE) has issued Construction sheet 37 'Handling Building Blocks' which advises that:

- There is risk of injury in the single-handed repetitive manual handling of blocks heavier than 20kg
- Units of greater than 20kg should be handled mechanically or using a two person team if they have to be handled repetitively.

**NB** It has been industry guidance for several years that two person teams should be used for handling heavy units.

The HSE guidance does not prevent an individual handling manually small numbers of units of greater than 20kg. In particular, ancillary units such as quoins or reveals would fall into this category and it would not be expected to handle these by a two person team. The guidance given in Construction Sheet 37 is not mandatory, but gives a method of meeting requirements of the Regulations. It is recommended that repetitive manual handling of blocks over 20kg should be subject to a risk assessment and a safe system of work should be established before block-laying commences.

### Blocks and construction options

The majority of units manufactured by CBA members are 20kg or less. Units of greater than 20kg may be specified and used to meet particular design requirements provided that appropriate handling methods are used, or the units are not to be handled repetitively.

For users who, for design reasons would otherwise select units of greater than 20kg but would prefer not to, a number of options exist. The appropriate choice from the options available will depend on the unit or wall properties dictated by the application.

Choices include:

- Using lighter solid units having sufficiently similar properties (made with lighter materials or in a smaller format)
- Using cellular/hollow units instead of solid units (having almost identical properties to solid units)
- Using alternative construction techniques such as
  - i) laying units flat to form a 190 or 215mm width wall (suitable for finishes such as plastering or drylining)
  - ii) collar jointing\* units to form a 190 or 215mm width wall (particularly suited to facing applications).

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Whenever making the choice of units it is essential to ensure that the desired performance characteristics of the finished wall are not compromised. Your supplier will be able to advise on an appropriate choice from the options available.

\*Collar jointing is laying units back to back in normal aspect with a 10-15mm cavity between the adjoining faces of the units. The cavity should not be filled with mortar. The two leaves may be tied together. If tied either normal ties or bed joint reinforcement may be used. Collar jointed walls are not suitable for separating walls in dwellings.

### Alternatives to full width solid units of greater than 20kg

For product specific data it is recommended that CBA member companies are consulted.

Required wall thickness	Block Options	Construction Options
140mm	140mm cellular or hollow (25-50% lighter than solid) 140mm solid units having a smaller face size	
190mm	190mm cellular or hollow (25-50% lighter than solid)	i) 2 x 90mm leaves of solid units collar jointed ii) 390 x 190 x 100mm solid units laid flat
215mm	215mm cellular or hollow (25-50% lighter than solid)	i) 2 x 100mm leaves of solid units collar jointed ii) 440 x 215 x 100mm solid units laid flat

### Guidance for Designers (based on test data and BS 5628: Pt 1)

**TABLE 1 Using a designation (i) mortar.**

(440 x 215mm face size units unless otherwise specified)

$f_k$  values (characteristic wall compressive strength) for solid, cellular and hollow units

	Unit Strength (N/mm <sup>2</sup> )				
	2.8	3.5	7	10	15
140mm Solid	2.3	2.9	5.7	7.4	10.0
140mm Cellular/Hollow	2.3	2.9	4.9	5.5	6.5
190mm Solid	1.9	2.4	4.7	6.1	8.3
190mm Cellular/Hollow	1.9	2.4	4.3	5.0	6.3
215mm Solid	1.8	2.2	4.4	5.7	7.7
215mm Cellular/Hollow	1.8	2.2	4.1	4.9	6.2

$f_k$  values (characteristic wall compressive strength) for collar jointed walls

	Unit Strength (N/mm <sup>2</sup> )						
	2.8	3.5	7	10	15	20	35
190mm wall	1.9	2.4	4.7	6.1	8.3	10.2	15.7
215mm wall	1.8	2.2	4.4	5.7	7.7	9.5	14.7

$f_k$  values (characteristic wall compressive strength) for units laid flat

	Unit Strength (N/mm <sup>2</sup> )						
	2.8	3.5	7	10	15	20	35
190mm wall*	2.2	2.7	5.3	5.9	8.1	10.0	15.4
215mm wall	2.2	2.8	5.4	6.2	8.4	10.4	16.0

\*390 x 190 x 100mm blocks

**TABLE 2 Using a designation (iii) mortar.**

(440 x 215mm face size units unless otherwise specified)

$f_k$  values (characteristic wall compressive strength) for solid, cellular and hollow units

	Unit Strength (N/mm <sup>2</sup> )				
	2.8	3.5	7	10	15
140mm Solid	2.3	2.9	5.4	6.9	8.4
140mm Cellular/Hollow	2.3	2.9	4.7	5.0	5.5
190mm Solid	1.9	2.4	4.4	5.7	6.9
190mm Cellular/Hollow	1.9	2.4	4.0	4.6	5.3
215mm Solid	1.8	2.2	4.1	5.3	6.4
215mm Cellular/Hollow	1.8	2.2	3.8	4.5	5.2

$f_k$  values (characteristic wall compressive strength) for collar jointed walls

	Unit Strength (N/mm <sup>2</sup> )						
	2.8	3.5	7	10	15	20	35
190mm wall	1.9	2.4	4.4	5.7	6.9	8.0	11.7
215mm wall	1.8	2.2	4.1	5.3	6.4	7.5	10.9

$f_k$  values (characteristic wall compressive strength) for units laid flat

	Unit Strength (N/mm <sup>2</sup> )						
	2.8	3.5	7	10	15	20	35
190mm wall*	2.2	2.7	4.9	5.5	6.8	7.8	11.5
215mm wall	2.2	2.8	5.1	5.7	7.0	8.1	11.9

\*390 x 190 x 100mm blocks

Note: Depending upon material density some units in this table may exceed 20kg. Please check unit weight with block producer.

To receive other data sheets in this series, a list of CBA members or for further information, please contact Concrete Block Association.

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