# New South Wales

## Book 2

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The quickest way to find a Boral Masonry Block or Brick Solution. Simply follow the FAST FIND GUIDE on the right hand side of the table.

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Fast Find a Boral Solution

1. Select your application criteria from the top of the table
2. Go straight to the section letter and page number indicated at the intersection of product rows and application columns (e.g. Section D, Page D2 in this example)

For technical support and sales office details please refer to the outside back cover
Boral Feature Face Masonry
for External and Internal Walls

• **Designer Block™**
  4 Contemporary Colours.

  5 Innovative Textures — Smooth, Honed, Polished, Shot-Blast or Split Face.

  Pre-Sealing Technology to reduce water absorption, and hence reduce the possibility of efflorescence, mould or mildew staining.

  Suitable for loadbearing and non-loadbearing walls.

• **Masonry One® Grey Block**
  Hollow Concrete Block suitable for loadbearing and non-loadbearing applications.
• **Masonry One® Core-Fill Block**
  Grey Concrete Block or Designer Block in coloured and textured finishes for reinforced retaining walls and loadbearing walls requiring increased robustness.

• **Basalt-Concrete Brick (B)**
  Standard Size, 119 high in Concrete-Basalt material for good fire performance and loadbearing characteristics.

• **Masonry One® Brick**
  Medium weight for non-loadbearing fire and/or acoustic systems. Available in 76, 119 and 162mm heights for faster, more cost effective construction.

• **FireLight Bricks (FL)**
  Lightweight for non-loadbearing fire and/or acoustic systems where weight saving is important. Available in 119 and 162mm heights for faster, more cost effective construction.

Boral Engineered Bricks
for Structural, Fire and Acoustic Wall Systems
Boral Masonry Construction Solutions

Boral Masonry offers a comprehensive range of proven products and systems including Concrete Masonry Bricks and Blocks, Fire and Acoustic Wall Systems, Segmental Block Retaining Walls and Segmental Paving Products.

What’s in this Guide

The Boral Masonry Bricks and Blocks guide details a comprehensive selection of decorative, structural, fire and acoustic walling solutions not available with other materials. Refer to Book 1 for Structural, Fire and Acoustic details.

This guide has been prepared as a comprehensive Boral Product Reference Guide. It does not attempt to cover all the requirements of the Codes and Standards which apply to masonry construction. All structural detailing should be checked and approved by a structural engineer before construction. Boral reserves the right to change the contents of this guide without notice.

Please note that this guide is based on products available at the time of publication from Boral Masonry NSW sales region. Different products and specifications may apply to Boral products sourced from other regions.

Additional Assistance and Information

- **Contact Details:** Please refer to the outside back cover of this publication for Boral Masonry contact details.
- **Colour and Texture Variation:** The supply of raw materials can vary over time. In addition, variation can occur between product types and production batches. Also please recognise that the printed colours in this brochure are only a guide. Always ask to see a sample of your colour/texture choice before specifying or ordering.
- **Terms and Conditions of Sale:** For a full set of Terms and Conditions of Sale please contact your nearest Boral Masonry sales office.

Guided Tour of a Typical Product Page
Blockwork
Design Considerations

Sizes

Blocks have a face dimension (nominal) of 400mm long x 200mm high. Because an allowance is made for 10mm wide mortar joints, the actual face size of the block is 390mm x 190mm. There are 12.5 blocks per m².

Most blocks are available in three thicknesses of 90mm (Series 100), 140mm (Series 150) and 190mm (Series 200).

Boral Masonry NSW offers many ‘fractional’ sized blocks to reduce the need for on-site cutting. However to maintain better colour consistency with coloured blocks, part size blocks for these applications are best prepared on-site by cutting or splitting from full size blocks.

Other block types such as lintel blocks, capping pieces, corner returns are made in various product ranges.

Core-Fill Blocks for reinforced wall construction are made in thicknesses of 140mm (Series 150), 190mm (Series 200), and 290mm (Series 300). Refer to Section E of this guide.

Before specifying your choice, please contact your local Boral Masonry sales office to confirm availability in your region.

Material and Dimensional Variation

Concrete Blocks are formed in steel moulds using relatively stable materials enabling the size of individual units to be controlled to within small tolerances. The code for concrete masonry units, AS/NZS4445 : 1997, permits a general tolerance of ±3mm on the overall dimension of each unit.

Modular Planning

The concrete block was one of the first building components to be designed with modular construction in mind. Originally it was based on a 4 inch module (as it remains in the USA) but when the metric system was adopted in Australia during the 1970’s, this was changed to a 100mm module.

Module Selection

For greatest ease and efficiency when constructing with masonry blockwork, it is recommended to plan a building using a 200mm module, as a significant reduction in the number of ‘special’ or cut blocks can be achieved.

Providing the design of a building is based on this module, cutting of blocks can generally be avoided. Coloured face blocks are generally made in only full length units (390mm) with part sizes (halves, etc) being cut on-site when required from the full length units, to maintain colour consistency.

NOTE: All saw grindings must be washed off the cut blocks. They are invisible while wet, but if allowed to dry, they appear as a pastel colour and are difficult to remove (as they are cementitious).

Most building materials work to a 600mm module. Blocks can also work to a 300mm module by using part sizes, which include half height blocks, (e.g. A skirting course of half high blocks and 5 courses of full blocks = 2100mm to suit typical door head height).

Nominal widths of doors and windows are also based on this module, e.g. 900mm wide single door; and 1200mm, 1800mm or 2400mm windows and doors.

The preferred way of dimensioning drawings is to show the ‘Nominal Sizes’ on openings. However, because the blocks are made 10mm shorter than the nominal (or modular) size, the actual openings will be different. Openings include one more mortar joint than units. For this reason, window and door frames are manufactured to suit openings which are 10mm wider than the module, e.g. 910mm 1210mm, 1810mm, 2410mm.

Note also that the length of piers and walls is 10mm less than the modules, i.e. 890, 1790 etc., due to the omission of the last vertical joint at the end of the pier/wall.
Face Blockwork Design Considerations

The following items should be considered carefully during the design stage to maximise the long-term beauty and to minimise the need for maintenance of face masonry.

Setout of Face Blockwork
When designing with split face blocks, special consideration should be given to the distances between openings and between corners and openings to facilitate the bolstering of block ends where required. Refer to additional information on Corner Details in Section C of this guide.

Colour and Texture Selection
The colour and texture of the unit should take into account the location of the masonry and the building. Dark coloured units can mask unsightly staining from dirt and pollution. On the other hand, darker units can accentuate the presence of any efflorescence or calcium carbonate caused by poor construction detailing, materials or cleaning.

It is important to note that concrete and clay products, due to the raw materials used in their production, may effloresce, and when preparing estimated costs, the cost of cleaning blockwork of this naturally occurring process should be considered.

Mortar Selection
Less staining and more aesthetically pleasing walls are achieved by ensuring the mortar colour is similar to the masonry unit. The colour of mortar is determined by the colour of the cement and sand used, and by the use or not of different coloured oxides. For colours other than greys, off-white cement and clean sand will assist colour matching. (Refer to page B8 for oxide details.)

Construction of sample walls is recommended to determine the appropriate mortar colour.

Copings, Sills, Parapets
Sills should shed stormwater from the masonry by projecting at least 30mm beyond the wall face. Copings or parapets should also shed water by having a ‘fall’ towards the unexposed (inner) face. Copings and parapets should be covered with a metal capping to prevent any water from penetrating the wall.

In-built Elements
Where there are in-built elements (e.g. signage support frames etc.) they should slope away from the masonry. The soffit of major elements, such as balconies, should be provided with a drip mould.

Protecting Face Masonry
The presealing additive used in the manufacture of Designer Block product and its mortar is designed to reduce the risk of staining, but additional sealing is recommended for ease of maintenance.
Blockwork Mortar Joints

Hollow blocks are normally laid with face shell bedding, i.e. there are two strips of mortar which are laid over the face shells with no mortar being laid on the web (except at corner construction). These two strips of mortar are continued up the vertical joints. Refer to Fig B2.

Joint Finishing

Ironed Joint

- The preferred finish for mortar joints in face blockwork is an ironed finish which provides the following benefits:
  - The ironing tool compresses the mortar at the face of the masonry, making it denser and more durable;
  - The mortar is pushed against the top and bottom faces of the blocks, improving the bond between the mortar and block.
  - The finish is obtained by ironing the joints with an ironing tool when the mortar is firm to touch (about 20 to 30 minutes after laying) and then lightly scraping off the surplus mortar with a trowel, or by lightly brushing. Refer to Fig B3.
  - The ironing tool should be made of 12mm diameter round rod and be more than 400mm long to ensure that a straight joint is produced.

Flush Joint

Where a plaster or textured coating is to be applied to the blockwork, a flush joint may be used. Rub surface with a piece of block when the mortar is firm to provide a flat surface for the coating.

Raked Joint

Although the raked joint is sometimes used in face brickwork for aesthetic reasons, it should NOT be used with hollow blocks which are not to be rendered. This is to avoid:

- Reducing the face shell mortar width,
- Adversely affecting the weatherproofing.

IMPORTANT: Because acid cannot be used to dissolve mortar without affecting the masonry units appearance, mortar smears should be cleaned off face blockwork before it sets hard onto the face.
Brickwork Design Considerations

Sizes

The dimensions of standard brick are: 76mm high x 230mm long x 110mm thick.

Boral Masonry NSW manufactures a range of Concrete Bricks in various modular sizes to complement standard blockwork and brickwork construction.

The Boral 11.162 Brick is 162mm high x 230mm long x 110mm thick. This height matches two standard size brick courses, with mortar. These are very popular for more cost effective laying. Refer to Section F of this guide.

| Number of Bricks | Brickwork Opening Brickwork Opening Brickwork Opening Brickwork Height (mm) |
|------------------|--------------------------------|---------------------------------|--------------------------------|
| Brick Length (mm) | Brick Length (mm) | 76 | 90 | 119 | 162 |
| 230 | 290 | 310 | 390 | 410 | 86 | 100 | 129 | 172 |
| 470 | 590 | 610 | 790 | 810 | 172 | 200 | 257 | 343 |
| 710 | 890 | 910 | 1190 | 1210 | 257 | 300 | 386 | 514 |
| 950 | 1190 | 1210 | 1590 | 1610 | 343 | 400 | 514 | 686 |
| 1190 | 1490 | 1510 | 1990 | 2010 | 429 | 500 | 643 | 857 |
| 1430 | 1790 | 1810 | 2390 | 2410 | 514 | 600 | 772 | 1028 |
| 1670 | 2090 | 2110 | 2790 | 2810 | 600 | 700 | 900 | 1200 |
| 1910 | 2390 | 2410 | 3190 | 3210 | 686 | 800 | 1029 | 1372 |
| 2150 | 2690 | 2710 | 3590 | 3610 | 772 | 900 | 1158 | 1543 |
| 2390 | 2990 | 3000 | 3990 | 4000 | 857 | 1000 | 1286 | 1714 |
| 2630 | 3290 | 3310 | 4390 | 4410 | 943 | 1100 | 1414 | 1886 |
| 2870 | 3590 | 3610 | 4790 | 4810 | 1029 | 1200 | 1543 | 2057 |
| 3110 | 3890 | 3910 | 5190 | 5210 | 1114 | 1300 | 1671 | 2228 |
| 3350 | 4190 | 4210 | 5590 | 5610 | 1200 | 1400 | 1800 | 2400 |
| 3590 | 4490 | 4510 | 5990 | 6000 | 1286 | 1500 | 1929 | 2572 |
| 3830 | 4790 | 4810 | 6390 | 6410 | 1372 | 1600 | 2057 | 2744 |
| 4070 | 5090 | 5100 | 6790 | 6810 | 1457 | 1700 | 2176 | 2915 |
| 4330 | 5390 | 5410 | 7190 | 7210 | 1543 | 1800 | 2316 | 3086 |
| 4550 | 5690 | 5710 | 7590 | 7610 | 1629 | 1900 | 2435 | 3257 |
| 4790 | 5990 | 6000 | 7990 | 8000 | 1714 | 2000 | 2572 | 3428 |
| 5030 | 6290 | 6310 | 8390 | 8410 | 1800 | 2000 | 2691 | 3600 |
| 5270 | 6590 | 6610 | 8790 | 8810 | 1886 | 2200 | 2810 | 3772 |
| 5510 | 6890 | 6910 | 9190 | 9210 | 1972 | 2300 | 2929 | 3943 |
| 5750 | 7190 | 7210 | 9590 | 9610 | 2057 | 2400 | 3086 | 4114 |
| 5990 | 7490 | 7510 | 9990 | 10010 | 2143 | 2500 | 3205 | 4286 |
| 6230 | 7990 | 8000 | 10490 | 10510 | 2229 | 2700 | 3405 | 4482 |
| 6470 | 8290 | 8310 | 10890 | 10910 | 2315 | 2900 | 3605 | 4682 |
| 6710 | 8590 | 8610 | 11290 | 11310 | 2401 | 3100 | 3810 | 4882 |
| 6950 | 8890 | 8910 | 11690 | 11710 | 2487 | 3300 | 4015 | 5082 |

Table B2 – Brick Quantities per Square Metre
(No allowance for wastage)

<table>
<thead>
<tr>
<th>Face Size</th>
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<tr>
<td>76 x 230</td>
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<tr>
<td>119 x 230</td>
<td>32.3</td>
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<tr>
<td>119 x 390</td>
<td>19.4</td>
</tr>
<tr>
<td>162 x 230</td>
<td>24.3</td>
</tr>
<tr>
<td>162 x 290</td>
<td>19.4</td>
</tr>
</tbody>
</table>

Additional information is provided on individual product pages in section F of this guide.

NOTE: To calculate a length dimension including a half-brick, add ‘x’ mm to ‘Length’ or ‘Opening’ figure. Where (x=120 for 230mm bricks), (x=150 for 290mm bricks), (x=200 for 390mm bricks). For example, an opening of 11.5 x 230mm long bricks = 2650 + 120 = 2770mm
Modular Planning

Standard size bricks, as with most building materials, work to a 600mm module.

In standard height bricks, this module is 7 bricks high x 2.5 bricks long (for standard length brick).

In one-and-a-half height bricks, this module is 1 standard height course plus 4 courses of brick-and-a-half high x 2.5 bricks long (for standard length brick).

In double height bricks, it is 1 standard course plus 3 courses of double height brick x 2.5 bricks long (for standard length brick).

Mortar Joints

Mortar joints (both horizontal and vertical) are usually specified as 10mm in thickness. Any raking, if specified, should not exceed 10mm depth and should not penetrate closer than 5mm to any core or perforation in cored units. Tooling of joints is particularly beneficial in improving durability and must always be carried out as specified. Joint finishing options are illustrated in Fig B8.
Control Joints
(Expansion Gaps)

Blocks and bricks (both concrete and clay) expand when heated and contract as they cool. They both expand when they absorb moisture and contract as they dry.

As they cure however, clay units expand and concrete units contract. For this reason, they should not be banded in the same wall.

Control joints are constructed and spaced to allow for these movements and in some cases, movement due to foundation settlement. Control joints should be used beside large openings, at changes of level in footings and at other points of potential cracking.

Table B3 details the recommended maximum control joint spacings for non-reinforced concrete walls.

The design and construction of control gaps in the external leaf of a full brick wall is identical to that in a brick veneer wall. Except at re-entrant angles in long walls, control gaps are not usually required in internal brick masonry. Where an internal gap is required, it can usually be located at a full-height opening such as a door or window.

### Table B3 – Control Joint Spacing

<table>
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<tr>
<td>Masonry One® &amp; Designer Block</td>
<td>8 metres</td>
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<td>Lightweight Masonry (&lt; 1500 kg/m³)</td>
<td>6 metres</td>
</tr>
<tr>
<td>Reinforced core-filled retaining walls</td>
<td>16 metres</td>
</tr>
</tbody>
</table>

NOTES:
- Joint width is 10mm for panels up to 6000mm long. For panels over 6000mm and up to 8000mm, joint width is 14mm.
- Joint sealants should be applied towards the end of construction to minimise the effect of panel movement.

Articulation Joints

Articulation joints are vertical gaps in brick walls or gaps between brick masonry and windows or doors, that allow for minor footing movements without causing distress or significant wall cracking.

Articulation joints provide the flexibility needed when building on reactive clay soils. **Articulation may not be required for masonry on stable sites.** The basic design and construction of articulation joints in the outer leaf of a full brick house is similar to that in a brick veneer. The principles are illustrated in Fig B10.

Where it is not possible to provide ties to the other leaf on either side of an articulation joint, it is necessary to provide a structural connection across the joint. This is made with masonry flexible anchors (MFAs) mortared into bed joints of brick masonry. See Fig B11.
Mortar Mixes for Concrete Block and Brick

The three principal functions of mortar are:

- To provide an even bedding for blocks and allow level coursing by taking up small variations in unit height;
- To transmit compressive loads; and
- To hold the blocks together in the wall by bonding to them, so that tensile and shear forces can be carried – often referred to as ‘bond strength’. This is particularly important so that units on top of the wall are not easily dislodged.

In order to provide a good bond between the units and the mortar, the following guidelines should be followed:

- An appropriate mortar mix should be selected (refer to Tables B4 and B5 together with the following section on ‘Mortar for Laying Designer Block product’).
- The mortar should be batched accurately using some consistent form of volume measurement.
- The sand used in the mortar should be clean pit sand or plasterer’s sand. Clayey loam or sand containing organic impurities will affect the mortar strength and should not be used. Sand should be well washed to ensure it is free of salt.
- Mortar should be discarded and not retempered, after the initial set of the cement has taken place.

Sand

The sand used in making the mortar for standard grey concrete blocks and bricks should not be the same as commonly used for clay bricks. ‘Brickie’s loam’ contains clay particles, which make the mortar more workable, but also cause some additional shrinkage in the mortar. As clay masonry units tend to expand, this compensates for the mortar shrinkage. Concrete masonry units, however, tend to shrink, thus, if used with a mortar with high shrinkage, cracking of the joints may result.

For this reason, mortar for concrete blockwork and brickwork should be prepared with clean sharp sand, such as pit sand, or plasterer’s sand. Tests have shown that the sand can contain up to 10% fines but it should not contain clay particles. Lime or Methyl cellulose, such as ‘Dynex’, can be added to increase workability. These additives or lime must not be used in mortar used for laying Designer Block products. Refer to the following section.

Mortar for Laying Boral Designer Block

- Boral Designer Block products are manufactured using the latest presealing technology to reduce water absorption, and hence reduce the possibility of efflorescence, mould or mildew staining.
- Designer Blocks can be laid in conventional mortar, however where single-leaf Designer Block masonry is required to be weather-resistant; it should be laid in mortar containing Tech-Dryad Mortar Additive. See Half-Bag Mixes below and Tables B4 and B5.
- Lime or plasticisers should not be added to mortar with Tech-Dryad additive.
- Clean, sharp sand may be difficult to use without lime plasticiser and may require blending or substitution with brickies sand. For colour-matching the mortar, the brickies sand should be near-white.
- Additives may be used with products other than Designer Block products, however caution should always be exercised when using lime replacing additives such as plasticisers or workability agents. They should be cellulose based, and only be used if specified by the architect or engineer and then strictly in accordance with the manufacturer’s instructions. Detergent and air entrainers should never be used.

‘Half-Bag’ mixes

M3 (general purpose) Half Bag Mix:
Half a Bag (20kg) of Off-White cement and oxide*
108kg clean sand (18 shovels @ 6kg)
0.5 litres Tech-Dryad mortar additive.

M4 (exposure grade) Half Bag Mix:
Half a Bag (20kg) of Off-White cement and oxide*
84kg clean sand (14 shovels @ 6kg)
0.5 litres Tech-Dryad mortar additive.

Oxide

* Oxide quantities below are approximate. Trial batches are recommended and should be assessed when dry. Contrasting mortar colour is not recommended due to difficulty of cleaning smears. Boral accepts no responsibility in the final colour of the mortar.

Alabaster: White oxide 0.8kg
Almond: Yellow oxide 0.1kg
Pearl Grey: Black oxide 0.01kg
Charcoal: Black oxide 0.5kg
Mortar mixing procedure:
Blocks must be dry when laid.
Put 12 litres of water into mixer.
Add 0.5 litres of Tech-Dryad mortar additive.
Add 20kg cement and sand as for M3 or M4 (exposure grade) mortar.

Laying Designer Blocks:
1. Lay dry blocks only.
2. Spread mortar on face shells. Do not spread mortar on webs.
3. Spread mortar on each side of perpends, leaving a cavity between.
4. For non-grouted masonry, a horizontal weep-hole at the floor joint of each core should be provided to drain water that may be trapped inside the blocks. Partly fill the bottom course with gravel or similar drainage material to prevent mortar droppings from blocking the weep-holes.
6. Mortar smears must be cleaned off before they set as acid cleaning later can discolour masonry.
7. Freshly laid walls must be covered overnight and when rain interrupts work.

Table B4 – Mortar Mixes

<table>
<thead>
<tr>
<th>G.P. Portland Cement</th>
<th>Lime</th>
<th>Sand</th>
<th>Tech-Dryad Additive</th>
<th>Methyl Cellulose Additive</th>
<th>Minimum Mortar Classification</th>
<th>Where Used (exposure)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>M3</td>
<td>Designer Block mortar for weather resistance.</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>M4</td>
<td>General purpose with moderate exposure.</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td></td>
<td>No</td>
<td>No</td>
<td>M3</td>
<td>Structural blockwork and severe exposure (marine and industrial environments). External walls adjacent to seafront, below damp-proof course, fences.</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td></td>
<td>No</td>
<td>Yes</td>
<td>M4</td>
<td>Calcium Silicate-Basalt</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td></td>
<td>No</td>
<td>Yes</td>
<td>M3</td>
<td>Calsil</td>
</tr>
</tbody>
</table>

NOTES: Methyl Cellulose water thickener is used to prevent the rapid drying out of the mortar thus improving its workability as well as increasing bond strength. It does not have the detrimental effect of the plasticiser or detergent admixtures which generally reduce bond strength. Methyl Cellulose can cause long delays in drying in moist basement environments. Dynex is one brand of methyl cellulose additive available.

Table B5 – Approximate Material Quantities for 1m³ of Mortar

<table>
<thead>
<tr>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are 12.5 full blocks per square metre of wall surface area. For every 800 blocks or 64m² of wall, about 1m³ of mortar mix is required, allowing for wastage. NOTE: Designer Block should be laid with Off-white cement to match colour of face of block.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mortar Classification</th>
<th>Concrete Blocks and Bricks</th>
<th>Designer Block Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M3</strong></td>
<td>Mix in 1 : 1 : 6 proportions</td>
<td>Mix in 1 : 5 proportions</td>
</tr>
<tr>
<td></td>
<td>Cement: 14 bags (20kg each)</td>
<td>Off-white Cement: 16 bags (20kg each)</td>
</tr>
<tr>
<td></td>
<td>Lime: 5 bags (20kg each)</td>
<td>Tech-Dryad mortar additive: 8 litres</td>
</tr>
<tr>
<td></td>
<td>Sand: 1.2m³ (~1.7t)</td>
<td>Sand: 1.2m³ (~1.7t)</td>
</tr>
<tr>
<td><strong>M4</strong></td>
<td>Mix in 1 : 0.5 : 4.5 proportions</td>
<td>Mix in 1 : 4 proportions</td>
</tr>
<tr>
<td></td>
<td>Cement: 18 bags (20kg each)</td>
<td>Off-white Cement: 20 bags (20kg each)</td>
</tr>
<tr>
<td></td>
<td>Lime: 3 bags (20kg each)</td>
<td>Tech-Dryad mortar additive: 8 litres</td>
</tr>
<tr>
<td></td>
<td>Sand*: 1.2m³ (~1.7t)</td>
<td>Sand*: 1.2m³ (~1.7t)</td>
</tr>
</tbody>
</table>

* Allowed 20% extra sand for bulking
* Use clean sand
* t = tonne
Reinforced Core-Fill Masonry Walls

Concrete blocks (140, 190, and 290mm) have large cores which facilitate the placement of steel reinforcing rods and the pouring/pumping of grout (grout is highly workable concrete).

If a wall is reinforced with bars spaced at 800mm centres or less and fully grouted, the wall is referred to as ‘reinforced masonry’. These walls can have similar strength and ‘flexure’ characteristics to reinforced insitu concrete walls.

Partially reinforced block walls are only grout filled where the reinforcement is placed, usually in bond beams and vertically in cores.

All reinforced walls must be designed by a structural engineer.

Grout Filling

Grout Specification

The correct grout specification (mix design) is critical to achieving the structural design of a reinforced wall. The grout used to fill the cores of blockwork walls should be specified as follows:

- Characteristic Compressive Strength 20MPa;
- Cement content not less than 300kg/m³;
- Round aggregate (if any) not bigger than 10mm;
- Clean sand (salts can leach through to the face); and
- A pouring consistency which ensures that the cores are completely filled and the reinforcement completely surrounded without segregation of the constituents.

The approximate number of blocks filled per cubic metre of grout is shown in Table B6.

Grouting

Grout may be mixed on site and poured from buckets into hoppers placed on top of the wall. Alternatively, for larger jobs, the grout may be delivered by transit mixer and pumped into the cores, using a small nozzle on the hose.

Before commencing placement of the grout, it is important that the cores should be clean and free of mortar ‘dags’ projecting into the core. A steel rod is pushed down the core to knock off these ‘dags’ and to break up any mortar that has dropped onto the footing. The cores are then hosed or swept out from the bottom of each core through the ‘clean-out’ block. The vertical steel rods are tied to the starter bars, and then the clean-out blocks are covered with formwork, ready for grouting.

In hot dry weather it may be necessary to hose the cores out with water in order to cool the blocks and so prevent ‘flash-setting’ of the grout. If so, this hosing should be completed at least 30 minutes before the grout is placed.

Because of the high pressures developed at the bottom of the cores when they are filled, grouting in lifts of more than 1.2 metres should not be attempted in one pour. Where the lift is more than 1.2 metres, it is preferable to fill the cores in two stages at least 30 minutes apart.

When grouting Series 150 blocks, lifts should be reduced to 800mm (4 courses) to ensure no voids are left in the wall.

Grout for Designer Block Units

Due to the high hydrostatic pressure at the bottom of freshly grouted cores, water will seep out of the wall. This MUST be cleaned off. The admixture used with Designer Block units will increase the time for the grout to firm and dry, therefore more care must be used inspecting and cleaning any seepage on the surface of these walls. Clean all grout spills before they set.

Table B6 — Blocks filled per cubic metre of Grout

<table>
<thead>
<tr>
<th>Block Type</th>
<th>Blocks Filled per m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.42 Notch</td>
<td>190</td>
</tr>
<tr>
<td>15.01 Full</td>
<td>190</td>
</tr>
<tr>
<td>15.142 Split Face</td>
<td>200</td>
</tr>
<tr>
<td>15.91 Double ‘U’</td>
<td>175</td>
</tr>
<tr>
<td>20.01 Full</td>
<td>120</td>
</tr>
<tr>
<td>20.42 Notch</td>
<td>120</td>
</tr>
<tr>
<td>20.142 Split Face</td>
<td>125</td>
</tr>
<tr>
<td>20.91 Double ‘U’</td>
<td>100</td>
</tr>
<tr>
<td>30.91 Double ‘U’</td>
<td>65</td>
</tr>
<tr>
<td>Connex 91</td>
<td>90</td>
</tr>
<tr>
<td>15.12 Bond Beam/intel</td>
<td>200 (80 lineal metres)</td>
</tr>
<tr>
<td>20.12 Bond Beam/intel</td>
<td>125 (50 lineal metres)</td>
</tr>
</tbody>
</table>
Construction Considerations

Mortar Deposits
Mortar extruded from masonry joints during laying should be cut off with an upward stroke of the trowel. In this way a clean cut can be made without smearing the face of the unit. On completion of laying and tooling, any mortar smears which may be on the face of the work should be removed, firstly with dry brushing and secondly, if necessary, by wet brushing. Do not allow mortar smears and dags to set on the face of the masonry. If these mortar deposits are allowed to set on face masonry, high pressure water jets or in extreme cases a diluted acid solution might be needed to remove mortar stains. See ‘Cleaning Face Concrete Masonry’ before testing either water jets or acid solutions. Acid cleaning should be avoided as face concrete blocks can be discoloured.

Scaffolding
Scaffolding planks should be placed with a clearance of at least 150mm to the wall. This gap allows mortar droppings to fall clear of the plank instead of splattering on the plank and building, disfiguring the wall. At the end of each day’s work or when rain interrupts work, the plank nearest the wall should be propped on edge to prevent mortar from being splattered onto the wall by overnight rain.

Concrete Droppings
Masonry, supporting reinforced concrete slabs and beams is frequently disfigured by droppings from the concrete pour. If such deposits are allowed to set it is sometimes impossible to rectify the damage. Protection is best achieved by covering the walls with plastic sheeting. Where this is not done, any concrete on the wall must be thoroughly cleaned off before it sets.

Rain Interruption
Overnight, and when rain interrupts blocklaying, the top of newly laid walls should be protected with plastic sheeting or similar. This is essential with face blockwork. When newly laid masonry is saturated by rain, lime is put into solution either from portland cement, or from saline (unwashed) sands or hydrated lime in the mortar. This solution takes in carbon dioxide from the atmosphere and precipitates calcium carbonate. This whitish stain is very disfiguring and not easily removed. Frequently, new masonry is marred by bands of calcium carbonate stain confined to three or four courses of masonry - the result of rain saturating freshly laid work.

Cleaning Concrete Masonry

Good Building Practice
Block layers must exercise extra care when laying face concrete masonry to minimise mortar staining.

Block layers must:
• Keep face blocks as clean as possible while laying and tooling;
• Keep unused pallets of blocks and tops of unfinished walls covered during rain to prevent water penetration and excessive efflorescence;
• Clean any dags and mortar smears before they set hard. Remaining stains could be removed following the procedures set out below.

Removal of Mortar Stains with Hand Tools
After using a bucket and brush, remove any remaining mortar dags and smears by rubbing the surface with a piece of ‘like coloured’ block or a piece of wood if cleaning polished masonry (to prevent scratching). Careful use of a paint scraper, wide bladed chisel or wire brush can be helpful in removing mortar buildup. However care must be taken not to scratch or damage the masonry surface.

Pressure Cleaning
This cleaning method is not a substitute for good building practice and hand cleaning methods. It should only be used after these procedures have been carried out if further cleaning is required.

Essential Preliminaries:
Thoroughly remove mortar smears and dags back to a flat surface with hand tools as outlined above. Hand cleaning must not leave any thickness of mortar, otherwise pressure cleaning will damage the masonry face and mortar joints before removing the thickness of mortar.

Allow the mortar to harden for a minimum of seven days prior to pressure cleaning;
Carry out a pressure cleaning trial on a typical but inconspicuous area and allow it to dry to determine:
• The effectiveness of this cleaning method; and
• That marking, damage or erosion of the surface has not been caused before proceeding with the general cleaning.

NOTE: If there is no inconspicuous area, a small wall could be constructed for this purpose.
Pressure cleaning may be carried out with pressure not exceeding 7MPa (1000psi) and volume not exceeding 20 litres/minute and fan jet of a minimum 40 degree width, held not closer than 500mm from the wall. Cleaning should be continuous and even. The pressure jet should never be stationary and should not ‘needle’ or zero in on mortar stains as surface erosion will almost certainly occur.

NOTE: If this method is not totally successful, further hand cleaning and scraping should be carried out prior to further pressure cleaning.

Caution:
High pressure water blasting can cause personal injury and damage masonry. Mortar joints can be blown out and face blockwork marked and eroded;
Zero degree or needle jets, narrow fan jets and turbo jets should not be used on blockwork because all concentrate the water pressure on too small an area which can cause damage;
Minimal pressure should be used to avoid mortar blowouts and/or damage to the face of units.

Experienced operators should carry out pressure cleaning in accordance with the above recommendations after appropriate trials have taken place.

Acid Treatments
Only if hand cleaning and pressure washing methods have failed to fully remove mortar stains, should acid treatments be considered for cleaning of concrete blockwork.

NOTE: Acids react with and dissolve cement, lime and oxide colourants in concrete blocks and mortar joints and are thus capable of etching, fading and streaking the masonry finish. When acid is applied to dry blockwork without pre-wetting, it is drawn in below the surface it is intended to clean. Salts may appear when the masonry dries out.

If it is considered necessary to use an acid for general cleaning, it should only be used after trialling in an inconspicuous area as outlined under ‘Essential Preliminaries’ and strictly in accordance with the following procedures.

Hydrochloric acid (otherwise known as Muriatic Acid or Spirits of Salts) can be tested at a strength of 1 part acid to 20 parts water. A less aggressive alternative is powdered Citric Acid which can be used at strengths up to 1 Part acid to 10 parts water (by volume).

Procedures for Acid Cleaning
1. Remove mortar dags and smears as described under ‘Hand Tools’;
2. Working from the top of the wall down in vertical ‘runs’, thoroughly pre-wet (SOAK) an area of blockwork of approximately 2m² at a time;
3. Apply diluted acid to the water-soaked area by brush or broom with a horizontally (sideways) action to prevent runs and streaks;
4. Within 2 to 3 minutes, rinse this area from top to bottom under tap pressure only;
5. Pressure clean this area thoroughly, gently and evenly, as outlined previously;
6. Repeat steps 1 to 5 as necessary to achieve the best compromise between cleaning and damage caused by excessive treatment.

Other Stains
Timber (Tannin)
These can usually be removed by the application of a chlorine solution, preferably Sodium Hypochlorite (household bleach), onto the dry surface. Re-apply as necessary to achieve the desired result.

Clay or Loam Stains
If not too severe and intransigent, these stains may be removed with a solution of 50ml household detergent and 500 grams of oxalic acid dissolved in 4 litres of warm water. Lightly pre-wet then apply the above solution with a nylon brush. Rinse off and repeat as necessary. Pressure cleaning as outlined previously may be of assistance.

Mosses, Moulds and Lichens
These commonly appear as a green to black area, often with a hair like growth, around damp areas such as taps, gutter overflow areas, south facing walls, etc.
1. Scrape off any thickness of moss/mould/lichen;
2. Pre-wet the mouldy area;
3. Apply a chlorine solution, preferably Sodium Hypochlorite (household bleach), at sufficient strength to kill mould within approximately 1 hour;
4. Scrubbing with a stiff brush or broom will normally assist;
5. Thoroughly flush the surface. If mould remains, repeat steps 1 to 3 as necessary to kill and remove the mould;
6. Pressure cleaning, as outlined previously, may assist.
**Efflorescence**

The term efflorescence is given to a white powdery deposit that forms on the surfaces of porous building materials such as masonry units, mortar and concrete. The temporary appearance of efflorescence is common on new masonry. For efflorescence to occur, three conditions must be present:

1. There must be soluble or semi soluble salts present;
2. There must be water entering the masonry; and
3. The masonry must be able to dry out.

The absence of any of the above three conditions will prevent efflorescence. Any situation which allows water to enter the wall is likely to promote efflorescence. The most common causes are:

- Poor building practice such as partially built walls left uncovered during rain. Delays in installation of window sills and downpipes can exacerbate this problem, allowing rainwater to enter block cavities and leach free lime to the surface;
- Poor storage of masonry units on site. Before units are placed in the wall they can absorb ground salts and excessive water in the stockpiled masonry and can mobilise latent salts. It is desirable to store masonry off the ground and loosely cover with a waterproof membrane during rain;
- Poor or missing copings and flashings;
- Excessively raked joints which allow water to enter the bed face of the masonry (ironed joints are recommended); and
- The use of air entraining agents in the mortar which makes the mortar act like a sponge.

Good laying practice and site procedures are necessary for keeping efflorescence to a reasonable level. Care should also be taken to ensure that excessive lime is not used in mortar joints.

In conjunction with dry brushing, the cleaning methods outlined previously will usually remove most ‘normal’ levels of efflorescence. Dry brush, then wet brush and wash down. It is important to remove as much efflorescence as possible with DRY brushing because powder efflorescence is water soluble. Wet brushing can dissolve the powder and the dry block can re-absorb it. If high levels of efflorescence are present on walls exposed to continual wetting from rain or other sources of dampness over an extended period, calcification or hardening of the lime tends to take place. The powdery lime gradually becomes a very hard film of calcium carbonate. If this occurs, it will almost certainly require professional advice and specialised cleaning methods for its removal.

Wall sealers also help to prevent future efflorescence, mould growth and general staining by reducing water absorption from rain.

Concrete products due to their mix of raw materials used in their manufacture, are prone to effloresce and allowances must be made by the purchaser for this occurring. Boral does not clean or accept to clean staining or efflorescence off blockwork.

**Safety Precautions and Warnings**

- When using chemicals, care must be taken to avoid damage to adjacent materials and finished surfaces. Masking and plastic sheeting may be necessary;
- To avoid personal injury, wear protective clothing and vapour cartridge breathing mask—particularly in confined areas, as recommended by chemical manufacturers;
- NEVER mix chemicals that you are unfamiliar with, particularly chlorine and acid—it emits deadly chlorine gas. Follow the chemical manufacturer’s recommendations;
- Dilute acid by adding acid to water. Never add water to acid;
- Harsh acidic chemicals should never be used for the cleaning of blockwork; and
- Chemical wastes must not be allowed to run down drains and storm water outlets in accordance with Environmental Protection Regulations.
Designer Block™
Contemporary Colours
for External and Internal Walls

The colour palette has been developed in consultation with designers and offers a broad and co-ordinated range. The Designer Block colour palette provides the flexibility of many colour combinations essential for the popular composite building styles that require varying finishes and materials.

Choose from a palette of 4 contemporary colours and 5 bold textures or customise to create an individual look (please note longer lead times and surcharges may apply for this service).
Designer Block™
Pre-sealing Technology

Designer Block products utilise the latest pre-sealing technology to reduce water absorption, and hence reduce the possibility of efflorescence, mould or mildew staining.

Designer Block products are suitable for loadbearing and non-loadbearing walls.
Designer Block™ Textures

**Smooth Face**
A finely textured finish created through the standard moulding process.

**Shot-Blast Face**
This process subtly exposes the aggregates, producing a finish like weathered ground stone.

**Honed Face**
The honing process grinds 2-3mm from the block surface, producing a matt exposed-aggregate finish, like sawn stone.

**Polished Face**
This involves producing a denser block which is honed and then buffed. Polishing enriches the colour of the aggregates. The finely finished polished surface is ideal for feature walls, trim and banding.

**Split Face**
The splitting process produces a bold textured, exposed aggregate finish.

**Block Ends**
Honed, Shot-Blast or Polished finishes are available on the end of blocks for corners, openings and free ends.
Essential Colours

<table>
<thead>
<tr>
<th>Smooth Face</th>
<th>Shot-Blast Face</th>
<th>Honed Face</th>
<th>Polished Face</th>
<th>Split Face</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabaster</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almond</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearl Grey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charcoal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Availability and Quantities

- Lead times apply to all coloured blocks. Longer lead times apply to Honed, Polished and Shot-Blast finishes as the product must be cured for four weeks, to harden sufficiently, before processing. A lead time of approximately eight weeks applies.
- Minimum order quantities apply on Honed, Polished and Shotblast finishes.
- Boral recommends part size blocks are cut/bolstered on-site to maintain colour consistency.

Colour and Texture Variations

- The colours shown in this brochure are provided as an indication of the colours and textures available. Some variations in colour will occur due to changes in raw materials. In addition, variation can occur within and between production batches due to the curing process. Please ask to see a sample of your chosen colour/texture before specifying or ordering.
**Design Block™**
**Smooth, Honed, Shot-Blast and Polished Face**

**INTRODUCTION**
Designer Block is suitable for internal and external walls in loadbearing and non-loadbearing applications. They are popular for feature face applications in double leaf construction.

**FACE TEXTURES**
Designer Block is available with the following face texture finishes:
- Smooth Face
- Honed Face
- Shot-Blast Face
- Polished Face
- Ends — Honed, Shot-Blast or Polished finishes. Refer to pg C4 for detailed description.

**COLOURS**
Designer Block units are available in 4 colours. Please refer to page C5 for additional information.

Customised colours and textures are also possible. Please note that extended lead times and minimum order quantities may apply.

**Specifications**

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Description</th>
<th>MPa</th>
<th>Wt kg</th>
<th>N°/Pallet</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.01</td>
<td>Full</td>
<td>15</td>
<td>11.1</td>
<td>180</td>
</tr>
<tr>
<td>15.01</td>
<td>Full (made-to-order)</td>
<td>15</td>
<td>12.5</td>
<td>120</td>
</tr>
<tr>
<td>15.42</td>
<td>Recessed Web</td>
<td>15</td>
<td>12.5</td>
<td>120</td>
</tr>
<tr>
<td>20.01</td>
<td>Full</td>
<td>15</td>
<td>14.2</td>
<td>90</td>
</tr>
<tr>
<td>20.42</td>
<td>Recessed Web</td>
<td>15</td>
<td>14.1</td>
<td>90</td>
</tr>
<tr>
<td>50.31</td>
<td>Capping</td>
<td>15</td>
<td>6.8</td>
<td>270</td>
</tr>
<tr>
<td>10.39</td>
<td>Victorian Sill</td>
<td>3.5</td>
<td>440*</td>
<td></td>
</tr>
</tbody>
</table>

* Supplied as 220 double units. Bolster on-site to achieve 440 units per pallet.

**Availability**
- Lead times apply to all coloured blocks.
- Part size blocks are best cut/bolstered on-site to maintain colour consistency.
- Contact Boral Masonry for further details.
INTRODUCTION
Designer Block Split Face is suitable for internal and external walls in loadbearing and non-loadbearing applications.

Designer Block Split Face is produced in three block thicknesses, Series 100 (95mm thickness), Series 150 (145mm thickness) and Series 200 (195mm thickness).

FACE TEXTURES
• Split Face - The splitting process produces a bold textured surface resulting in characteristics much like split natural stone.

COLOURS
Designer Block units are available in 4 colours. Please refer to page C5 for additional information.

Customised colours are also possible. Please note that extended lead times and minimum order quantities may apply.

DESIGN NOTES
One in three 10.101 and one in four of 15.121 blocks delivered will be half solid to enable on-site bolstering to create split face textures at sides of openings and corners where required. Splitting details are on pages C8 to C11.

When designing with split face blocks, special consideration should be given to the distances between openings and between corners and openings to facilitate the bolstering of block ends where required.

NOTE: Colour variations may occur between recessed web and full blocks as these are batched differently.

### Specifications

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Description</th>
<th>MPa</th>
<th>Wt kg</th>
<th>N°/Pallet</th>
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<tr>
<td>10.101 Full</td>
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<td>13.9</td>
<td>144</td>
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<tr>
<td>10.109 Half Height</td>
<td>15</td>
<td>7.2</td>
<td>288</td>
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<td>15.121 Full</td>
<td>15</td>
<td>15.8</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>15.142 Recessed Web</td>
<td>15</td>
<td>15.5</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>20.121 Full</td>
<td>15</td>
<td>17.7</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>20.142 Recessed Web</td>
<td>15</td>
<td>17.6</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

Availability
- Lead times apply to all coloured blocks.
- Part size blocks are best cut/bolstered on-site to maintain colour consistency. Part size blocks can be made-to-order.
- Contact Boral Masonry for further details.
Series 100 Corner Details

One third of 10.101 blocks are half solid

Fig C1 — Corner Bonding Details
Series 100 Split Face Designer Block

Series 150 Corner Details for Unreinforced Walls

One unit in four is half-solid, for end splits

Fig C3 — Corner Bonding Details
15.121 Split Face Corner

Fig C4 — Corner Bonding Details
15.01 cut on-site to maintain bond
Series 150 Feature Face Designer Block
Series 100 Installation Details

**Fig C5 — 45° Corner**  
Series 100 Split Face Designer Block

**Fig C6 — 45° Acute Corner**  
Series 100 Split Face Designer Block

**Fig C7 — Sill Detail with Smooth Face Sill**  
Series 100 Split Face Designer Block

**Fig C8 — Sill Detail with Capping Piece**  
Series 100 Split Face Designer Block

**Fig C9 — Sill Detail with Raked Paver**  
Series 100 Feature Face Cavity Wall

**Fig C10 — Sill Detail with Victorian Sill profile**  
Series 100 Feature Face Cavity Wall
Series 200 Installation Details

Fig C11 — Sill Detail - Single Skin Wall  
Series 200 Feature Face Designer Block

Fig C12 — Sill Detail - Single Skin Wall  
Series 200 Split Face Designer Block

Fig C13 — Corner Bonding Details  
Series 200 Split Face Designer Block

Fig C14 — Face Lintel Detail with 1800mm Opening for Series 150 or 200 Blocks
Series 150 Installation Details for Reinforced Walls

15.42 cut on-site to maintain bond

Next course laid with recesses down to allow extra cover to horizontal steel

Strike mortar flush over recess in end. Iron when mortar is firm.

Fig C14 — Corner Bonding Details  
Series 150 Split Face Designer Block

Fig C15 — Corner Bonding Details  
Series 150 Feature Face Designer Block
Series 200 Installation Details for Reinforced Walls

NB: 20.01 and 20.42 may have colour variations.
INTRODUCTION
Boral Formed Face Designer Block provides a distinctive face pattern to create internal and external walls with unique architectural character.

FACE TEXTURES
- **Tiled Face** – a 140mm or 190mm thick block with a formed finish manufactured with a dummy centre joint to form a 190 x 190mm tile face pattern.

Formed Face is available with the following face textures:
- smooth
- honed
- polished
- shotblast.

**Specifications**

<table>
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<tr>
<th>Code</th>
<th>Product Description</th>
<th>MPa</th>
<th>Wt kg</th>
<th>N°/Pallet</th>
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<td>120</td>
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<tr>
<td>20.01T</td>
<td>Tiled Face - Full 190mm</td>
<td>≥10</td>
<td>15.3</td>
<td>90</td>
</tr>
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</table>
MASONRY BLOCKS AND BRICKS  
NEW SOUTH WALES  
BOOK 2

ENGINEERED BLOCKS

Masonry Design Guide
Masonry One® Grey Block is a 90mm thickness block which is manufactured from controlled light weight concrete.

An extensive range of component forms cater for most popular construction requirements.

Masonry One® Grey Block combines strength, durability and ease of construction and provides highly cost effective solutions for every-day construction applications.

**APPLICATIONS**

Masonry One® Grey Block is very popular for internal walls and veneer wall construction.

**FIRE RATING**

10.01 series blocks have a 120 min insulation rating. For further details refer to Book 1.

**ADDITIONAL INFORMATION**

Please refer to the Boral Masonry Design Guide (Book 1) for additional structural, fire and acoustic performance information.

### Specifications

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Description</th>
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<th>N°/Pallet</th>
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<tbody>
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<td>10.02</td>
<td>Three Quarters</td>
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<td>6.1</td>
<td>240</td>
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<tr>
<td>10.03</td>
<td>Half</td>
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<td>4.3</td>
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<td>Lintel or Bond Beam</td>
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<td>180</td>
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<td>10.25</td>
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<td>Quarter</td>
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<td>Half High Solid</td>
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<td>5.2</td>
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**Colour and Availability**

- No minimum order quantities apply.
- Lead time 0-2 weeks.
- For coloured blocks, refer to the Designer Block section of this guide.

**NOTE:**

- This product will have colour variations due to the natural element of the raw materials. Boral Masonry accepts no responsibility for variations in colour.

Natural Grey*
Typical Component Usage - Series 100 Masonry One® Grey Block

Steel reinforcing and grout to project specifications or Steel lintel

Fig D1 — Corner Bonding Detail for Series 100 Construction Block

NOTE: 10.25 corner return only available in Natural Grey.

Fig D2 — Alternative Corner Bonding Detail for Series 100 Construction Block

NOTE: 10.02 three-quarter block only available in Natural Grey.
INTRODUCTION
Masonry One® Grey Block is a 140mm thickness block which is manufactured from controlled dense-weight concrete.

An extensive range of component forms cater for most popular construction requirements.

APPLICATIONS
Masonry One® Grey Block is very popular for loadbearing and non-loadbearing wall construction and the construction of small cantilevered walls as it is the thinnest block suitable for reinforced grout filling. Also refer to the products in the Core Fill Blocks section of this guide.

The Estate Wall Pier is used extensively in the construction of boundary fencing for properties and subdivisions.

FIRE RATING
15.01 series blocks have a 120 min insulation rating. For further details refer to Book 1.

ADDITIONAL INFORMATION
Please refer to the Boral Masonry Design Guide (Book 1) for additional structural, fire and acoustic performance information.

Specifications

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<th>Code</th>
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<th>Wt kg</th>
<th>N°/Pallet</th>
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<td>Full</td>
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<td>9.7</td>
<td>120</td>
</tr>
<tr>
<td>15.02</td>
<td>Three Quarters</td>
<td>10</td>
<td>7.7</td>
<td>160</td>
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<tr>
<td>15.03</td>
<td>Half</td>
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<td>5.2</td>
<td>252</td>
</tr>
<tr>
<td>15.12</td>
<td>Lintel or Bond Beam</td>
<td>10</td>
<td>12.4</td>
<td>120</td>
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<td>15.25</td>
<td>Corner Return</td>
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<td>15.83</td>
<td>Half High Solid</td>
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<td>8.6</td>
<td>192</td>
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Colour and Availability
- No minimum order quantities apply.
- Lead time 0-2 weeks.
- For coloured blocks, refer to the Designer Block section of this guide.

NOTE:
- This product will have colour variations due to the natural element of the raw materials. Boral Masonry accepts no responsibility for variations in colour.

Natural Grey*
Typical Component Usage - Series 150 Masonry One® Grey Block

Fig D3 — Corner Bonding and Free End Detail for Series 150 Construction Block

Steel reinforcing and grout to project specifications or Steel lintel

15.01 or 15.83

Cut from 15.83

15.25

900mm

Cut from 15.01

NOTE: 15.25 corner return only available in Natural Grey.

Fig D4 — Corner Bonding and Free End Detail for Series 150 Construction Block

Steel reinforcing and grout to project specifications or Steel lintel

15.01

15.25

15.01

15.01 to 340mm

15.01

15.01

15.01

15.01

15.03

15.01

15.03

15.03

15.03

15.03

15.03

15.01

15.01 to 340mm

15.01

NOTE: Use where 15.25 corner return not available.
**INTRODUCTION**

Masonry One® Grey Block is a 190mm thickness block which is manufactured from controlled lightweight concrete.

An extensive range of component forms cater for most popular construction requirements.

**APPLICATIONS**

Masonry One® Grey Block is very popular for loadbearing and non-loadbearing wall construction and the construction of cantilevered walls as it is suitable for reinforced grout filling. Also refer to the products in the Core Fill Blocks section of this guide.

**FIRE RATING**

20.01 series blocks have a 120 min insulation rating. For further details refer to Book 1.

**ADDITIONAL INFORMATION**

Please refer to the Boral Masonry Design Guide (Book 1) for additional structural, fire and acoustic performance information.

---

**Series 200 - Masonry One® Grey Block**

**Specifications**

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<td>90</td>
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<td>20.02</td>
<td>Three Quarters</td>
<td>10</td>
<td>8.7</td>
<td>120</td>
</tr>
<tr>
<td>20.03</td>
<td>Half</td>
<td>10</td>
<td>6.8</td>
<td>180</td>
</tr>
<tr>
<td>20.04</td>
<td>Quarter</td>
<td>10</td>
<td>4.3</td>
<td>360</td>
</tr>
<tr>
<td>20.12</td>
<td>Lintel</td>
<td>15</td>
<td>16.4</td>
<td>90</td>
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<tr>
<td>20.20</td>
<td>Knock-Out Bond Beam (cut to order)</td>
<td>10</td>
<td>11.0</td>
<td>90</td>
</tr>
<tr>
<td>20.71</td>
<td>Half High</td>
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<td>5.9</td>
<td>180</td>
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<td>50.31</td>
<td>Capping</td>
<td>10</td>
<td>6.8</td>
<td>270</td>
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**Colour and Availability**

- No minimum order quantities apply.
- Lead time 0-2 weeks.
- For coloured blocks, refer to the Designer Block section of this guide.

**NOTE:**

- This product will have colour variations due to the natural element of the raw materials. Boral Masonry accepts no responsibility for variations in colour.

Natural Grey*
Typical Component Usage - Series 200 Masonry One® Grey Block

Steel reinforcing and grout to project specifications or Steel lintel

Fig D5 — Corner Bonding and Free End Detail for Series 200 Construction Block

NOTE: Also suitable for Series 200 Designer Block.
Masonry One® - High Fire Rated Grey Block
Series 150 and 200

INTRODUCTION
Masonry One® blocks are manufactured from a blend of material which reduces the weight and increases the fire performance characteristics.

Masonry One® blocks are ideal for non-loadbearing walls of commercial, industrial and high-rise buildings with concrete and portal framed structures.

Masonry One® blocks are also suitable for loadbearing walls, however the Srf values from Designer Block units apply. Refer to the Boral Masonry Design Guide (MDG Book 1) for more information.

Masonry One® is manufactured in 90, 110, 140 and 190mm thicknesses to suit most types of fire and/or acoustic wall construction.

FIRE DESIGN CONSIDERATIONS
Masonry One® blocks utilise a unique blend of material, which has been shown through fire testing to provide excellent fire insulation characteristics.

ACOUSTIC DESIGN CONSIDERATIONS
Masonry One® blocks provide excellent sound resistance with a wide variety of board-lining systems.

ADDITIONAL INFORMATION
Please refer to the Boral Masonry Design Guide (MDG Book 1) for additional structural, fire and acoustic performance information.

Specifications - Series 150

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<th>Product Description</th>
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<th>Average Weight kg</th>
<th>Unit £’uc MPa</th>
<th>No per Pallet</th>
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<tr>
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<td>Full</td>
<td>140 x 390 x 190</td>
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<td>≥8</td>
<td>120</td>
</tr>
<tr>
<td>15.422</td>
<td>Corner</td>
<td>140 x 340 x 190</td>
<td>11.1</td>
<td>≥8</td>
<td>135</td>
</tr>
<tr>
<td>15.403</td>
<td>Half</td>
<td>140 x 190 x 190</td>
<td>7.4</td>
<td>≥8</td>
<td>252</td>
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Specifications - Series 200

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<th>Product Code</th>
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<tr>
<td>20.401</td>
<td>Full</td>
<td>190 x 390 x 190</td>
<td>13.2</td>
<td>≥8</td>
<td>90</td>
</tr>
<tr>
<td>20.403</td>
<td>Half</td>
<td>190 x 190 x 190</td>
<td>9.0</td>
<td>≥8</td>
<td>180</td>
</tr>
</tbody>
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Availability
• No minimum order quantities apply.
• Lead time 0-2 weeks.
Masonry One® - High Fire Rated Grey Block

Series 150

15.401  Full
15.403  Half
15.422  Corner

Series 200

20.401  Full
20.403  Half
CONSTRUCTION CONSIDERATIONS

Before commencing placement of the grout, it is important that the cores should be clean and free of mortar ‘dags’ projecting into the core. A steel rod is pushed down the core to knock off these ‘dags’ and to break up any mortar that has dropped onto the footing. The cores are then hosed or swept out from the bottom of each core through the ‘clean-out’ space. The vertical steel rods are tied to the starter bars, and then the clean-out blocks are covered with formwork, ready for grouting (see ‘Retaining Wall Details’ in Book 1). An alternative method, which may be used in low height walls, is to leave a gap in the mortar bed at the bottom of each core and to hose out the dropped mortar and dags before the mortar has set.

When grouting Series 150 Blocks, lifts should be reduced to 800mm (4 courses) to ensure no voids are left in the wall.

<table>
<thead>
<tr>
<th>Block Type</th>
<th>Blocks Filled per m³ of Grout (approximate)</th>
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<tr>
<td>15.42 Notch</td>
<td>190</td>
</tr>
<tr>
<td>15.01 Full</td>
<td>190</td>
</tr>
<tr>
<td>15.142 Split Face</td>
<td>200</td>
</tr>
<tr>
<td>15.91 Full</td>
<td>175</td>
</tr>
<tr>
<td>20.01 Full</td>
<td>120</td>
</tr>
<tr>
<td>20.42 Notch</td>
<td>120</td>
</tr>
<tr>
<td>20.142 Split Face</td>
<td>125</td>
</tr>
<tr>
<td>20.91 Full</td>
<td>100</td>
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<tr>
<td>30.91 Full</td>
<td>65</td>
</tr>
<tr>
<td>Connex 91</td>
<td>90</td>
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INTRODUCTION
Boral Masonry Feature Face Core-Fill Blocks are designed for the construction of reinforced masonry retaining walls and loadbearing walls requiring increased robustness characteristics and where a feature face is required.

FACE TEXTURES
Core-Fill Block is available with the following face texture finishes:

- Smooth Face
- Honed Face
- Shot-Blast Face
- Polished Face
- Split Face
- Ends — Honed, Shot-Blast or Polished finishes.

Please refer to page C4 for general information.

COLOURS
Designer Block products are available in 4 colours. Please refer to page C5 for additional information.

Customised colours and textures are also possible. Please note that extended lead times and minimum order quantities will apply.

Specifications

Smooth, Honed, Shot-Blast or Polished Face
Face and one end available Polished, Honed or Shot-Blast on request

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Description</th>
<th>f'uc MPa</th>
<th>Wt kg</th>
<th>N°/Pallet</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.42</td>
<td>Full - Recessed Web</td>
<td>15</td>
<td>12.5</td>
<td>120</td>
</tr>
<tr>
<td>20.42</td>
<td>Full - Recessed Web</td>
<td>15</td>
<td>14.1</td>
<td>90</td>
</tr>
</tbody>
</table>

Split Face

<table>
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<tr>
<th>Code</th>
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<th>f'uc MPa</th>
<th>Wt kg</th>
<th>N°/Pallet</th>
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<tr>
<td>15.142</td>
<td>Full - Recessed Web</td>
<td>15</td>
<td>15.5</td>
<td>120</td>
</tr>
<tr>
<td>20.142</td>
<td>Full - Recessed Web</td>
<td>15</td>
<td>17.6</td>
<td>90</td>
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</tbody>
</table>

Installation Considerations
Hydrostatic pressure at the bottom of a freshly grouted core is very high, forcing water to seep out of the wall. This MUST be cleaned off. The admixture used with Designer Block products will increase the time for the grout to firm and dry, therefore more care must be used inspecting and cleaning any seepage on the surface of these walls. Pours of 1.2m max. lift are recommended.

Availability
- Lead times apply to all coloured blocks.
- Part size blocks are best cut/bolstered on-site to maintain colour consistency.
- Contact Boral Masonry for further details.
INTRODUCTION
Boral Series 150 Core Fill Block is designed for the construction of 140mm thickness reinforced masonry retaining walls and loadbearing basement walls.

Specifications

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<td>120</td>
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<td>15.91</td>
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<td>9.4</td>
<td>120</td>
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<td>15.49</td>
<td>Open End</td>
<td>15</td>
<td>9.7</td>
<td>120</td>
</tr>
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<td>15.03</td>
<td>Half</td>
<td>15</td>
<td>5.6</td>
<td>252</td>
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Colour and Availability

- No minimum order quantities apply.
- Lead time 0-2 weeks.

NOTE:
- This product will have colour variations due to the natural element of the raw materials. Boral Masonry accepts no responsibility for variations in colour.

Natural Grey*
Typical Usage - Series 150

Even Courses

15.49 cut to 340mm length for corner blocks

Steel spacings as specified by engineer (200 or 400mm typical)

Cut from 15.49 or 15.42

150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

Clean-out Course Detail

15.91 cut from 15.49 or 15.42

70 275 400 400 400 300 95

15.91 cut to 340mm length for corner blocks

15.91 cut to 340mm length for corner blocks

150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out

15.91 cut to suit for clean-out course (cut on site)

15.91 blocks with 2 cuts 150mm apart, 100mm up face, knock out 150 x 100mm for clean-out opening

15.91 full length at end of wall

Steel reinforcing starter bars

Cut wings off to allow for clean-out
Core-Fill Block

Series 200 - Masonry One®

INTRODUCTION
Boral Series 200 Core Fill Block is designed for the construction of 190mm thickness reinforced masonry retaining walls and loadbearing basement walls.

Specifications

<table>
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<th>Wt kg</th>
<th>N#/Pallet</th>
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<td>Recessed Web</td>
<td>15</td>
<td>11.4</td>
<td>90</td>
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<td>20.91</td>
<td>Double-U Stretcher</td>
<td>15</td>
<td>11.2</td>
<td>90</td>
</tr>
<tr>
<td>20.92</td>
<td>Corner and End</td>
<td>15</td>
<td>9.9</td>
<td>90</td>
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<tr>
<td>20.93</td>
<td>Half End</td>
<td>15</td>
<td>5.5</td>
<td>180</td>
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<td>20.12</td>
<td>Lintel</td>
<td>15</td>
<td>22.3</td>
<td>90</td>
</tr>
<tr>
<td>20.96</td>
<td>Clean-Out</td>
<td>15</td>
<td>11.9</td>
<td>90</td>
</tr>
<tr>
<td>10.34</td>
<td>Quarter (10.34 optional)</td>
<td>10</td>
<td>2.8</td>
<td>432</td>
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</table>

Fig E3 — Corner Bonding Detail for 20.91 Core Fill Block System

Colour and Availability

• No minimum order quantities apply.
• Lead time 0-2 weeks.

NOTE:
• This product will have colour variations due to the natural element of the raw materials. Boral Masonry accepts no responsibility for variations in colour.

Natural Grey*
Typical Usage - Series 200

Steel spacings as specified by engineer (200 or 400mm typical)

Even Courses

Clean-out Course Detail

Steel reinforcing starter bars

Clean out all dropped and rodded mortar before boarding up and pouring grout

10.34 (optional for extra stability)

Fig E4 — Typical Steel and Block Layout for 20.91 Block Wall using 20.96/10.34 Clean-out Course
Core-Fill Block

30.91 Double-U Stretcher

30.92 End

30.93 Half End

20.96 + 10.03 Clean-Out

Series 300 - Masonry One®

INTRODUCTION
Boral Series 300 Core Fill Block is designed for the construction of 290mm thickness reinforced masonry retaining walls and loadbearing basement walls.

Specifications

<table>
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<tr>
<th>Code</th>
<th>Product Description</th>
<th>f'uc MPa</th>
<th>Wt kg</th>
<th>N°/Pallet</th>
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<tr>
<td>30.91</td>
<td>Double-U Stretcher</td>
<td>15</td>
<td>13.6</td>
<td>60</td>
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<tr>
<td>30.92</td>
<td>End</td>
<td>15</td>
<td>16.2</td>
<td>60</td>
</tr>
<tr>
<td>30.93</td>
<td>Half End</td>
<td>15</td>
<td>9.3</td>
<td>120</td>
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<tr>
<td>20.96</td>
<td>Clean-Out</td>
<td>15</td>
<td>11.7</td>
<td>90</td>
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<tr>
<td>10.03</td>
<td>Clean-Out</td>
<td>15</td>
<td>4.4</td>
<td>360</td>
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</tbody>
</table>

Colour and Availability
• No minimum order quantities apply.
• Lead time 0-2 weeks.

NOTE:
* This product will have colour variations due to the natural element of the raw materials. Boral Masonry accepts no responsibility for variations in colour.

Natural Grey*
Typical Usage - Series 300

Steel spacings as specified by engineer (200 or 400mm typical)

Clean-out Course Detail

Steel reinforcing starter bars

30.93 with leg removed for access or 20.96 cut to 290mm long

Clean out all dropped and rodded mortar before boarding up and pouring concrete

20.93 or 20.96 to suit wall length

30.93 or 20.96 bolstered to 290mm length as required

Fig E6 — Steel and Block Layout for 30.91 Core Fill Block System
INTRODUCTION
Boral Basalt-Concrete bricks have an \( f'uc \) of 12MPa, making them excellent for loadbearing or non-loadbearing applications. They provide good fire performance and acoustic performance characteristics where minimising weight is not a primary consideration.

Boral Basalt-Concrete bricks are a popular choice for walls in high-rise units where they are commonly used with a rendered finish. They are also commonly used for loadbearing walls in 3-storey unit construction with plasterboard or render finish.

Basalt-Concrete bricks are manufactured in 90 and 110mm thicknesses and in a range of size formats to suit most construction formats.

Boral Basalt-Concrete blocks are also available. Please refer to the appropriate product pages in this Boral Masonry Block Guide.

FIRE DESIGN CONSIDERATIONS
Boral Basalt-Concrete bricks comprise of a Basalt-Concrete blend which provides good fire performance characteristics in loadbearing conditions.

All core areas are \( \leq 25\% \) of total volume, therefore all of these bricks can be considered as solid for fire design purposes.

ACOUSTIC DESIGN CONSIDERATIONS
The mass of Basalt-Concrete is similar to Clay and Calsil therefore rendered walls perform similarly.

Its texture is coarser and its porosity is higher than Clay and Calsil, so it performs better with plasterboard, particularly when daub-fixed.

Please refer to acoustic test/estimate data in Book 1 of the Boral Masonry Design Guide for appropriate systems.

<table>
<thead>
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<th>Colour and Availability</th>
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**Specifications**

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<th>Actual TxlHxL (mm)</th>
<th>Average Unit Wt</th>
<th>Unit Wt</th>
<th>( f'uc )</th>
<th>( f'm ) w/M3 Mortar</th>
<th>Perforation</th>
<th>N° per m²</th>
<th>N° per Pallet</th>
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</thead>
<tbody>
<tr>
<td>9.119B</td>
<td>90x290x119</td>
<td>5.6</td>
<td>10</td>
<td>5.6</td>
<td>&lt;20</td>
<td>25.8</td>
<td>236</td>
<td>336</td>
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<tr>
<td>11.119B</td>
<td>110x230x119</td>
<td>5.1</td>
<td>12</td>
<td>5.6</td>
<td>&lt;25</td>
<td>32.3</td>
<td>339</td>
<td>350</td>
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</tbody>
</table>
INTRODUCTION
Boral Masonry One® Brick is a non-loadbearing, medium density light weight material which provides high fire rated performance.

Masonry One® Brick is ideal for large commercial, industrial and high-rise buildings with concrete and portal framed structures.

Masonry One® Brick is manufactured in 90 and 110mm thicknesses and in a range of size formats to suit many fire and/or acoustic wall construction applications.

For larger masonry panel applications, also refer to Block products in section D (Engineered Blocks) in this guide.

FIRE DESIGN CONSIDERATIONS
Masonry One® Brick utilises a unique material blend which has been shown through fire testing to provide excellent fire insulation, integrity and structural adequacy characteristics.

ACOUSTIC DESIGN CONSIDERATIONS
Boral Masonry One® Brick provides excellent sound resistance with a wide variety of board-lining systems.

Please refer to acoustic test/estimate data in Book 1 of the Boral Masonry Design Guide for appropriate systems.

Specifications

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Actual T x L x H (mm)</th>
<th>Average Unit Wt kg</th>
<th>Unit f’uc MPa</th>
<th>Perforation %</th>
<th>Nº per m²</th>
<th>Nº per Pallet</th>
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<tbody>
<tr>
<td>9.119 LW</td>
<td>90 x 290 x 119</td>
<td>4.2</td>
<td>10</td>
<td>&lt;20</td>
<td>25.8</td>
<td>336</td>
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<tr>
<td>9.162 LW</td>
<td>90 x 290 x 162</td>
<td>6.1</td>
<td>10</td>
<td>&lt;20</td>
<td>19.4</td>
<td>288</td>
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<tr>
<td>11.119 LW</td>
<td>110 x 230 x 119</td>
<td>4.2</td>
<td>10</td>
<td>&lt;25</td>
<td>32.3</td>
<td>350</td>
</tr>
<tr>
<td>11.162 LW</td>
<td>110 x 230 x 162</td>
<td>5.5</td>
<td>10</td>
<td>&lt;25</td>
<td>24.2</td>
<td>300</td>
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<tr>
<td>11.76 VLS</td>
<td>110 x 230 x 76</td>
<td>3.2</td>
<td>10</td>
<td>Solid</td>
<td>48.5</td>
<td>560</td>
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</table>

Colour and Availability
• No minimum order quantities apply.
• Lead time 0-2 weeks.

Natural Grey
**INTRODUCTION**

Boral FireLight bricks are manufactured from a low-density material which provides high fire rated performance and minimum weight for non-loadbearing applications.

Boral FireLight is ideal for concrete framed office buildings and high-rise home units.

FireLight is manufactured in 90 and 110mm thicknesses and in a range of size formats to suit all types of fire and/or acoustic wall construction.

Boral FireLight blocks are also available. Please refer to the appropriate product pages in this Boral Masonry Block Guide.

**FIRE DESIGN CONSIDERATIONS**

FireLight is a fire tested lightweight concrete which is unique to Boral, and provides excellent fire rating characteristics. Please refer to the fire performance characteristics in Book 1.

**ACOUSTIC DESIGN CONSIDERATIONS**

Boral FireLight gives excellent sound resistance with a wide variety of tested board-lining systems.

Please refer to acoustic test/estimate data in Book 1 of the Boral Masonry Design Guide for appropriate systems.

---

**Specifications**

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Actual TxlLxH (mm)</th>
<th>Average Unit Wt (kg)</th>
<th>Unit f’uc (MPa)</th>
<th>Perforation</th>
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<td>9.162FL</td>
<td>90x290x162</td>
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<td>≥3</td>
<td>&lt;20</td>
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<tr>
<td>11.162FL</td>
<td>110x230x162</td>
<td>4.5</td>
<td>≥3</td>
<td>&lt;25</td>
<td>24.2</td>
<td>300</td>
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</table>
Customer Support New South Wales

1. Stock colours Colours other than stock colours are made to order. Not all colours displayed in this brochure are available in all states. (Contact your nearest Boral Masonry office for your area’s stock colours.)
   A surcharge applies to orders less than the set minimum quantity.

2. Brochure colours The printed colours in this Masonry Design Guide are only a guide. Please ask to see a sample of your colour/texture before specifying or ordering.

3. Colour and texture variation The supply of raw materials can vary over time. In addition, variation can occur between product types and production batches.

4. We reserve the right to change the details in this publication without notice.

5. For a full set of Terms and Conditions of Sale please contact your nearest Boral Masonry sales office.

<table>
<thead>
<tr>
<th>Specifier Line</th>
<th>1300 360 255</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td><a href="http://www.boral.com.au/masonry">www.boral.com.au/masonry</a></td>
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Orders, Product Samples and Sales Enquires

<table>
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<tr>
<th>NSW</th>
<th>Clunies Ross Street, Prospect, 2148</th>
<th>T: (02) 9840 2333</th>
<th>F: (02) 9840 2344</th>
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<tbody>
<tr>
<td>ACT</td>
<td>16 Whyalla Street, Fyshwick, 2609</td>
<td>T: (02) 6239 1029</td>
<td>F: (02) 6280 6262</td>
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Technical Enquires

Other Regional Sales Offices

<table>
<thead>
<tr>
<th>Victoria</th>
<th>Level 1 Port IT, 63-85 Turner Street, Port Melbourne, 3207</th>
<th>T: (03) 9363 1944</th>
<th>F: (03) 9363 6008</th>
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<tbody>
<tr>
<td>South Australia</td>
<td>Main North Road, Pooraka, 5095</td>
<td>T: (08) 8262 3529</td>
<td>F: (08) 8260 3011</td>
</tr>
<tr>
<td>Queensland</td>
<td>62 Industrial Ave, Wacol, 4076</td>
<td>T: (07) 3271 9292</td>
<td>F: (07) 3271 1581</td>
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<tr>
<td>North Queensland:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cairns</td>
<td>8 Palmer Street, Portsmith, 4870</td>
<td>T: (07) 4035 1888</td>
<td>F: (07) 4035 1208</td>
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<tr>
<td>Townsville</td>
<td>360 Bayswater Road, Garbutt, 4814</td>
<td>T: (07) 4725 6285</td>
<td>F: (07) 4725 6043</td>
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<tr>
<td>Mackay</td>
<td>David Muir Street, Slade Point, 4740</td>
<td>T: (07) 4955 1155</td>
<td>F: (07) 4955 4130</td>
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