



ByBlock® Product Data Sheet

PRODUCT NAME

ByBlock®

DESCRIPTION

ByBlock is a 100% recycled post-consumer plastic, semi-structural, non-load bearing filler product that offers high thermal mass properties and is created using a patented low emissions technology. Because we do not add any additives or fillers in the processing, ByBlocks do not break, crumble or fracture. ByBlocks are designed to live harmoniously with traditional building materials such as lumber, steel and cement to meet the structural requirement of the job. ByBlocks offer excellent dimensional stability, water resistant properties and handles loads slightly above traditional non-load bearing hollow CMUs.

SIZE AND SHAPE

WIDTH	DEPTH	HEIGHT
16"	8"	8 5/8"
400 mm	198 mm	205 mm

Total height of ByBlock includes the "pins" on top of the product which recess into the ByBlock above. Actual exposed/finished height of ByBlock is 8".

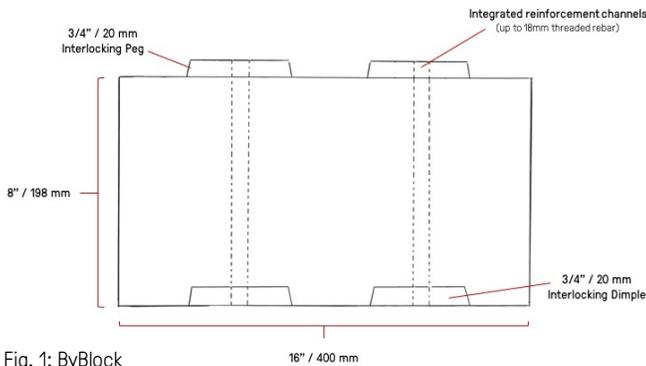


Fig. 1: ByBlock

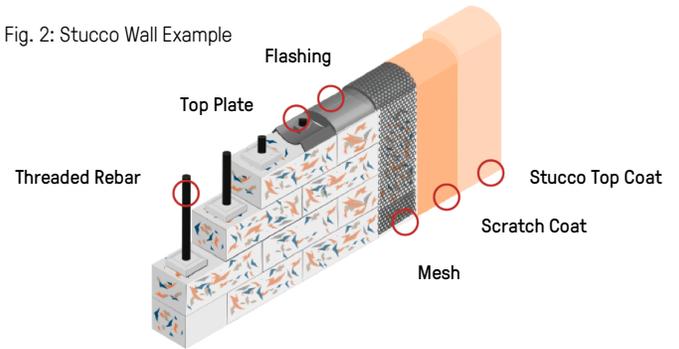
DENSITY
Standard: 10 KG / 22 lbs
Customization densities: 8KG – 12KG

ADVANTAGES

- **Labor Savings.** Specialized trade skills are not required. ByBlocks stack and lock in place without additional glues or adhesives; using only post-tension for added structure. ByBlocks are a mid-weight material and easy to handle.
- **Environmentally Friendly.** 100% recycle post-consumer plastic. No fillers. Manufactured using only steam and compression.

- **Adaptable.** ByBlocks can be used alone for small walling applications but can easily integrate with all other building materials to fit the demands of the project.
- **Stable Thermal Properties.** Thermal properties will remain stable over its entire service life.
- **Insect Resistant.** Plastic is not consumable by termites and carpenter ants.
- **Workability.** ByBlocks can be screwed, nailed, stapled, sawed and drilled through using standard, readily available tools and hardware.
- **Zero Breakage.** Does not break, fracture or crack. Minimizes unnecessary construction waste.
- **Finishing.** ByBlock can be finished with any readily available finishing material including but not limited to stucco, sheet rock/drywall, plaster, siding, paneling and some specialized paints to meet the demands of any construction project.

Fig. 2: Stucco Wall Example



COLOR

Colors vary due to the nature of the material.

FIRE RESISTANCE:

ByBlocks are categorized as Type 5 construction and require to be appropriately clad with approved thermal barriers to conform with the building code for fire safety as required for the intended application. Secondary fire retardants (spray, wraps or panels) can be applied after installation.

PERFORMANCE

Standard, single unit un-reinforced 10kg ByBlocks offer unique performance and strength.

YOUNGS MODULUS	IDEAL LOAD
8.4	500 – 580 PSI max

ByBlocks are intended to be reinforced using threaded rebar (12 – 18mm) for added strength and integrated with other structural building materials such as wood, steel and



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concrete depending the application and as directed by structural and civil engineering.

CLEANING

Because no adhesives or mortars are required, and the patented technology creates a *clean* product, ByBlock walls do not require special cleaning or solutions as part of its preparation. ByBlock structures/surfaces can be cleaned using an air gun to blow debris free from the product. No solvents or adhesives means no harsh chemicals are required for cleaning or preparation for wall coverings. Harsh cleaning methods after walls have been erected may mar the surface of the blocks. Keep the ByBlock structure dry until coverings are installed.

PART 2 – EXECUTION

REQUIRED TOOLS

- Band saw or radial arm saw
- Standard torque wrench
- Rubber mallet
- Standard level

REINFORCEMENT ESTIMATES & PREPARATION

ByBlock does not require glues or mortars during construction but glues and adhesives can be applied if needed. ByBlock strength and reinforcement is derived from the use of threaded rebar and post-tension.

ByBlocks are produced with two integrated reinforcement channels for speedy construction and flexibility. Each reinforcement channel can support **12mm – 18mm threaded rebar** without drilling. While reinforcement channels are available every 8”/203mm to easily provide maximum support, threaded rebar must be installed every 16”/406mm at a minimum. Consult with a structural engineer and local building codes for guidance on structural requirements.

****If you plan to have windows, doors or other openings, a rod should be placed on either side of the opening for additional support.**

PREPARING FOOTING/FOUNDATION

ByBlock also requires a level concrete footing. Regardless of new construction or existing footing, insert the first threaded rod 4”/102mm from the edge of the first wall then every 16”/406mm thereafter. Rebar can be added every 8”/203mm for additional support if required. If you have a corner, insert a rod 4”/102mm in direction of the corner to proper support anchor. Use approved anchoring epoxy to properly affix the

threaded rod and cure. See anchoring epoxy installation procedures for more detail.

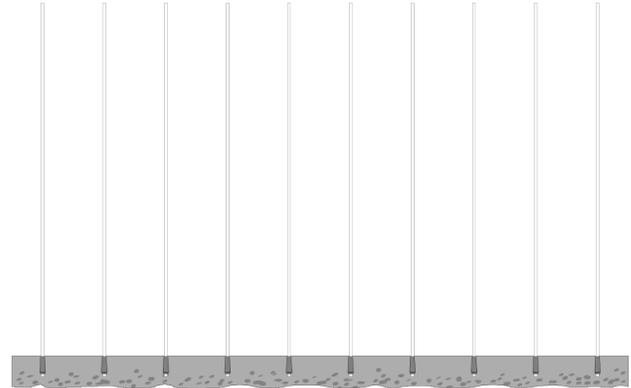


Fig. 3: Threaded rebar in concrete footing with anchors (not to scale)

New Construction: Start the concrete footing by digging the area of the wall a few inches below the frost line, the maximum depth in the ground below which the soil does not freeze during the winter. Consult a structural engineer to design the footing.

Existing Footing: If you are using existing concrete footing, drill a hole 1/16 to 1/4 inch larger than the diameter of the threaded rod you are using or as instructed based on the application.

Bases or Framing: If you are assembling a ByBlock wall to a base or frame (for example, mobile sheds or movable walls), drill a hole slightly larger than the threaded rod.

Insert the rod through the base/frame and, using approved washers and lug nuts, adjust to the desired height. We recommend using washers and lug nuts on top and bottom of the structure base to hold the threaded rod firmly in place during ByBlock installation. The inlet on the bottom of the ByBlock will provide sufficient space for the standard washer and lug nut.

Retaining Walls: If you are using ByBlocks for retaining walls, prepare the footing as instructed using foundation grade mixture of concrete. Prepare the threaded rod by bending into an L-shape. The short part of the L should be at least 12 inches long.

Check your local building codes for specifications and/or consult with a structural engineer for footing depth and wall height requirements. ByBlock walls should not exceed 8 feet without additional structural support.



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Once the concrete is properly poured, place the threaded rod 4" from the rim of the trench so the short part of the L is facing the outside of the foundation (away from the hillside) and push the threaded rod to the bottom of the concrete.

CUTTING

Make all ByBlock cuts with motor-driven saws. Best results are achieved using a **fine-tooth blade** (100+ tpi) band saw or radial saw with 12" blade. As the product is created using varying types of post-consumer waste, it is an irregular material and may grab during the cutting process. Ensure the ByBlocks are properly secured and held in position using secured fences or guides to hold the block firmly in position.

Do not cut while trying to hold with bare hands. **Use the appropriate PPE always** as edges are sharp. Best results are achieved using a steady medium pace.

Do not force a quick cut beyond 1" deep. Hand saws and grinders can be used for minor adjustments or material removal if required.

INSTALLING

Install ByBlocks as you would any other "brick" type of application—staggering each course. Each ByBlock must have at least one threaded rod running through it.

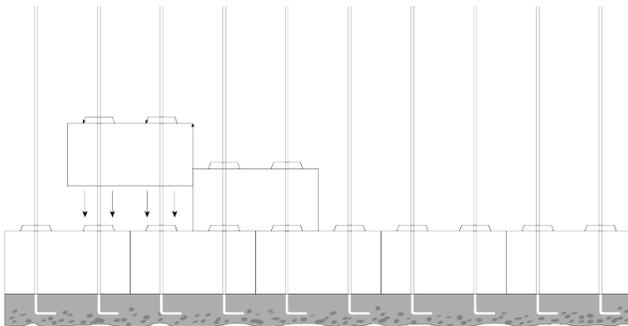


Fig. 4: ByBlock installation example with threaded rebar every 8"

Slide the ByBlocks down the threaded rod and into position; continuing the process until the wall unit is at finish height but **not exceeding 8 ft / 2.4 m**. Washers and nuts tightened to their final, level post-tension will add integrity and strength to the wall unit. ByBlocks can be slightly adjusted if the level surface of the block happens to vary from the block above or below, before final tension is applied using a rubber mallet.

OPENINGS

Window, door or other openings may require sections of the ByBlock to be removed to allow for lumber placement.

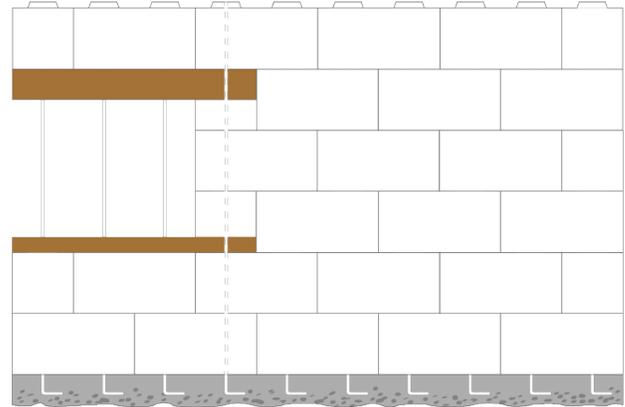


Fig. 5: Opening support example.

Make these cuts according to manufacturer's recommendations. In the instance of a door header, for example, the lumber **must extend a minimum of 8" beyond the opening on either side** to allow for the threaded bar to pass through the lumber. This will fix the lumber in position. When installing lumber as a bottom plate of a window opening, a grinder or hacksaw can be used to remove any threaded rod extending beyond the height of the lumber after post-tension has been applied (nuts and washer are recessed below the height of the lumber).

After designated height has been achieved, apply your top-plate over the threaded rods, resting on top of the final course of ByBlocks. And, using a torque wrench, tension the threaded rod

JOINTING

ByBlocks are designed to hold firmly to the blocks above and below, creating one complete unit. The post-tension adds further strength to the system. Because of this, no adhesives, mortars, or solvents are required for jointing.

LEVELING & SETTING

A ByBlock structure gets its strength from compressing the blocks together by tightening the top bar down; using post-tension.

For time savings, pre-drill the top plate or beam (metal or wood depending on the application) to match the measurements of the rods at the footing. It is not uncommon for slight movement in the rods during the installation of the ByBlock, but the rods need to be fastened in direct vertical



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alignment with their attachment point in the footing for maximum strength and sizing.

DO NOT over tighten. Refer the maximum loads on the threaded rebar when in question. Tighten each wall down in equal increments until the ByBlock wall locks into place and the desired height is achieved.

Ideal tensioning results in a 1/8”/3mm compression per ByBlock. Use a standard carpenters level to keep the work you are doing plumb. If at any time ByBlock slips out of place, simply knock it back into place using a rubber mallet.

FLASHING OF BYBLOCKS

Install flashing at locations shown in the plans and in strict accordance with local building codes and best practices.

WEEP HOLES AND VENTS

Because the material is not bound together with adhesives, there is no need for additional ventilation. The material will allow for some ambient air to pass. For most Residential and Commercial purposes, most of your external walls will be covered and finished with an external covering/application which will prevent any water or liquid from penetrating into the internal structure of the Byblock, negating the need for weep holes.

INSPECTION

The final surfaces of any ByBlock wall using standard applications will present true, level and flush. Any additional metal bracing to maintain plumb can be applied as per local building codes.

DELIVERY, STORAGE AND HANDLING

ByFusion ByBlocks will be delivered to the job site on pallets. Store pallets in single stacks on level ground and cover with waterproof coverings to protect the blocks from inclement weather. Keep ByBlocks on the pallet or raised off the floor to prevent them from sitting in pooled water. While ByBlocks do not demonstrate capillary action as in traditional CMUs, they are can accumulate water adding to weight. Saturated ByBlocks will require additional drying time before interior/exterior wall coverings can be applied.

PROJECT/SITE CONDITIONS

Protection of work: cover walls each day after installation to keep open walls protected and dry. After ByBlocks are installed, they should be protected from damage by other trades performing operations that could damage the

structure. Corners should be protected from damage after installation.

MAINTENANCE

When properly installed, ByFusion ByBlocks require no maintenance. The plastic will not deteriorate when covered and protected from the elements. If left exposed, some surface deterioration may occur from UV exposure to the outer parts of the ByBlock resulting in washed out/sun bleached color.

LIMITATIONS

- The facing is not intended for use as an impervious surface.
- If exposed to the sun for extended periods of time, a UV sealer/protectant should be applied to limit the effects of weather as UV will bleach out colors over time.
- ByBlocks are semi-rigid and require reinforcement.
- ByBlock wall heights should be limited to 8 feet tall; additional reinforcement may be required for heights extending 8 ft/2.4m.
- ByBlocks are not melted – they are fused together using our proprietary process. When cut in half, it is common for some particles of plastic to become loose.
- ByBlocks are not intended to be used in environments where they are exposed to temperatures exceeding 130°F/54°C over extended periods of time.

LIMITED PRODUCT WARRANTY

The manufacturer warrants that this product shall be of merchantable quality when used or applied in accordance with the manufacturer’s instructions. This product is not warranted as suitable for any purpose other than the general purpose for which it is intended. This warranty runs for one (1) year from the date the product was purchased. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED TO THE DURATION OF THIS WARRANTY. Liability under this warranty is limited to replacement or defective product or, at the manufacturer’s option, refund of the purchase price. CONSEQUENTIAL AND INCIDENTAL DAMAGES ARE NOT RECOVERABLE UNDER THIS WARRANTY.

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