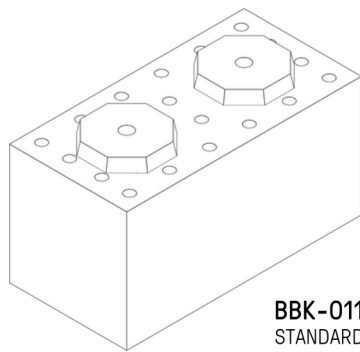




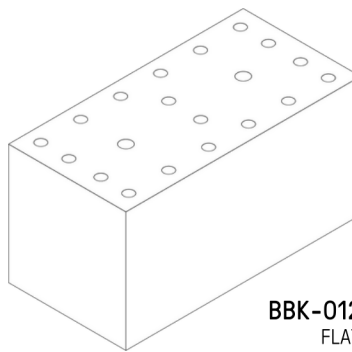
# BYBLOCK® PRODUCT DATA SHEET

## DESCRIPTION

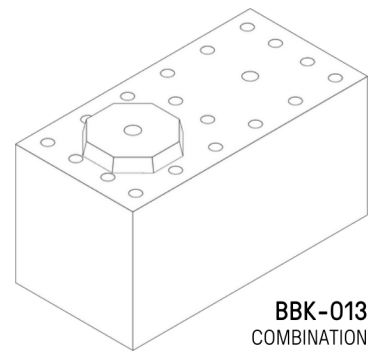
ByBlock is a multi-purpose, high-performing, reinforceable, and reusable insulating building material made entirely out of non-recyclable plastic waste. ByBlocks are designed to integrate with traditional building materials such as lumber, steel, and cement to meet the structural requirement of the project; offering excellent dimensional stability, water-resistant properties, and handles high-pressure loads without cracking or crumbling.



**BBK-011**  
STANDARD



**BBK-012**  
FLAT



**BBK-013**  
COMBINATION

## SIZES AND DIMENSIONS

MODEL	WIDTH	DEPTH	HEIGHT
BBK-011 BBK-013	15-1/2" (394 mm)	7-3/4" (197 mm)	8-5/8" (227 mm)
BBK-012	15-1/2" (394 mm)	7-3/4" (197 mm)	8" (203 mm)
DENSITY			
Standard: 22 lbs / 10 kg			
Customization Densities: 16.5 - 26.4 lbs / 8 kg - 12 kg			

Total height of Standard and Combination ByBlocks includes "pins" on top of the product. When stacking ByBlock, the "pins" insert into the ByBlock above; providing stability and additional shear strength in wall assemblies.

Flat ByBlocks have a flat top surface and are intended for use at wall penetrations and as the top course of a wall assembly; providing a flat surface for the top plate. Exposed/finished height of ByBlock is 8" (203 mm).

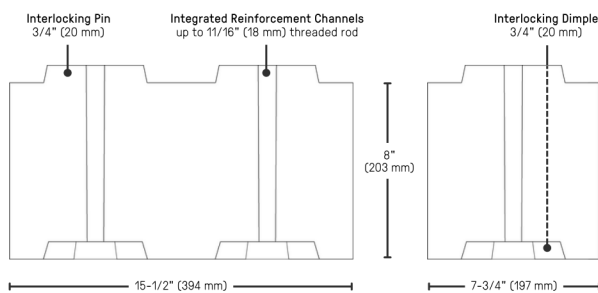


Fig.1 BBK-011 Standard ByBlock dimensions and features

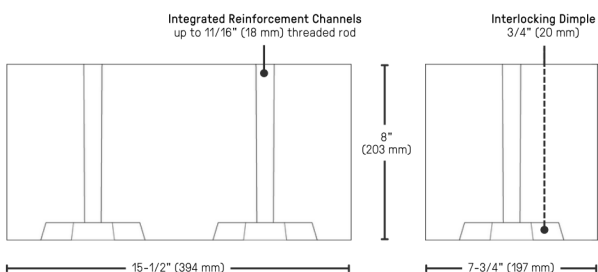


Fig.2 BBK-012 Flat ByBlock dimensions and features

## PERFORMANCE

Standard, single unit un-reinforced 22 lbs (10kg) ByBlock offers unique performance and strength. ByBlocks are intended to be reinforced using threaded rod; 3/8" - 5/8" (10 mm -16 mm) for assembly and added strength.

ByBlocks can be integrated with other structural building materials such as wood, steel and concrete depending on the application and as directed by engineering. Refer to our ByBlock Installation Guide for a more detailed overview.

ByBlock is not intended as a sole component of a wall assembly in thermal applications. ByBlock will serve as an insulating, structural component, utilizing standard building materials to the interior and exterior of the wall assembly as per project design specifications.



**ADVANTAGES**

Project Savings - ByBlocks are a highly-durable and easy to handle, mid-weight material that stack in place without additional glues, adhesives, additives, or mortars. Specialized trade skills are not required for installation of ByBlock which translates to approximately 54% project savings between materials and labor costs when compared to concrete block construction.

Environmentally Friendly - 100% repurposed plastic waste. No additives or fillers.

Zero Breakage - Does not crack or crumble. Minimizing unnecessary construction waste.

Water Resistant - Since ByBlocks are made with plastic, they are able to resist water without additional products.

Insect Resistant - Plastic is not consumable by termites and carpenter ants.

Workability - ByBlock can be used alone for many applications, but also integrate easily with all other building materials to fit the demands of the project. They can be screwed, nailed, stapled, sawed and drilled through using standard, readily available tools and hardware.

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 project.

**ENVIRONMENTAL**

ByBlock is made out of 100% non-recyclable plastic content, making it one of the most sustainable building blocks on the market. Every ByBlock diverts 22 lbs of plastic from being landfilled or incinerated.

ByBlock holds a UL Certified Environmental Product Disclosure, meets GREENGUARD and GREENGUARD GOLD criteria for formaldehyde, total aldehydes, and CREL/TLV levels, and is CA Section 01350 Compliant.

Testing followed CDPH Standard Method v1.2, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," and UL 2821, "GREENGUARD Certification Program Method for Measuring and Evaluating Chemical Emissions from Building Materials, Finishes and Furnishings Using Dynamic Environmental Chambers."

Under the context of the LEED v4.1 Rating System, ByBlock will contribute to LEED credits in building projects.



**TECHNICAL SPECIFICATIONS**

ICC-ES Report Listings

- ESL-1255, Compressive Properties
- ESL-1256, Thermal Transmission
- ESL-1257, Airborne Sound Transmission

COMPRESSIVE PROPERTIES (indiv. unreinforced) <sup>1</sup>			
COMPRESSIVE RESISTANCE	MAX LOAD	MODULUS OF ELASTICITY	
408 psi	49,000 lbf	2,148 psi	
FASTENER STRENGTH <sup>2</sup>			
FASTENER	WITHDRAWAL	SHEAR LOAD	
#10x3" Screw @ 2" depth	202.9 lbf	270.0 lbf	
3/8"x4" Lag Screw @ 3" depth	326.6 lbf	519.0 lbf	
THERMAL PROPERTIES <sup>3</sup>			
R-Value / RSI	R - hr-ft <sup>2</sup> ·°F/Btu RSI - m <sup>2</sup> ·K/W	1.14 / 0.20	
K-Factor	Btu-in/hr·ft <sup>2</sup> ·°F	0.86	
ASTM C-518 Testing is performed on 1" thick specimen			
ACOUSTIC PERFORMANCE <sup>4</sup>			
STC Rating	OITC Rating		
21	15		
THERMAL EXPANSION <sup>5</sup>			
TEMP RANGE	CHANGE (mm)	CLTE [µm/(m·°C)]	
-30°C to 40°C	0.89	61.947	
FIRE RATING (CLASS B) <sup>6</sup>			
FLAME SPREAD INDEX (FSI)	SMOKE DENSITY INDEX (SDI)		
75	200		
Class B Fire Rating was achieved by covering ByBlock with an application of FireFree 88 as per manufacturer specifications. Untreated ByBlock should not be exposed to flame or ignition sources.			
STRENGTH PERFORMANCE OF A WALL ASSEMBLY <sup>7</sup>			
E72 PROPERTY	UNIT	MAX LOAD	COEFF. OF VARIATION
COMPRESSION	LBF	25,715	15.8%
TRANSVERSE (VERT)	PSF (MPH)	85 (184)	19.3%
RACKING	LBF	7,943	4.0%
Testing was performed on post-tensioned ByBlock wall assemblies without any additional material or support. ByBlock is designed to integrate with standard building materials to meet structural requirements of the project.			
LEED CATEGORY			
CREDIT	POINTS	RATING SYSTEM LEED v4.1	
Environmental Product Declarations	2	LEED BD+C, LEED ID+C	
Sourcing Raw Materials	2	LEED BD+C, LEED ID+C	
Construction and Demolition Waste Mgmt.	2	LEED BD+C, LEED ID+C	
Environmentally Preferable Products	5	LEED BD+C, LEED ID+C	
Responsible Sourcing for Infrastructure	1	LEED CITIES, LEED COMMUNITIES	

1 : ASTM C165-07(Reapproved 2017), Standard Test Method for Measuring Compressive Properties of Thermal Insulations, Procedure A

2 : ASTM D1761-12, Standard Test Method for Mechanical Fasteners in Wood

3 : ASTM C518-17, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

4 : ASTM E90-09(2016), Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

5 : ASTM E831-19, Standard Test Method for Linear Thermal Expansion of Solid Materials by Thermomechanical Analysis

6 : ASTM E84-21a, Standard Test Method for Surface Burning Characteristics of Building Materials

7 : ASTM E72-15, Standard Test Methods of Conducting Strength Tests of Panels for Building Construction

**INSTALLATION**

ByBlock installation uses post-tension to create a wall assembly with consistent strength and rigidity. Threaded rebar is fixed into the base footing (concrete, steel, or timber). Using the reinforcement channels, ByBlock is installed over the rebar and placed onto the footing.

Continue stacking ByBlock as you would any other brick or block application—in staggered courses (running bond). Each ByBlock must have at least one threaded rod running through one of its integrated reinforcement channels.

**DELIVERY, STORAGE, AND HANDLING**

ByBlocks are delivered on standard pallets in quantities of 60. Pallets are to be stored on level ground and kept dry. Avoid storing ByBlock or pallets in pooled water. While ByBlocks do not demonstrate capillary action as traditional CMUs, they can accumulate water, adding to the weight. Saturated ByBlocks require additional drying time before interior/exterior wall coverings can be applied.

**CLEANING**

ByBlock walls do not require special cleaning. ByBlock structures/surfaces can be cleaned using an air gun to blow debris free from the product or wiped with any mild detergent. Do not saturate ByBlock.

**COLOR**

Colors vary due to the nature of the material. No two ByBlock are alike.

**FIRE RESISTANCE**

ByBlock is categorized as a Type 5 construction material. Untreated ByBlock should not be exposed to flame or ignition sources. Secondary thermal barriers and fire retardants (spray, wraps, or panels) can be applied as per manufacturer specifications post-assembly. Class B Fire Rating can be achieved using FireFree 88. Consult with the local building code for the required fire rating for the application and build as instructed.

**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.

**CUTTING**

Best results are achieved using a fine-tooth blade (80+ 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 in position using fences or guides to hold the block firmly in place.

Do not cut while trying to hold with bare hands. Always use the appropriate PPE 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.

**MAINTENANCE**

ByBlock requires no maintenance. Plastic will not deteriorate when properly covered and protected from the elements. If left exposed to sun, some surface color may bleach out.

**LIMITATIONS**

- ByBlocks are intended to be reinforced and assembled by means of post-tensioning.
- Consult a structural engineer for wall heights above 8' as additional reinforcement may be required.
- ByBlocks are fused together using our proprietary process. When cut in half, it is common for some particles of plastic to become loose. Use the collection bag that comes with every pallet to collect ByBlock construction debris and send back to ByFusion to make more ByBlock – zero waste.
- If the application requires ByBlock to be exposed to the sun, a UV sealer/protectant should be applied to limit the effects of UV as it will bleach out colors over time.
- ByBlocks are not intended to be used in environments where they are exposed to temperatures exceeding 140° F / 60°C over extended periods of time without a finished covering.

**DISCLAIMER OF LIABILITY:**

Technical information contained herein is furnished without charge or obligation and is given and accepted at recipient's sole risk. Because conditions of use may vary and are beyond our control, ByFusion Global, Inc. makes no representation about, and is not responsible or liable for the accuracy or reliability of data associated with uses of any product described herein. Nothing contained in this document shall be considered a recommendation. Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments.