



TECHNICAL BULLETIN

PROCURING AND USING BALLAST BLOCKS FOR UNIRAC ROOFMOUNT™ & ECOFOOT®

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PURPOSE

This bulletin familiarizes the reader with requirements and usage guidelines to speed procurement of ballast blocks (referred to below by industry standard term “Concrete Masonry Units” or CMUs) for Unirac’s ROOFMOUNT™ and ECOFOOT® products. These commonly available blocks are not sold by Unirac. The installer is responsible for verifying that the required minimum weight and type of block match the design.

BALLAST BLOCK FUNCTION

Ballast blocks provide weight that creates downforce, preventing a ROOFMOUNT™ product (RM10, RM5, or RMDT) or ECOFOOT® product (ECOFOOT® 2+ OR ECOFOOT® 5) array from lifting under load or sliding on the roof.

SPECIFICATIONS

General

CMUs should comply with ASTM (<https://www.astm.org/>) concrete roof pavers designation C1491-14 or C90-16a for a “normal weight” density with a compressive strength of 3000 PSI. The block should have an integral water repellent suitable for the climate.

Size

Unirac designs call for a 4” x 8” x 16” CMU. Note that these are “nominal dimensions”—i.e., when installed with mortar in an architectural use such as a wall. Nominal figures are used for purchasing, but actual measurements are 3/8” less per dimension. This difference should not be a concern to the user.

- 2”x8”x16” nominal dimension blocks may be approved if blocks are securely tied or permanently adhered to all neighboring blocks, proper weight is achieved inside the bays, and the entirety of the blocks remain inside the footprint of the bay.
- If using an adhesive product, ensure suitability for the application (e.g., specific masonry products commonly available at home stores). Some installers use mechanical processes to secure blocks (e.g., baling or metal straps). Ultimately it is the installer’s decision what, if any, method of joining blocks is required.



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Weight

Block weight can vary by geographic location from 26-38 lbs. each. The most important issue is making sure the weight matches the design, as this is integral to the safe functioning of the system. If your construction drawings were created by Unirac, then ballast block weight is specified in the “inspection” section of the report. You will want to check the blocks you procure to ensure that they are the expected weight.

If you are designing your project in U-builder <https://design.unirac.com>, actual block weight should be changed in the ‘DESCRIBE THE PROJECT’ section. This means you can utilize a locally available block to meet the project requirements—you’ll want to have that in advance before beginning your design.

PRODUCT-SPECIFIC REQUIREMENTS

ROOFMOUNT™

RM10 bays hold up to 4 blocks (6 blocks on north row modules). If the number shown in the U-Builder installation and design plan is greater than 4 in a bay, additional bays will be required to accommodate the extra blocks. These are located as close as possible to the bay requiring the extra blocks. RM5 bays accommodate up to 2 standard blocks each.

RMDT™ bays vary by type:

- Ridge bays hold up to 5 standard blocks.
- Valley bays hold up to 2 blocks each.

ECOFOOT®

ECOFOOT®2+ ballast block capacity is as follows:

- 3 blocks without shade on south and mid rows.
- 6 blocks on north row.
- 2 blocks on tucked north row Base.
- 1 4x8x16 plus 1 2x8x16 on a tucked south row Base (tucking south row requires field modification of the Base). Please follow guidance in “Size” above for use of 2” CMUs.

ECOFOOT® 5D ballast block capacity is as follows:

- 4 blocks per tray for 60-cell modules.
- 5 blocks per tray for 72-cell and other long mods.

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Configuration

How blocks should be stacked varies by product. Consult each product's installation guide at <https://unirac.com/technical-support/> for diagrams.

Sourcing

The CMUs described in this document can be found at any larger construction materials vendor. Example sources we have seen success with include: National Roofing Partners (national), St. Vrain Block Company (Colo.), A. Jandris & Sons (Mass.), RCP Block & Brick (Calif.), Cromwell Concrete Products Inc. (Conn.), Payless Hardware & Rockery (Calif.), and Oldcastle Infrastructure (national). If you have questions, please contact Unirac.

Maintenance

It is recommended that blocks be inspected periodically for any signs of degradation. If degradation is observed, the block should immediately be replaced.

Further information

Consult our YouTube channel for new Tips & Tricks (<https://www.youtube.com/user/uniracsolar1>).

Reference

C1491-14 specification: <https://store.astm.org/c1491-19.html>