



## Polyiso R-value Determination Methods

There are at least two R-value conditioning methods currently in use for Polyisocyanurate (Polyiso) foam. Both methods are outlined in the current version of ASTM C1289 "Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board". This standard covers Commercial and Residential Polyiso foam insulation products as well as Roofing, Sheathing, Cavity Wall and Exposed products. A product could be a Residential or Commercial Product as well as a Roofing, Sheathing, Cavity Wall or Exposed Product.

The first conditioning method is frequently referred to as PIMA (Polyisocyanurate Insulation Manufacturers Association) 101. In this method sample boards are conditioned for 180 days at 73 +/- 4°F (23 +/- 2°C) and 50 +/- 5% relative humidity prior to testing or at least 90 days at 140 +/- 2°F (60 +/- 1°C) dry heat prior to testing. Once the boards have been conditioned their R-value is measured using ASTM C177, C236, or C518. This was the Industry standard method for more than a decade and continues to be the standard for all impermeably faced products. These are ASTM C1289 Type I (aluminum foil on both sides) products.

Impermeably faced products may be used both in commercial roofing and sheathing applications as well as in residential roofing and sheathing applications. The above conditioning method is the only method identified in ASTM C1289 for use with impermeably faced (ASTM C1289 Type I) products.

Some permeably faced products are sold quoting the conditioning method described above. These are Type II (Glass fiber reinforced cellulosic felt or uncoated or coated polymer bonded glass fiber mat on both sides) and Type V products (Oriented strand board or wafer board on one side and glass fiber reinforced cellulosic felt or uncoated or coated polymer bonded glass fiber mat on the other side) that are sold into the residential market. The conditioning method for insulations sold into the residential market is controlled in large part by the Federal Trade Commission (FTC). The recognized conditioning method for all residential products is the PIMA 101 method. The FTC will however accept the newer Long-Term Thermal Resistance method (ASTM C1303/CAN-ULC S770) where applicable - which currently would only be for Type II and Type V products.

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In summary - If the Polyiso foam has an *impermeable facer* the conditioning method will be the PIMA 101 method. This is due to PIMA 101 being the only method currently recognized by ASTM C1289 for this type of faced product. This method will be used regardless of whether the product is sold into the residential or commercial market.

If the product is faced with a *permeable facer* (Type II or Type V) and sold into the commercial market it will be sold using the ASTM C1303/CAN-ULC S770 conditioning method. A similar product with the same facer sold into the residential market would have its R-value reporting method dictated by the FTC R-value rule. The R-value rule requires the PIMA 101 method and allows the ASTM C1303/CAN-ULC S770 method. Rmax will therefore provide the PIMA 101 value for these products.

Whether the R-value measurement method is ASTM C1303/CAN-ULC S770 or PIMA 101, the method is noted in the Thermal Properties/Product Data tables included in Rmax product literature.

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