

BULLETIN

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Polyiso insulation classification

There are two important standards for polyiso thermal insulation; these are CAN/ULC-S704 and ASTM C-1289. Each standard uses some or all of the following wording to describe the different types of thermal insulation products: "Type", "Class" and "Grade". However, there is no correlation between ASTM and CAN/ULC classification systems. Below is a description on how each standard classifies polyiso insulations.

According to **CAN/ULC-S704-03** the "mechanical properties" of the material determine the "Type" assigned to the product (please see the table 1) and the "Class" is based on the water vapor permeance of the material (see table 2).

Table 1

| Properties | Type 1 | Type 2 | Type 3 |
|---|--------|--------|--------|
| Compressive Strength, min., kPa | 110 | 140 | 170 |
| Tensile Strength, min., kPa perpendicular to the plane of the facer | 24 | 35 | 35 |
| Flexural Strength, min., kPa | 170 | 275 | 275 |
| | | | |

Table 2

| Properties | Class 1 | Class 2 | Class 4 |
|--|---------|------------|---------|
| Water Vapor Permeance ng/(Pa*s*m 2), (for 25.4 mm product) | ≤ 15 | >15 - ≤ 60 | > 60 |

ASTM 1289-03 classification uses the **material** used as the facer on the product to determine the "Type" (see below for detailed information). Since there are a large variety of products in the Type I and Type II classification, a subsection called "Class" was created to further differentiate the products. To account for the different **compressive strengths** of the materials found in Type II, Class 2 products, a third subdivision was needed called "Grade".

Type I – Faced with **aluminum foil** on both major surfaces of the core foam.

Class 1– Non-reinforced core foam.

Class 2–Glass fiber reinforced core foam.

Type II –Class 1–Faced with **organic/inorganic/ asphalt saturated/polymer-bonded/fibrous felt or uncoated/ asphalt coated/polymer-bonded/glass fiber mat membrane facers** on **both** major surfaces of the core foam.

Grade 1–16 psi (110 kPa), min, compressive strength.

Grade 2–20 psi (138 kPa), min, compressive strength.

Grade 3–25 psi (172 kPa), min, compressive strength.

Class 2–Faced with polymer-bonded glass fiber mat membrane facers on both major surfaces of the core foam.

- Type III—Faced with a **perlite insulation board** on **one** major surface of the core foam and an organic/inorganic/asphaltsaturated/polymer-bonded/fibrous felt or uncoated/asphalt-coated/polymer-bonded/glass fiber mat membrane facer on the other major surface of the core foam.
- Type IV—Faced with a **cellulosic fiber insulating board** on **one** major surface of the core foam and an organic/inorganic/asphalt-saturated/polymer-bonded/fibrous felt or uncoated/asphalt-coated/polymerbonded/glass fiber mat membrane facer on the other major surface of the core foam.
- Type V—Faced with **oriented strand board** or **waferboard** on **one** major surface of the foam and an organic/inorganic/asphalt-saturated/polymer-bonded/fibrous felt or uncoated/asphalt-coated/polymerbonded/glass fiber mat membrane facer on the other major surface of the core foam.
- Type VI—Faced with a **perlite insulation board** on **both** major surfaces of the core foam.