

# THERMAL BREAK OPENINGS

The building sector is a major energy consumer and its impact on the environment is considerable. Experts agree that as design and development continue to trend towards energy-efficient performance, operating costs and carbon footprints will decrease. The outer envelope is the key to an eco-friendly building, and by their nature, windows and doors represent an important part of the equation.

The overall coefficient of heat transfer (U-value) indicates the degree to which thermal energy can pass through an exchange surface. The lower the coefficient is in terms of BTU/ft<sup>2</sup>•F•h, the better the insulation. Another common indicator is thermal resistance (R-value), which indicates a given material's capacity to resist the transfer of thermal energy. The higher the R-value is in terms of BTU/ft<sup>2</sup>•F•h, the better the insulation. The overall coefficient of heat transfer (U) is the inverse of thermal resistance (R).

The energy efficiency of doors is calculated using one of two methods, and the results can vary greatly.

- The first method is the value of the door core measured according to ASTM C518 Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- The second is the value of the functional opening's energy performance according to ASTM C1363 Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.

The second value is more representative of reality, and the results are correspondingly lower-performing.

De La Fontaine offers insulating doors that, when combined with a thermal break frame, contribute to a considerable reduction in a building's energy costs. Doors and frames are manufactured with hot-dipped galvanized steel (A40 or A60) with a corrosion-resistant zinc-iron alloy coating. In addition to providing an energy-efficient opening, these feature the advantages of steel: security, durability, high recycled content, and ease of maintenance.

#### **Available gauges:**

Frames: 16-gauge (0.056"/1.4 mm) and 14-gauge (0.071"/1.8 mm)

Doors: 18-gauge (0.044"/1.1 mm) and 16-gauge (0.056"/1.4 mm)

The best-performing insulating doors are made with a polystyrene or urethane core. The thermal break frame is a special profile with a polyvinyl chloride (PVC) seal that inhibits the transfer of heat/cold from the exposed to the non-exposed side of the frame. This seal is also installed in the mullion of elevations and windows. Please refer to the chart below for more information on our thermal break products and the energy values available.

Thermal break frames are only available with a face-welded assembly. For specific details, please refer to our technical data book.



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### ENERGY VALUES FOR DE LA FONTAINE PRODUCTS

| Door core                                       | Frame         | Hardware | ASTM C518*<br>(imperial)<br>Calculated | ASTM 1363<br>(imperial)<br>Operable |
|---|---------------|----------|--|-------------------------------------|
| Polystyrene                                     | Thermal break | A,B,C    | U: 0.14<br>R: 7.03                     | U: 0.41<br>R: 2.44                  |
| Polyisocyanurate<br>(Urethane)                  | Thermal break | A,B,C    | U: 0.10<br>R: 10.2                     | U: 0.38<br>R: 2.63                  |
| Honeycomb                                       | Thermal break | N/A      | U: 2.18<br>R: 0.46                     | U : N/A<br>R : N/A                  |
| Steel-stiffened, mineral<br>fiber wool          | Thermal break | A,B,C    | U : N/A<br>R : N/A                     | U: 0.55<br>R: 1.8                   |
| Steel-stiffened, polystyrene                    | Thermal break | A,B,C    | U : N/A<br>R : N/A                     | U: 0.65<br>R: 1.54                  |
| Steel-stiffened, urethane<br>(calculated value) | Thermal break | N/A      | U : N/A<br>R : N/A                     | U: 0.58<br>R: 1.7                   |

\*ASTM C518: represents the value of the panel only (not the frame or hardware).

#### Units:

U: BTU/ft<sup>2</sup>•F•h

R: ft<sup>2</sup>•F•H/BTU

#### Hardware:

A: Self adhesive silicon based perimeter seal

B: Adjustable perimeter seal (foam seal)

C: Rabbetted threshold (not TB)

