



## Energy Saving Thermal Barrier Systems

Aluminum is a highly thermal conductive material that will rapidly transfer exterior climatic temperature unless something is done to stop the thermal conduction. A thermal barrier system will improve thermal performance while maintaining the structural and long-term durability of the fenestration unit. Customers that choose Linetec, can rely on our thermal barrier service to ensure optimal performance of the thermal barrier.

A thermal barrier can be achieved with either of two different methods. The first is a two-part urethane that is poured into and cured within a "dog-bone" structural cavity in the aluminum extrusion; this product is offered by Azon and supplied by Linetec. The other thermal system involves pre-formed engineered plastic inserts which are placed between two aluminum frame components. This product, manufactured by Technoform, is called I-Strut, and also supplied by Linetec.

Both energy-saving systems can contribute to earning performance points toward LEED® Certification, the Green Building Rating System.

### LEED® Contribution

#### **Energy & Atmosphere 1-10 points - two (2) points mandatory**

##### **EA Credit 1.1 Optimize Energy Performance**

Achieving increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

#### **Indoor Environmental Quality one (1) point**

##### **EQ Credit 7.1 Thermal Comfort, Design**

Provide for a comfortable thermal environment that supports the productivity and well-being of the building occupants.

**Azon's polyurethane (pour and debridge) system** is specifically designed to work in conjunction with today's high performance finishes. The two components consist of a reactive resin and polymeric isocyanate. Combined in the prescribed ratio, they react to become a unique, structural, insulating fenestration design component.

Azon's pour and debridge technology is employed in three steps.

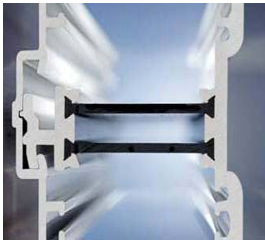
1. The aluminum profile is extruded with a thermal barrier "dog-bone" channel
2. A specially formulated two-component liquid polyurethane is poured into the channel
3. The two components react rapidly to become a very strong insulating polymer. Within a few minutes, after the mixture is fully reacted and becomes a solid, the aluminum web connecting the channel is removed by the debridging machine.

Azon also offers the option of Azo-Brade™. The Azon Azo-Brader™ provides mechanical surface conditioning of the extrusion cavity to insure proper adhesion to difficult finishes. Windows and doors utilizing the Azon Azo-Brader™ through Linetec may carry a ten-year warranty against polymer creep or failure.



When the pour and debridge process is completed and the window is assembled there is no aluminum contact exterior to interior. Thus, transfer of temperature is interrupted, resulting in an energy-efficient, insulating thermal barrier. Temperatures of  $-100^{\circ}\text{C}$  will not transfer with pour and debridge thermal barrier in an aluminum frame-neither will hot temperatures. [View AAMA specifications and material properties](#)

**Technoform's I-Strut**, compared to pour and debridge, is a totally different thermal barrier approach. Rather than a single aluminum extrusion which is cut apart (debridged) after the polyurethane is inserted and cured in the channel, Thermal Strut involves two separate extrusions and joins them through the use of engineered structural plastic strut. Both the inside and outside aluminum profiles are extruded independently with a cavity that will ultimately receive the strut.



With Technoform I-Strut, products can be manufactured with two-tone finishes; because interior and exterior components can be coated before assembly. Architects and designers can choose to apply the interior and exterior finishes that best match their cost, performance, and design requirements.

Technoform I-Strut is available in more than 200 standard extruded aluminum profiles (most are special order) and is assembled in a three-step process.

1. The aluminum reglets (cavities) on the mating profiles must be knurled. During the knurling process, the inner and outer walls of the aluminum pocket are notched. These notches grab and secure the I-Strut during step three - the crimping process.
2. The I-Strut profiles are inserted into the knurled cavities of the aluminum extrusions.
3. The aluminum reglets are crimped (or rolled) to create the mechanical bond between the aluminum and the I-Strut profile.

Regardless of the method chosen, a thermal barrier can provide an energy-saving option for your building products. For more information on Linetec and our thermal barrier services visit [www.linetec.com](http://www.linetec.com).

