

SUSTAINABLE CHOICES FOR THRESHOLDS, GASKETING AND MORE

Small details
make a big
difference when
specifying door
products.

BY
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As a member of the door and hardware industry, you probably already have an acute sense for details. But you may not have considered how even the smallest details can play a vital role in a building's sustainability.

As a door hardware professional, I have a very specific definition of sustainability. It means specifying and correctly installing high-quality products on door openings that will not be damaged during occupancy and do not require extensive maintenance. In short, sustainability in an opening means the specified hardware will last.

We do not do our end users any favors when we specify poor quality products. Many of the commonly overlooked parts are actually crucial to sustainability. Here are some examples of details in product choices and installation that make all the difference in the sustainability of an opening.

Gasketing manufacturers provide a range of products that enhance the sustainability of an opening. From gasketing to thresholds and everything in between, these companies bring small details together to make an opening truly effective and code-compliant.

Four options for thresholds and adhesives.



EPOXY ABRASIVE
(EPX)



RUBBER GRIP
(RUB)



ALUMINUM COMPOSITE FILLER
(ACF)



PHOTOLUMINESCENT
EPOXY ABRASIVE
(PEA)

In some cases, gasketing may even be required to meet code. For example, fire door assemblies in corridors and smoke barriers need to be tested in accordance with UL 1784 – Air Leakage Tests of Door Assemblies.

As specifiers, it is important to realize that while end users will most likely replace a broken deadbolt, they are much less likely to change out a defective door bottom or replace cracked rubber in gasketing. In most cases, they will ignore it or pull it off without replacement. This severely compromises both the security and sustainability of that opening.

Thresholds and Adhesives

Thresholds are specified to perform a function such as restricting air flow, smoke, light, heat or cold. They can provide functions such as life safety, security and energy efficiency.

Commercial thresholds are generally manufactured from extruded aluminum, bronze, brass or stainless steel. Often double beveled, these are extruded to be one piece.

However, thresholds can also be extruded with grooves that are filled with a specific type of abrasive adhesive product. Based on the opening and type chosen, this adhesive can help extend the life of the threshold because it eases wear and tear. If you've ever noticed a threshold that is worn down and slippery, you can imagine the issues this can cause. In addition, owners can have liability issues whenever a product like this

becomes worn down. For example, if a threshold holds water or is exposed to oil, it can become slippery and cause users to slip and fall.

To achieve a positive influence on sustainability, specify an adhesive that makes sense for the purpose of the opening.

OPTION 1: EPOXY ABRASIVE

This exceptionally strong surface provides the utmost safety for outdoor applications, and should be used in all exterior openings to assist and maintain the sustainable life of the opening. It is also useful for parks, schools, hospitals and industrial buildings.

OPTION 2: RUBBER GRIP

While a rubber adhesive may be appropriate for a low-traffic doorway, it is generally not recommended for commercial applications. It is made up of a blend of synthetic rubbers and chemical compounds.

OPTION 3: ALUMINUM COMPOSITE FILLER

This contains aluminum oxide and silicone carbide and is ideal for applications such as heavy commercial traffic in supply rooms, manufacturing buildings, schools, cafeterias, automobile dealers, hospitals and industrial facilities.

OPTION 4: PHOTOLUMINESCENT EPOXY ABRASIVE

The most common usage of a photoluminescent adhesive is with fire door assemblies as well as indoor applications on staircases. It includes a photoluminescent tread for visibility.

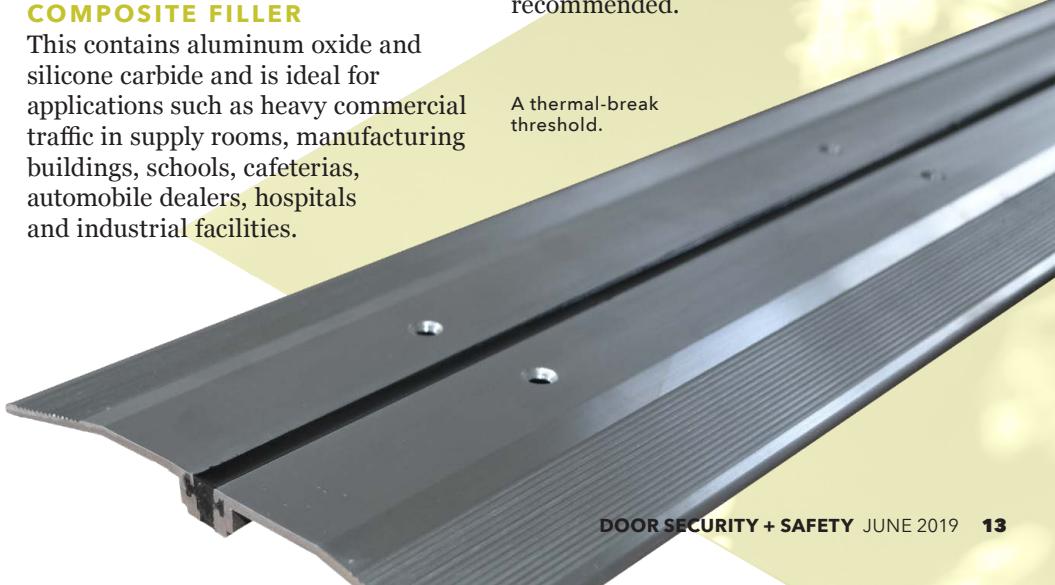
Thresholds

Thermal-break thresholds are used when there is an opposition in temperature from one side of an opening to the other. These are designed to inhibit the transmission of thermal energy through more conductive materials. This type of threshold may be specified when conserving energy in a very hot or very cold environment.

Rabbeted thresholds include a built-in stop, designed to allow the door to close against the seal and inhibit air flow.

In many cases, the end user does not prefer the appearance or encumbrance of a threshold. In these cases, a cycle-tested automatic door bottom is recommended.

A thermal-break threshold.



Thresholds are key to sustainability. The different variations and options available in thresholds can assist specifiers and end users to ensure proper productions are achieved.

Automatic Door Bottoms

Automatic door bottoms provide protection from fire, smoke, noise and other threats to the life safety and comfort of building occupants. They require some maintenance but provide a seamless user experience, and most will never notice its existence. These door bottoms automatically retract into the housing when the door opens, and lower when the door closes, to provide the needed protection.

Specifying door bottoms with a minimum capacity of 2.5 million cycles is imperative. They are required in specific openings such as in stairwells or in openings with fire or sound ratings, and are available in a variety of thicknesses and finishes. Some automatic door bottoms are even surface mounted, so they can be installed without removing the door.

An automatic door bottom is activated in one of two ways. One is the standard opening and closing of the door. If the door is closed, the threshold functions as a latch activating the door bottom and allowing the seal to drop down. When the door is opened, the pin

hitting against the stop retracts in the door bottom and the seal is then concealed in the housing.

The more innovative approach is to have an electronically retracting door bottom that can be activated with a switch – a keypad, key switch or a standard momentary switch with no credential requirements. This feature is extremely useful in settings where sound control is particularly crucial, such as law firms and doctor's offices, and room occupants are also made aware of the feature and its importance. It can also be specified whenever a complete seal is required, such as during a fire.

Gasketing

Gasketing is the most misunderstood and underspecified detail.

Gasketing should not be categorized as a door accessory but rather an integral and significant component of a successfully operating, code-compliant and sustainable opening. However, its effectiveness is dependent on proper specification and installation.

A quick note on the difference between weather stripping and gasketing – the former is appropriate when weather protection is the only goal, and the latter should be specified when protection from sound, fire and/or smoke is desired.

When specifying gasketing, keep in mind the following:

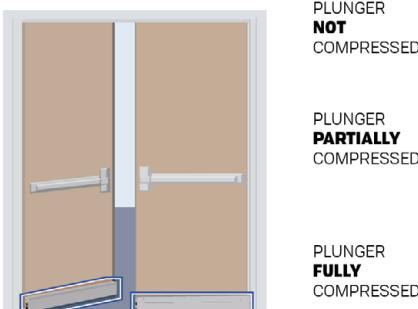
- ▶ Ensure the specified gasketing does not interfere with any other hardware on the door, such as pivots, cylindrical locks, electronic hardware, surface mounted closers or concealed vertical rods.
- ▶ Ensure that mounting hardware locations are adjusted for any brackets that must be used on perimeter gasketing.
- ▶ Mounting brackets should always be used when there is surface-mounted hardware that will interfere with gasketing.
- ▶ Specify gasketing that is appropriate for the setting such as anti-ligature or anti-microbial.

To keep energy from escaping an opening, quality gasketing is paramount. It should also be manufactured specifically for sustainability.

Rubber Compression Extrusions

Gasketing is generally composed of aluminum and a seal to block unwanted air, light or sound. Seals are made in a variety of materials.

Automatic door bottom activation.





SILICONE OR ETHYLENE PROPYLENE DIENE MONOMER (EPDM)

This is ideal for usage in an opening with a big temperature swing. It can be extruded in a variety of colors and carries a good resistance to oxidation and water absorption. This is the preferred seal for gasketing.

VINYL

Vinyl seals react poorly to cold weather, since they will crack, dry out and break off. Avoid vinyl products at all costs when considering sustainable openings.

NEOPRENE

This seal can be a solid neoprene or a sponge neoprene and can only be extruded in black. It is much more resistant to cold than vinyl; while it gets a little brittle, it will not crack.

It is recommended to always specify adjustable gasketing over mechanical gasketing. As a building settles, the gasketing may pull away from the door and become useless. But adjustable gasketing extends the life of the product and enhances sustainability.

It is important to ensure the specified gasketing does not interfere with other hardware on the door. This includes, but is not limited to, pivots, cylindrical locks, electronic hardware, surface-mounted closers and concealed vertical rods.

Installing Products for Sustainability

Specifiers need to keep in mind the ease – or lack thereof – of installing their specified products. It should go without saying that gasketing needs to be installed properly to ensure the opening will function properly and be sustainable. Let me break it down for clarity.

The top and middle images to the left illustrate the proper way to specify an opening when sustainability is a

chief concern. You must use adjustable gasketing and a mounting bracket that goes over it to allow for installation of other door hardware. Gasketing must form a complete, uninterrupted, airtight seal around the head, jamb and sill.

To achieve uninterrupted contact, the gasketing must be installed on the same side of the door and frame. Proper sustainable performance also depends on maintaining good surface contact between the gasket and the door edge or frame. This can usually be achieved using compression seals.

As shown in the bottom image on the left, the incorrect practice of “notching out” gasketing to create space for hardware, it is easy to see that many specifiers and installers are unaware of the need for a continuous seal.

Breaking this seal creates two potential risks to occupants. The first is a security issue, as the break in the gasketing creates an access point to the secure side of the opening. The second is an even more serious threat to life safety as the door assembly was not tested with the modification. This is of particular concern with fire doors where any breaks in the seal are likely to result in the leakage of smoke into a room.

These examples demonstrate how to successfully specify and install products that are going to give an opening a sustainable lifespan. Though the details are small, the impact is big. +



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Top: Proper installation of a bracket to ensure a continuous seal on the latch side on a door.

Middle: Proper installation of a bracket for a surface-mounted door closer that allows for a continuous seal on the head.

Bottom: Improper installation of gasketing.