Small Details Make a Big Difference in Door Hardware

by Jacob Wexler

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SUSTAINABILITY FOR THE AUTHOR, A DOOR HARDWARE PROFESSIONAL, 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 FOR YEARS.

Choosing products for sustainability

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

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 the Underwriters Laboratories (UL) 1784, *Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives.*

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

Thresholds and adhesives

Thresholds are specified to restrict airflow, smoke, light, heat, and cold. They can provide functions such as life safety, security, and energy efficiency.

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

However, thresholds can also be extruded with grooves in them that are filled with a specific type of abrasive adhesive product. Based on the opening and type, this adhesive can help extend the life of the threshold because it eases wear and tear. Owners can have liability issues whenever a product like this becomes worn down. For

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example, if a threshold holds water or has oil exposure, it can become slippery and cause users to slip and fall.

To achieve a positive influence on sustainability, it is best to specify an adhesive that makes sense for the opening's purpose.

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.

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.

Aluminum composite filler

This contains aluminum oxide and silicone carbide and is suitable for applications with heavy commercial traffic in supply rooms, manufacturing buildings, schools, cafeteria, automobile dealers, hospitals, and industrial facilities.

Photoluminescent epoxy abrasive

The most common use of a photoluminescent adhesive is with fire door assemblies as well as common 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 very hot or cold environments is desired.

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

In many cases, the end-user does not prefer the 'look' or encumbrance of a threshold. In these cases, a cycle-tested automatic door bottom is recommended. The different variations and options available in thresholds can provide specifiers with flexibility to properly accommodate a variety of sill conditions.

Automatic door bottoms

Automatic door bottoms provide protection from fire, smoke, noise, and other threats to the life safety and comfort of building occupants. These require some maintenance, but provide a seamless user experience, in which 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. These are required in specific openings such as stairwells or those with fire or sound ratings. They 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

A door is deemed sustainable when the specified hardware lasts for years.

Images courtesy Legacy MFG

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 into 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 one of most misunderstood and underspecified material. Gasketing should not be categorized as a door accessory, but rather recognized as an integral and significant component to 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, it is important to 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;
- 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; and
- 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 for durability.

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.

Silicone or ethylene propylene diene monomer (EPDM)

This is well-suited for 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.

Neoprene

This seal can either be a solid or 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 over mechanical gasketing. As a building settles, the gasketing may pull away from the door and become useless. However, adjustable gasketing extends the life of the product and enhances the building's sustainability.

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Figure 1

'Notching out' gasketing to create space for hardware creates a security issue and poses a fire risk.

One final note on specifications: 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 door hardware. Gasketing needs to be installed properly to ensure the opening functions properly and is sustainable.

One 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.

Figure 1 shows the incorrect practice of 'notching out' gasketing to create space for hardware. Breaking the seal creates two potential risks to occupants. The first is a security issue, as a 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. **CS**

ADDITIONAL **INFORMATION**

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Key Takeaways

One aspect of sustainability is the specification and installation of high-quality products on door openings that will not be damaged during occupancy and do not require extensive maintenance. Gasketing manufacturers provide a range of products to enhance an opening's sustainability. It is important to realize that while end-users will replace a broken deadbolt, they are less likely to change out a defective door bottom or replace cracked rubber in gasketing. In most cases, they will ignore or pull it off without replacement. This compromises both the security and sustainability of that opening.

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