



## **1% of the Budget, 90% of the Headaches Code, Labeling and Liability Issues When Specifying Door Hardware**

### **Overview**

While of primary importance in making a building fully functional for its occupants, door hardware is often a low priority for many in the building trade, and can often be an afterthought in the design process.

This synopsis of code, labeling and liability information compiled by John Cohrs (AHC, CDC, CCPR), Architectural Specifications Supervisor, and Mark McRae, Product Engineering Manager, Hager Companies aims to provide an explanation of some of the background issues architects and specification writers may not fully understand when specifying door hardware.



## **Common Misconceptions About Door Hardware Product Labeling and Listing**

### ***The Basics of Door Hardware Product Labeling and Listing***

Door hardware products are Labeled or Listed to show that they meet minimal life safety requirements, such as fire resistance, shock resistance, or basic mechanical aptitude to show that it functions to a minimum safety standard. Moreover, the label or mark indicates that the manufacturer's production site conforms to a range of compliance measures and is subject to periodic follow-up inspections to verify continued conformance. Listed/Labeled equipment or materials are required to bear a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction.

Only testing companies accredited by Occupational Safety and Health Administration (OSHA) are allowed to test and certify that products are safe for use in the United States. The approved companies are appointed as Nationally Recognized Testing Laboratories (NRTL). An NRTL's function is to provide an independent evaluation, testing and certification of any product.

Underwriters Laboratories (UL) and ITS Warnock Hersey (WHI) are both NRTLs accredited by OSHA in the U.S. In Canada, ITS WHI and cUL are accredited by the Building Standards Council of Canada (SCC). Certifications provided by ITS WHI have equal legal status with those provided by Underwriters Laboratories (UL) and Underwriters Laboratories Canada (ULC).

### ***Why There's Sometimes No Real Difference Between NRTL Listing Marks***

Some Listing Marks have become popular within certain industries or certain geographic areas based on the lab that first started to test the specific products. For instance, the ITS WHI Mark is used for non-electrified building materials. Roughly 80% of the wood fire doors on the market bear the ITS WHI Label. However, this does not mean that a wood fire door tested by another NRTL is any different as long as the same test standard was used for the evaluation. For example, when a product bears a UL US-mark in the US, it shows/proves exactly the same fulfillment of appropriate North American standard as the ITS WHI Mark.

Any accredited NRTL can test and List a product to a specific standard, if the lab has the testing capability. For example, both UL and ITS WHI are involved in fire prevention testing of building products such as fire door assemblies including gasketing, locks and latches, and closers. Both labs have the necessary furnaces and additional equipment to perform the simulated fire tests called out in the specific standard, which for the door hardware industry is typically *UL10C Positive Pressure Fire Tests of Door Assemblies*.



### ***When a Product Label/Listing Doesn't Mean What You Think It Means***

Although a product has been Listed by an agency and bears its corresponding Mark, many building professionals do not fully understand how the product was tested, or what the Listing Mark means. For example, Spring Hinges must be Listed to be used on fire doors, but the listing has little to do with the ability of the hinge to withstand fire. It merely signifies that the hinge is able to cycle one million cycles to better ensure that the door will latch closed. Also, although not required to be labeled, for a spring hinge to comply with ADA requirements, it must be adjustable to close in a minimum of 1.5 seconds from 70 degrees of opening, and must also have less than a 5-pound opening force. However, if used on a fire door the hinge must be able to close the door so that it latches closed. In this case the fire code trumps the ADA code.

Products are also often tested above and beyond the minimum requirements found in safety standards to show consumers the quality of the products or additional features. For example, exit devices used on doors providing a means of egress are required to be Listed to UL305 Panic Hardware. UL305 only requires the devices to be cycled 100,000 times. However, ANSI/BHMA A156.3 requires a Grade 1 exit device to be cycled 500,000 times.

### **The Basics of Fire Ratings: requirements for an opening before it can be classified as fire rated**

Walls, frames and doors all have to be fire rated. This is self-explanatory, as it would not make much sense to put a labeled door in a non-rated wall just as you cannot put a non-labeled door in a rated wall and call the opening fire rated. The purpose of a fire rated opening is to retard fire for a specific length of time. All components of the opening have to be rated. When an opening is also required to be "S" (smoke) labeled then additional gasketing items will be required to comply with the code.

Every swinging fire door must have a listed and labeled self-latching latching device to engage the strike to be fire rated. Push and pull plates cannot be used on a fire rated door. The door has to latch into the frame when closed so it stays closed. The latch prevents the door from opening during a fire if something falls against it. This means you must use at least a passage lock set on the door. Deadbolts cannot be used in place of a latching device because they are not self-latching.

Steel ball bearings and steel based hinges must be used on fire rated doors. Brass, bronze and other base materials cannot be used, unless tested as an assembly. Continuous hinges are allowed as tested. Plain bearing hinges cannot be used. Bearing hinges minimize wear from everyday operation and help prevent door sag. During a fire, the door needs to operate smoothly so closers and latching devices work properly. Some manufacturers may provide doors with non-bearing type hinges only when they are part of the listed assembly.



The door must be self-closing to be fire rated. A properly sized, listed and labeled closing device is part of basic fire door hardware requirements. If the door is left open during a fire, then that opening cannot retard the fire as it was meant to do; the door needs to close after somebody passes through it. This is usually done by a door closer or, in some cases, spring hinges.

Fire rated and listed louvers can be installed on fire doors but they have to be a fusible link type. This means that once the heat from the fire reaches a certain temperature (usually 105°F) (41° C), the fusible link will melt which causes the louver blades to close. This will help prevent the spread of fire. The maximum size for these louvers is 24" x 24" (610 x 610 mm). There is no glass allowed in a fire rated door if it has a louver and no louvers at all can be installed in a 3-hour rated door.

Basic fire door frames do not have hourly ratings. The exception being frames specially labeled for less than 3 hours. Frames bearing a recognized fire label may support a 3-hour, 1 1/2-hour, 3/4-hour or a 1/3-hour door. Frames used in masonry walls can be used with a maximum 3-hour fire door. While frames in drywall are intended for use with fire doors rated up to 1 1/2-hour, some manufacturers have tested for a 3-hour frame in drywall. Verify with your manufacturer for individual listing.

***Note: These are basic requirements; codes differ from area to area and are enforced by the Authority Having Jurisdiction (AHJ)***

***The purpose of a fire rated opening is to retard fire for a specific period of time***

The hourly designation indicates the duration for the fire test exposure and is known as the fire protection rating.

**A label:** 3-hour rating (for a 4-hour wall): These doors are used for openings in walls separating buildings that are joined together. They are metal doors and glass is allowed as tested. "A" label doors might not require additional seals applied to the frame, check with your individual manufacturer's procedure. Typically, a hollow metal door needs no added seals. Metal and some composite doors expand when heated. The door itself effectively seals the opening and often does not require the addition of an edge sealing system for the fire label. However, this door would still need a smoke gasket if it were functioning as a smoke control door.

**B label:** 1 1/2-hour rating (for a 2-hour wall): These doors are usually used for stairwell doors but are sometimes used at all the rated walls in a building (i.e., mechanical or electrical rooms). One hundred square inches of exposed glass per door leaf is allowed. These are mostly wood composite and hollow metal doors. A "B" label 1-hour rating (1-hour wall) exists for use in buildings less than four stories tall; this rating currently only applies to wood doors. "B" label fire doors require the addition of an edge-sealing system (category "G" gasket) to the frame to comply with the new positive pressure test method. Some wood doors do not require the additional category "G" gasket; check with your manufacturer for availability.



**C label:** 3/4-hour rating (for a 1-hour wall): These doors are used for openings from a corridor into another room in the same building. 1,296 square inches of exposed glass is allowed per vision light. These are mostly wood composite doors. “C” label fire doors require the addition of an edge-sealing system (category “G” gasket) to the frame to comply with the new positive pressure test method. Some wood doors do not require the additional category “G” gasket, check with your manufacturer for availability.

**D label:** 1 1/2-hour rating (for a 2-hour wall): These are hollow metal doors used in exterior walls subject to severe fire exposure from outside the building. One hundred square inches of exposed glass per door leaf is allowed. Check with your manufacturer’s listing for the addition of a category “G” gasket to meet positive pressure requirements.

**E label:** 3/4-hour rating (for a 1-hour wall): These are hollow metal doors used in exterior walls subject to moderate to light fire exposure from the outside of the building. 1,296 square inches of exposed glass is allowed per vision light. Check with your manufacturers listing for the addition of a category “G” gasket to meet positive pressure requirements.

**1/3-hour door:** 20-minute rating (for a 1-hour wall): These doors do not have a letter designation for their rating and can be a wood or particle core door. 1,296 square inches of exposed glass is allowed per vision light. They are tested with or without hose stream. Doors tested without hose stream are specially labeled: “Twenty Minute-Rating Without Hose Stream”. These doors are used on condo/apartment entrances, offices of a 1-hour rated corridor wall and other applications where smoke and draft control are the primary concern.

#### ***The addition of an “S” to a door label***

**S Label:** The letter “S” is the designation on a door’s fire label indicating it can be used as a Smoke Control Door. Door manufactures are allowed to put an “S” on a fire label when the door opening has passed the air infiltration test. The door opening does not become approved for a Smoke and Draft Control unit until an approved category “H” gasket system has been installed on the frame. The federal government, many owners and some states require at least some openings to be labeled for smoke as well as fire. This is not limited to 20-minutes but includes all fire labeled doors that are rated 20-minutes and above. The addition of an approved category “H” smoke control gasket completes the installation instructions necessary to validate the labeled door to become a Smoke Control Door.

***Note: All of the labels listed above have the capability of being both fire and smoke barrier openings, however, not all openings require smoke labels under UBC 7-2 (1997). Openings requiring smoke labels are detailed either by the fire authority having jurisdiction, local code, NFPA 101 or NFPA 5000.***



## **Code and Liability Issues Concerning the Americans with Disabilities Act**

The Americans with Disabilities Act (ADA) might be one of the most misunderstood pieces of legislation that affects the construction industry. While it is feared by some, loathed by others, and completely disregarded by a few, the ADA can stir up some strong emotions. However, those who feel the strongest about it often don't fully understand what it means to them.

One of the reasons for this is that the ADA can be very confusing, and can even sometimes seem to conflict with standard building codes. Much of the law is also vague, and can be open to interpretation. Unfortunately, the ADA is ultimately defined in the courts, where building owners found to be non-compliant can face attorneys' fees and potential fines.

The part of the ADA that DHI members should be concerned about is Title III, which deals mainly with "accessibility" for businesses and non-profit agencies. Obviously, doors represent a significant part of overall accessibility. In fact, an entire section of the ADA (section 4.13) is devoted solely to doors. So it's important for door hardware distributors to be knowledgeable on the subject.

While the ADA is a civil rights law, not a building code, it does include design and construction standards for both public and private buildings. These standards are expressed in the Americans with Disabilities Act Accessibility Guidelines (ADAAG). In very general terms, the ADA requires a building owner to provide:

- Measures that will enable individuals with disabilities to physically enter the facility.
- Access to those areas where goods and services are made available to the public.
- Access to restroom facilities, and to insure that the restrooms themselves are accessible.
- Any remaining measure of accessibility required to remove barriers in order to provide access to the goods, services, advantages, privileges or accommodations provided to the public.

### ***Make No Mistake: the ADA is Taken Seriously***

Just as it's true that the U.S. government is reasonable with businesses in regard to meeting ADA standards, it's also true that the government takes ADA compliance very seriously. In suits brought by the Attorney General (which can be based on complaints filed by individual consumers) monetary damages and civil penalties can be awarded. Civil penalties may not exceed \$50,000 for a first violation or \$100,000 for any subsequent violation.



In addition, private parties can bring lawsuits to obtain court orders to stop discrimination. While no monetary damages are available in these cases, reasonable attorney's fees can be awarded.

***Bottom Line: Meeting ADA Accessibility Standards is Good for Business***

No matter how you may feel about the ADA and how it relates to you, there's no question that providing accessibility helps a business create a positive experience for its customers. And the fact is, customers who have accessibility problems with a business probably won't remain customers very long!

Millions of people with disabilities regularly shop, travel, dine out and more—often with family and friends, which makes the total number of potential customers affected by accessibility even greater. Studies show that people with disabilities in the U.S. alone have \$175 billion per year in discretionary income. Plus, this group's global spending power jumps dramatically when you consider the World Health Organization's estimate that there are 600 million people with disabilities around the world.

What's more, there can be tremendous advantages in easing access to the entire aging U.S. population—not only those who are disabled. As people begin to experience physical difficulties with age, they often seek out businesses that make access easier. The U.S. Census Bureau projects that the number of people 65 and older will more than double between 2000 and 2030, from 35 million to 71.5 million people. Plus, the number of people age 85 and older is also expected to double to 9.6 million.

Since one of a person's first interactions with a building (and therefore, a business) is with its door hardware, compliance with ADA legislation is a matter of dollars and cents. That's why, as a member of the door hardware industry, knowledge of applicable ADA standards should be important to you.

***Note: John Cohrs (AHC, CDC, CCPR) of Hager Companies is an expert in ADA issues related to doors and door hardware. John regularly facilitates educational seminars on ADA compliance, and he has also compiled a white paper on the subject, which is available free of charge for those interested in learning more about the subject. John can be reached at 317-833-4406 or at [jcohrs@hagerco.com](mailto:jcohrs@hagerco.com).***