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Panic Hardware and Delayed Egress Locks

Standards to meet when required by building code

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Panic hardware is a door latching assembly incorporating an actuating member, usually called an actuating bar or push pad, which releases the mechanical latching or locking mechanisms upon the application of force in the direction of exit travel.

Panic hardware is defined in the NFPA 101, Life Safety Code and the ICC International Building Code (IBC) as a life-safety product. In NFPA 101, section 7.2.1.7 and the IBC, 1008.1.10, use panic hardware for affecting the safe egress from building structures such as Institutional, Assembly Hall, Educational and High Hazard occupancies. Architects, fire and/or building code officials, building owners, and manufacturers understand that panic hardware is an integral part of building a safe structure.

Additionally, there are Fire Exit Hardware requirements in the code. Fire Exit Hardware is Panic Hardware that provides emergency egress while also providing fire

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Panic Hardware (continued from cover)

resistance protection when used as part of a fire door assembly.

Model building codes require panic hardware to be tested/evaluated by a 3rd party product safety testing organization to a nationally recognized product safety standard such as UL's Standard for Safety for Panic Hardware, ANSI/UL 305. Many local building codes also require evaluation to ANSI/BHMA A 156.3. Manufacturers of panic hardware can submit their products to UL for safety testing/ evaluation to UL 305; testing to the ANSI/ BHMA A 156.3 can be done concurrently.

UL's first edition of UL 305 was developed and published in November 1955 and in 1983, UL achieved ANSI/UL Standard Recognition for UL 305. The current, sixth edition of ANSI/UL 305 was published in July 2012.

UL's testing/evaluation program of panic hardware includes:

1. review of the product construction and installation instructions
2. testing for performance
3. confirmation of the manufacturer's identification markings
4. retesting of the panic hardware series once every four years
5. plus the use of UL's program for Follow-Up Services: periodic announced visits at the place of manufacture to review actual production and compliance with UL requirements.

All codes require that no additional locking device, deadlock, chain, padlocks and hasps, etc., be installed on a door required to have a panic device or be equipped with any device that prevents the release of the latch (open) when the touch pad or cross bar is pushed. Additionally, if the hardware is required to be "Fire Exit Hardware", the panic device shall not be able to be secured in the unlatched position by the use of a locking device (such as a set screw).

Related equipment that is also allowed by model building codes for egress applications includes Special Locking Arrangements, such as Delayed Egress Locking Systems and Access- Controlled Egress Door Assemblies. Approved and listed special locking arrangements are generally used in buildings containing low to ordinary hazards and protected throughout by approved, supervised, automatic fire detection systems. These devices allow for free egress after a predetermined period of time (e.g. 15 or 30 seconds) of applied force to the releasing device. Other configurations allow free egress for a set period of time after actuation by a sensor.

In most applications, Special Locking arrangements are designed to allow for free egress upon activation of specific conditions of a building fire protection system and/or loss of power, however, there are exceptions allowed by code.

UL 294 (Access Control Equipment), UL 305 (Panic Hardware), section 7.2.1.7 from NFPA 101 or section 1008.1.10 of the IBC are the requirements used to evaluate such equipment. For additional details regarding Special Locking Arrangements, see UL's Listing categories Special Locking Arrangements (FWAX), Controlled Exit Panic Devices (FULA) and Access Control System Units Accessory (ALVY).

Follow-up information on Panic Hardware or any Fire Door related product can be located at www.ul.com; search for the new Marketing and Application Guide called "Doors, Windows and Related Hardware, Fire, Smoke, Egress and Windstorm Related Applications". For specific questions related to Panic Hardware contact Edgar Wolff-Klammer at Edgar.Wolff-Klammer@ul.com, for details on Delayed Egress Locks contact Louis Chavez at Louis.Chavez@ul.com. For all general inquiries contact Bob James at Bob.James@ul.com.

Fire Resisting and Smoke Control Doors

A Global Perspective — Part Two

In Part One of this article (FSA Issue 2) we looked at the background of the developing standards and codes. This issue covers current and future certification of fire/smoke doors practices.

Test Methods

As indicated in Part One of this article, the fire resistance test methods for the North American and European systems vary. One similarity that exists between the two systems is the heating conditions for the test methods; both are based on ISO 834, Fire Resistance Tests – Building Construction. The US codes reference ANSI/UL 10B, Safety Fire Tests of Door Assemblies & ANSI/UL 10C, Safety Positive Pressure Fire Tests of Door Assemblies, and Canada uses ULC/CAN4-S104, Standard Method for Fire Tests of Door Assemblies. The ANSI/UL 1784, Safety Air Leakage Tests of Door Assemblies, standard is used to test smoke control door assemblies for the US market; Canada does not require this type of testing for doorsets. These tests contain major differences, which translate to critical aspects, from the European test methods; EN 1634-1 and EN 1634-3, Fire Resistance and Smoke Control Tests for Door, Shutter and Openable Window Assemblies and Elements of Building Hardware. Two critical differences are the pressure within the furnace chamber, which can be positive or negative, and the use of a hose stream test to measure the remaining 'robustness' of the door after the fire test duration.

Furnace Pressure

UL10C requires a positive pressure above 1m height (neutral at 1 m above sill) while UL10B and ULC/CAN4-S104 require the furnace chamber to have a neutral pressure at the top of the door assembly. The furnace pressure can have a major effect on the performance of the doorset, particularly for timber based doors, so a degree of consistency would be a major benefit to those manufacturers who need to develop doors to both sets of codes. A negative pressure within the whole of the furnace chamber is something which has never existed in the European Standard. In EN 1634-1, the furnace pressure is neutral at 500mm; dissimilar to UL10B, UL 10C and ULC/CAN4-S104.

Hose stream

As mentioned in Part One of this article, the Hose Stream test is intended to ensure that fire resistant building products cannot easily be penetrated by other building materials or furnishings during a fire. The test, in the form of a stream of water at a constant amount of force, is uniformly applied to all portions of a door, wall or glazed assembly for a calculated duration. The duration and pressure of the hose stream test increases with time and the size and rating of the assembly as the duration is calculated using factors that increase with time and the square area of the assembly being tested.

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CRACKING DOWN ON COUNTERFEITERS

Tip from a UL Client Uncovers Valves Bearing Counterfeit UL Marks

UL's mission is public safety and we take that responsibility seriously. Because goods with counterfeit UL Marks can be hazardous, UL has developed a comprehensive anti-counterfeiting operations (ACO) program to prevent products bearing counterfeit UL Marks from entering the stream of commerce.

Our dedicated team of professionals works with law enforcement officials around the world to interdict counterfeit goods and safeguard the integrity of the UL Mark. UL's strategy for protecting the UL Mark from counterfeiters is built on three pillars: enforcement, education and partnerships. Each pillar represents a vital component of UL's overall anti-counterfeiting program.

UL utilizes these three components to effectively protect the UL family of Marks, with particular priority given to life safety products. For example, a tip from a UL client involving pressure reducing valves that were suspected to bear counterfeit UL Marks resulted in immediate action. The alleged source of the goods was determined to be an unauthorized factory located in Yuyao City, Zhejiang, PRC. Our Asia based anti-counterfeiting staff, assisted by a local consultancy firm, undertook the investigation of the suspected source of the infringing goods. Over the course of several months, enough evidence was obtained to substantiate the case and pursue an enforcement action.

UL's previous efforts to partner effectively with Chinese authorities in this region resulted in the establishment of a Memorandum of Understanding (MoU) between UL and the Ningbo Municipal Administration for Industry and Commerce (AIC) – Yuyao Branch and the Yuyao City Quality and Technical Supervision Bureau (TSB). Building upon this newly forged partnership to combat counterfeiting, ACO staff gathered together all the information discovered during the investigation and filed a formal complaint with the Yuyao AIC. A case conference was held and a strategy was developed and implemented.

Within 24 hours, more than ten officials from Yuyao AIC (with onsite support from UL ACO representatives), conducted an

Questions & Answers

Does the Installation of Ice Barriers have an Impact on Roof Covering Classifications?

Ice and water barriers used in roofing application can play an important role in the overall fire performance of roofing products and systems. On one hand, the barrier may afford additional protection to the combustible roof deck. On the other hand, the barrier can be an additional combustible component in the system. Consequently, these barriers are taken into consideration for UL Class A, B, and C roofing products and systems. These products are generally referred to within UL as roofing underlayment accessories. There are other types of underlayments other than self-adhering polymer modified bitumen sheets, which are required to be tested in accordance with ASTM D 1970. Asphalt based underlayments, or others, are required by Code to be examined in accordance with ASTM D226 (Type 1), ASTM D4869 (Type 1), or ASTM D6757.

The UL product category for underlayment accessories is "Prepared Roofing Accessory" (TGDY). These underlayments are tested with representative prepared roof coverings and combustible roof decks, such that they can be used interchangeably with Class A, B, or C roof coverings.

When new prepared roof coverings are submitted to UL (such as asphalt shingles), and they are intended to be used with specific underlayments, they are tested and certified in accordance with UL790 (ASTM E108) in this manner.

For additional information contact Dwayne Sloan at Dwayne.E.Sloan@ul.com.

enforcement action against the suspect factory. Many different models and types of fire protection valves were found during the raid. Hundreds of pieces of finished products bearing counterfeit UL Marks were seized and ultimately destroyed. Molds and other tools used in the production of these counterfeit goods were also confiscated. In addition to the destruction of the goods and tools of production, a significant fine was levied and an order to cease infringement of the UL Mark was issued.

A press release announcing the results of the swift action by Yuyao AIC was published in the local newspaper, showcasing this effective partnership between the authorities and a private company and highlighting the penalties associated with counterfeiting the UL Mark.

For more information or if you have any questions related to UL's Anti-Counterfeiting Operations, please contact Judith Lykins at Judith.A.Lykins@ul.com.

Fire Resisting and Smoke Control Doors (continued from page 3)

The hose stream test has been conducted by UL since the 1920's when it became a replacement for the sand bag pendulum test. The hose stream test was developed to ensure that the product was a rugged barrier over the entire product and not just one area where the sand bag would normally impact. Doors and other products that are to be used in vertical applications must be tested to the hose stream test to receive any Classification to a UL or ULC Standard. The only exception permitted is for 20 minute rated doors intended for use as smoke barriers and installed where the International Building Code has been adopted.

The implications of the hose stream test are that products designed for use outside North America often need some redesign or additional features added to achieve similar ratings in the U.S. As a result, ratings do not exist for products such as 60 min Integrity only toughened glasses or unlatched doors held closed by only closers – applications which commonly exist in some European countries. Additionally, there is a need to choose hardware products and components much more carefully and all tests for hinged door leaves are usually conducted with positive latching devices installed.

Installation Requirements

In North America, and other countries which reference the International Building Code, NFPA 80 (Standard for Fire Doors and Other Opening Protectives) and NFPA 105 (Standard for the Installation of Smoke Door Assemblies) have become widely referenced and widely adopted as installation standards for fire doors, fire windows and smoke door assemblies.

These standards cover requirements for marking, regular door inspection, maintenance, common installation methods, common industry terms and hardware requirements for products. They are seen as "Best Practices" for Fire Doors and Smoke Doors and are used as evaluation criteria by Authorities Having Jurisdiction (AHJs) to determine compliance for proper installation and therefore act as a primary building code regulation for fire doors.

European EN safety standards do not include fire door installation requirements as is the case with ICC and NFPA Codes. Instead this is left to be handled in individual European National regulations. The European product standards address products up to the 'factory gate' and once outside the manufacturer, they become subject to local regulations. As a result, there are many differing installation requirements across Europe for fire/smoke doors ranging from quite firm and tight requirements based on the certification of the installed assembly, involving independent third party certification, to very little or no control over the installation.

Hence, the differences are often substantial between the two systems as far as installation of fire doors is concerned.

Doorsets/Kits/Parts of Works

There are also a number of other complications – not least the culture of doorset fabrication in a number of European countries. Doorsets are defined within the product standards as a complete doorset including door frame, door leaf or leaves, building hardware, seals, glass etc., but that is often not what is bought. The complete doorset often only comes together on-site (i.e. at the time of installation). As the product standard EN 16034, Pedestrian Doorsets, Industrial, Commercial, Garage Doors and Windows, covers only complete doorsets for CE marking most 'doors', such as those that come together on site will not be able to be CE marked unless this is addressed by the installer. This leaves a situation in many countries where some doors will be CE marked, (i.e. subject to

the EN standards and the increased rigour above National test methods) and some, being based on National standards as they are not able to be CE marked. A situation which many people would agree is wholly unacceptable in moving towards a level and transparent marketplace. This results in a confused, non-harmonised system for fire/smoke doors across Europe and leaves developing countries that are looking for systems to adopt, with little choice but to turn to established, consistent systems and codes.

The Future

So now, after both parts of this article, it should be clear how the codes came into being, which bodies are involved in the development and ownership of the codes and their impact on fire resisting and smoke control doorsets.

For the future, it is clear that these 'International' codes will continue to be used for countries outside of North America as the buildings are built by North American finance, insured by North American influenced insurance companies, designed by North American trained architects, influenced by readily accepted and consistent 'International' or North American (usually NFPA or IBC sourced) codes and standards – which are increasingly becoming true International codes and standards.

This means that the need for certification of doorsets against the Standards referenced in the 'International' codes will continue and, as the North American codes are often used in emerging nations, their use will increase, especially in Middle Eastern and Asian countries. It is likely then that if a manufacturer exports from either Europe or Asia they will increasingly be asked about meeting these requirements.

To address these difficulties in seeking product certifications for different markets, UL has developed a combined fire door test method which can be used to test against U.S. and EN standards in one test program. This means that a producer of fire doors can conduct a fire resistance test and use that test evidence for UL certification purposes as well as CE marking (when it arrives for fire doors) and even some National Standards gaining multiple results at the same time.

For more information, please contact Chris Miles at Chris.Miles@ul.com or by phone at +44.1925.258.870.

Spotlight

Fire Industry Expert Joins UL to Build European Business

UL LLC (UL), the global independent safety testing and certification organization, has appointed Mr. Chris Johnson, formerly with Warringtonfire (now Exova), as its new Senior Engineer responsible for firestopping under UL's Building Materials and Life Safety and Security Systems division within the European and Latin America regions.

This new appointment is part of an expansion by UL into Europe which will give manufacturers of both passive and active fire safety products access to testing and certification suitable for global use, from one point of contact.

With more than 15 years of experience in constructing, testing and assessing the fire performance of products as well as an in-depth understanding of the product certification process, Chris Johnson is a well known and respected member of the UK and European passive fire safety industry.

Chris has extensive technical expertise in the fire resistance field and has been a key member in CEN and BSI standards development. Chris has also been involved in developing independent third party certification schemes for products such as firestopping and has drafted a number of issues of European Technical Approvals (ETAs) for firestopping systems.

At UL Chris will be responsible for engineering matters in firestopping for European certification as well as North American certification. For questions you can reach Chris Johnson at **Chris.Johnson@ul.com** starting November 19, 2012.

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WHAT'S HOT:

UL Holds Russian Fire Safety Forum in Chicago

This summer UL hosted a delegation of Architects, Regulators and Fire Protection experts from Russia. The three day long forum focused on U.S. and Russian building codes, standards development, product certification and various research & development projects. Highlights of the event included presentations from Irina Ladygina of Krilak and Elena Korol from Moscow State University, Ray Orozco former Chicago Fire Commissioner/ Executive Director of Chicago Office of Emergency Management Communications and David Paulison former FEMA Director and current UL Board of Trustee.

For additional details, please contact Kevin Faltin at **Kevin.R.Faltin@ul.com** or Kim Delort at **Kimberly.Delort@ul.com**.

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