

FIRE DOORS

What is a fire door?

A fire door is a specialized door installed in a wall that is required to have a fire-resistance rating. A fire door is an integral part of the built-in fire protection systems of a building. From a code perspective, the doors are part of assemblies called closures and the word fire door is somewhat misleading, as a fire door should never be installed as a separate entity.

The National Building Code – 2023 Alberta Edition (NBC(AE)) and National Fire Code – 2023 Alberta Edition (NFC(AE)) defines a closure as a device or assembly that is used to close an opening through a fire separation or an exterior wall. Closures include a door, a shutter, wired glass or glass block, and all components such as hardware, closing devices, frames and anchors. This means a fire door is a closure and it includes the frame, doorknob, hinges etc. to make the assembly complete. In addition, all the components within the assembly have a fire-protection rating.

Fire-protection rating means the time in minutes or hours that a closure will withstand the passage of flame when exposed to fire under specified conditions of test and performance criteria, or as otherwise prescribed in the NBC(AE).

For each fire-resistant rated wall required by the NBC(AE), a corresponding fire-protection rated fire door assembly is required:

Fire-Resistance Rating of Fire Separation	Minimum Fire-Protection Rating of Closure
45 min	45 min
1 h	45 min
1.5 h	1 h
2 h	1.5 h
3 h	2 h
4 h	3 h

Fire doors shall be installed in conformance with National Fire Protection Association (NFPA) 80, “Standard for Fire Doors and Other Opening Protectives.”

Most people are familiar with swing type fire doors. With a few exceptions, every fire door shall be equipped with a self-closing device designed to return the door to the closed position after each use.

Although self-closing devices are not required for all doors in a fire separation, it is assumed that in a fire situation every door in a fire separation is closed. Swing type fire doors shall be equipped with a positive latching mechanism designed to hold the door in the closed position after each use. It is acceptable to have hold-open devices on fire doors in certain situations, but these devices are not allowed on:



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- an exit stair door in a building more than 3 storeys in height,
- a door for a vestibule:
 - between a storage garage and an assembly occupancy, care occupancy or a residential occupancy.

Hold-open devices that are permitted on fire doors shall be designed to release by a signal from:

- an automatic sprinkler system,
- a heat-actuated device, or
- a smoke detector located as described in CAN/ULC-S524, "Standard for Installation of Fire Alarm Systems." if used on:
 - an exit door,
 - a door opening into a public corridor,
 - an egress door from a suite or room that opens onto an exterior passageway, a corridor used by the public or a public corridor,
 - a door serving
 - an assembly occupancy,
 - a care occupancy,
 - a treatment occupancy,
 - a detention occupancy, or
 - a residential occupancy, or
 - a door required to function as part of a smoke control system.

A permitted hold-open device shall be designed to release upon a signal from the building fire alarm system if a fire alarm system is provided. However, this requirement does not apply to:

- a hold-open device on a door located between a corridor used by the public and an adjacent sleeping room in a treatment occupancy or,
- a hold-open device that is designed to release by a heat-actuated device as per above.

What are the maintenance requirements for fire doors?

Fire doors shall be inspected every 24 hours to ensure that they remain closed unless the door is equipped with a hold-open device conforming to the NBC(AE). Fire doors shall be operated every month to ensure they are properly maintained (as per the fire safety plan). At no time shall the fire doors be obstructed, blocked, wedged open, or altered in any way that would prevent the intended operation of the fire door.

If during an inspection a fire door is found to be damaged in which it affects the integrity of the doors' fire-protection rating, then it must be repaired so that the integrity is maintained. Any defects that interfere with the operation of a fire door must be corrected and maintained. A fire door must be operable at all times. If during an inspection of a fire door it is found to be damaged beyond repair, then the door must be replaced in conformance with the NBC(AE) and NFPA 80. Both repair and replacement must be completed immediately.

Examples of damage to fire doors includes, but is not limited to:

- open holes or breaks exist in surfaces of either the door or frame (minor scuffs,



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scratches, dents, and dings are acceptable),

- parts are missing or broken,
- self closing device does not operate as intended,
- latching hardware doesn't latch securely when closed,
- fire-protection rating plate is painted over or missing.

Unfortunately, many fire doors are compromised by the installation of non-rated hardware, incompatible hardware and repairs that do not maintain the integrity of the fire-protection rating. When a fire door needs to be replaced or repaired, a person who is familiar with NFPA 80 should be consulted prior to any work being done.

Some people with cognitive disabilities such as dementia are at risk of wandering away from the residence or healthcare facility in which they are being treated. To reduce this risk, some residences and healthcare facilities install special hardware on egress and exit doors that can only be operated by designated persons. This solution keeps residents/patients from wandering, but the doors can still trigger anxiety in residents/patients who may nevertheless try to leave the space through them, without success.

Recent studies have shown that applying murals (of a landscape, for example) on exit and egress doors in these environments can help reduce anxiety in people with cognitive disabilities who tend to view them as a pleasant natural barrier rather than as a means of escape.

Where this approach is implemented and the doors are not reasonably discernible, an alternative means of egress from the space should be provided. It is expected that the designers and authorities having jurisdiction (AHJ) will use judgement in determining whether an alternative means of egress is required. Additionally, the murals should be applied with care so that they do not conceal or impair the operation of any fire and life safety systems installed nearby, including, but not limited to, exit signage, emergency lighting, fire alarm devices, sprinklers or door hardware. Egress and exit doors with murals should be reasonably discernible to residential care or healthcare staff who will be required to assist residents/patients if the space must be evacuated, and to visitors who will be expected to evacuate on their own.

It is imperative that the AHJ be consulted prior to the installation of or application of vinyl wrap, stickers, painting, etc. to any doors within these facilities. Facilities wishing to use these types of applications should obtain written acceptance by the AHJ.

It is a NFC(AE) requirement to keep a record of all inspection and maintenance requirements for fire doors. The records must be kept on the premises for five years from the time the inspection and maintenance were completed.

If a fire safety plan is required then the NFC(AE) requirements for operation, inspection, and maintenance of fire doors must be outlined in the fire safety plan.

NOTE: The NFC(AE) does not require inspections to be completed by a certified fire door inspector.

Contact

Please contact the local authority having jurisdiction for any questions regarding this Safety Tip.

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