Temperature Rise Fire Doors

A temperature rise door is a fire-rated door that limits the heat transfer through the door for a period of 30 minutes. Temperature rise ratings indicate the maximum rise above ambient temperature on the non-fire side of the door, and will be either 250°, 450°, or 650° F. The 250° door is the most restrictive because it limits the heat transfer to only 250° for a 30-minute period. A typical hollow metal door would reach approximately 1400° F in the same time period. By minimizing the transfer of heat, a temperature rise door could protect an exit enclosure, allowing people to pass the floor of fire origin.

While the International Building Code (IBC) requires 450° temperature rise doors in interior exit stairways, ramps, and exit passageways, the code includes an exception for buildings equipped throughout with an automatic sprinkler system.

This is the information typically included on the label for a temperature rise door:



The IBC has changed slightly from one edition to the next with regard to temperature rise doors in interior exit stairways, ramps, and exit passageways. Each edition includes an exception stating that temperature rise doors are not required in buildings protected throughout with an automatic sprinkler system.

IBC 2003:

715.3.4 Doors in Vertical Exit Enclosures and Exit Passageways. Fire door assemblies in vertical exit enclosures and exit passageways shall have a maximum transmitted temperature end point of not more than 450°F (232°C) above ambient at the end of 30 minutes of standard fire test exposure. Exception. The maximum transmitted temperature end point is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

2006 IBC:

The word "vertical" has been removed, and "is not required" has been changed to "is not limited." 715.4.4 Doors in exit enclosures and exit passageways. Fire door assemblies in exit enclosures and exit passageways shall have a maximum transmitted temperature end point of not more than 450°F (250°C) above ambient at the end of 30 minutes of standard fire test exposure.

Exception: The maximum transmitted temperature rise <i>is not limited in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

2009 IBC:

The paragraph on glazing has been added to this section, with the exception duplicated for the fire door assemblies and the glazing.

715.4.4 Doors in exit enclosures and exit passageways. Fire door assemblies in exit enclosures and exit passageways shall have a maximum transmitted temperature endpoint of not more than 450°F (250°C) above ambient at the end of 30 minutes of standard fire test exposure.

Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

715.4.4.1 Glazing in doors. Fire-protection-rated glazing in excess of 100 square inches (0.065 m2) shall be permitted in fire door assemblies when tested as components of the door assemblies and not as glass lights, and shall have a maximum transmitted temperature rise of 450°F (250°C) in accordance with Section 715.4.4.

Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

2012 IBC:

The term "exit enclosures" has been changed to "interior exit stairways", and a reference to ramps has been added. The term "endpoint" has been changed to "rise." Fire-protection-rated glazing larger than 100 square inches is no longer permitted, and limitations on fire-resistance-raged glazing have been added. The duplicate exception has been deleted.

716.5.5 Doors in <u>interior exit stairways and ramps</u> and exit passageways. Fire door assemblies in <u>interior exit stairways and ramps</u> and exit passageways shall have a maximum transmitted temperature <u>rise</u> of not more than 450°F (250°C) above ambient at the end of 30 minutes of standard fire test exposure. Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. 716.5.5.1 Glazing in doors. Fire-protection-rated glazing in excess of 100 square inches (0.065 m2) <u>is not permitted</u>. Fire-resistance-rated glazing in excess of 100 square inches (0.065 m2) shall be permitted in fire door assemblies when tested as components of the door assemblies, and not as glass lights, and shall have a maximum transmitted temperature rise of 450°F (250°C) in accordance with Section 716.5.5.

2015 IBC:

The requirements for fire-resistance-rated glazing have been modified.

716.5.5 Doors in interior exit stairways and ramps and exit passageways. Fire door assemblies in interior exit stairways and ramps and exit passageways shall have a maximum transmitted temperature rise of not more than 450°F (250°C) above ambient at the end of 30 minutes of standard fire test exposure. Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. 716.5.5.1 Glazing in doors. Fire-protection-rated glazing in excess of 100 square inches (0.065 m2) is not permitted. <u>Fire-resistance-rated glazing in excess of 100 square inches (0.065 m2) shall be permitted in fire doors. Listed fire-resistance-rated glazing in a fire door shall have a maximum transmitted temperature rise in accordance with Section 716.5.5 when the fire door is tested in accordance with NFPA 252, UL 10B or UL 10C.</u>

2018 and 2021 IBC: The code language is the same as the 2015 IBC, only the paragraph number has been changed to 716.2.2.3.

Source: <u>iDigHardware.com</u> – Lori Greene, Manager, Codes and Resources, Allegion – June 2022 For more information, refer to <u>Decoded: Temperature-Rise Doors.</u>