

SpecRite

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from National Guard Products, Inc.

Clearing up the Smoke

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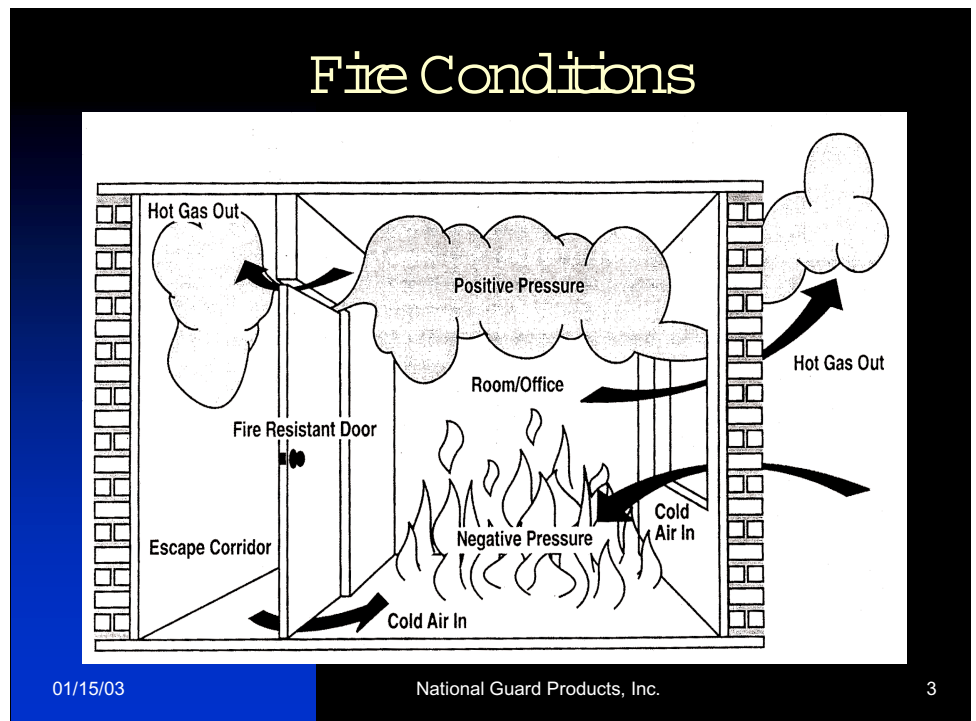
The International Building Code requires that Fire Doors in Corridors and Smoke Barriers meet requirements for a smoke and draft control door assembly. Following are our most commonly asked questions regarding these requirements as individuals have begun to specify and supply products in areas now under the jurisdiction of this code.

What is meant in the International Building Code by the following statement?

"714.2.3 Doors in corridors and smoke barriers...Fire Doors shall also meet the requirements for a smoke and draft-control door assembly tested in accordance with UL1784 with an artificial bottom seal installed across the full width of the bottom of the door assembly."

Do smoke doors need to be equipped with a door bottom seal of some type in order to comply with the IBC?

The answer is that a door bottom seal is not required, but one may be furnished if desired as long as it is listed for use on positive pressure fire doors.



What does the portion of IBC text underlined above mean?

This wording specifically refers to how the assembly is tested to comply with UL1784. This refers to article 5.4.5 in UL1784, which reads as follows:

"5.4.5 In order to obtain information on the extent of air leakage at the ungasketed bottom gap of a test sample, an artificial seal may be applied to the bottom 6 inches (152.4 mm) of the test sample. The artificial seal may be any material,

such as an impermeable sheet or tape."

The IBC is requiring the artificial bottom seal option when the assembly is tested. By sealing the bottom of the door, the assembly can then be accurately tested for air leakage around the perimeter seals.

Remember that the IBC, and also the UBC (1997) require positive pressure tested fire door assemblies, which in accord with UL10C, UBC7-2 (1997), and IBC (2000) require the neutral pressure plane to be maintained at 40" above the sill. This condition results in hot air, gases and smoke



pushing outward (positive pressure) against the door from the fireside. (See illustration)

Lower than 40" above the sill a negative pressure condition exists resulting in cool air from the non-fire side flowing in around the bottom of the door. In other words, the smoke, which has risen with the heat and gases, is not escaping at the door bottom, so there is no requirement for a door bottom seal to contain smoke.

Does every fire door in a corridor need to be a smoke and draft control assembly?

The official IBC Commentary – Volume 1, 2000 has this to say regarding section 714.2.3 of the IBC:

"...It is important to note that compliance with this standard (UL1784) as well as NFPA 252 (or UL10B and UL10C) is not required for all doors located in corridors, only corridors required to be fire-resistance rated in accordance with Section 1004.3.2.1"

To get a complete understanding of section 1004.3.2.1, you must be knowledgeable on the various types of occupancies, of the occupant load served by the corridor, whether the building has a sprinkler system, and whether any of the four exceptions to

fire-resistance ratings in this section apply. If an I-2 type occupancy, you must refer to section 407.3.1 for different requirements.

An exception is given to I-2 type occupancies (hospitals, nursing care facilities, etc.), which allows certain corridors to not require a fire-resistance rating, but indicates that they "shall provide an effective barrier to limit the transfer of smoke". This section does not require door closing devices, nor compliance with UL1784. No reference is made to smoke and draft control door assemblies.

Conclusions:

Not all corridors are required to be fire-resistance rated due to exceptions in the code, and doors in these corridors will not be fire-rated.

Fire-rated doors will be required in fire-resistance rated corridors or smoke barrier walls and need to also be smoke and draft control door assemblies, tested to UL1784, which require Gasketing tested to UL1784 in order to comply.

I-2 type occupancies have an exception to certain corridors allowing the use of non-fire rated doors, which do not require UL1784 compliance, but do require that the walls and doors "shall provide an effective barrier to limit the transfer of smoke." Smoke transfer is most effectively limited at

the door by the use of Gasketing tested to UL1784 (for use on Smoke & Draft Control Door Assemblies).

NGP welcomes your product application questions with regard to the new IBC and will try to help you with technically correct answers. We also recommend that every office in areas under the jurisdiction of the IBC, whether you are involved in specification writing or distribution of doors, frames and hardware should obtain a copy of the Code, and the Commentary, which provides greater clarification of detailed issues.

A convenient source to obtain most building codes and related publications is "<http://www.construction-book.com>" - click on "codes".



NGP has over 90 different perimeter seals and astragals which have been tested to meet UL 1784 and are Category H classified by UL and WH as smoke and draft control gaskets. Look for the smoke symbol in our catalog next to these products.

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Spec Rite is designed as a vehicle to provide information to Architects and Specification Writers to make them better informed and to make their job easier.

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