



FACILITIES PROTECTION SYSTEMS

INNOVATIVE SOLUTIONS
FOR LIFE SAFETY AND BUSINESS CONTINUITY

This bulletin has been prepared to assist anyone who must seal a room for a Clean Agent System. In the majority of circumstances, if an Enclosure Integrity Test (as recommended by NFPA 2001) is to be performed, the room will need to be air tight to pass this test. In extreme circumstances (where the enclosure can not be properly sealed), an alternative qualitative testing method may be considered by the AHJ.

In either test case, the rooms must be properly sealed. It is the nature of Clean Agent to suppress all flame and fire spread. Therefore it is critical that the Clean Agent remain in the protected area until emergency personnel have a chance to deal with a possible continuing source of ignition.

PROPER CONTAINMENT OF CLEAN AGENT “SEALING OF ROOMS”

1. **ALL DOORS** leading from the Clean Agent protected areas or into another Clean Agent protected area shall have drop seals on the bottoms, weather stripping around the jams, latching mechanisms and door closer hardware. In addition, double doors shall have a weather-stripped astragal to prevent leakage between doors and a coordinator to assure proper sequence of closure. In general, doors shall be treated as though they are being weatherproofed for outside use with the least amount of light possible passing through all sides. Doors, which for any reason cannot be kept normally closed, should be equipped with electromagnets designed to release on alarm.
2. **ALL DUCTWORK** leading from or into a protected area may be permanently sealed off, air tight, with metal plates caulked and screwed in place. Ductwork left in service from the building air handling unit must have butterfly blade type dampers installed with neoprene seals. Dampers must be spring loaded or motor operated to provide 100% air shut off. It is further recommended that the building air-handling units be shut down to prevent the spread of smoke or Clean Agent into other areas of the building.
3. **SELF-CONTAINED AIR HANDLING UNITS** within the protected zone may be left in service at the owner's option. However, one must consider the possibility that the air-handling unit could be the source of the fire. Therefore, it is recommended to interconnect the systems to be shutdown.
4. **PROTECTED AREAS** shall be enclosed with wall partitions, which extend slab-to-slab. When nozzle deflector plates are not used, ceiling tiles should be clipped in place within 4 feet of any discharge nozzle.
5. **ANY HOLES, CRACKS, OR PENETRATIONS** leading into or out of the protected area must be sealed. This includes pipe cleaners and wire troughs. All walls should be caulked around the inside perimeter of the room where the walls rest on the floor slab and where the walls intersect with the ceiling slab above.
6. **IF A RAISED FLOOR** continues out of a Clean Agent protected area into adjoining rooms, bulkheads must be installed under the floor directly under above-floor border partitions. These

bulkheads must be caulked top to bottom. If the adjoining rooms share the same underfloor air handlers, then the bulkheads must have dampers installed the same as required for ductwork. See item #2

7. **ALL FLOOR DRAINS** *should have traps, and those traps should be designed to have water in them at all times.*
8. **POROUS BLOCK WALLS** *must be sealed slab-to-slab to prevent agent from passing through the block. Two or three coats of paint are normally required. Unpainted block walls are totally unacceptable.*
9. **IN GENERAL**, *the basic intent is to make Clean Agent protected areas as air tight as possible during and after Clean Agent discharge. Clean Agent is heavier than air and therefore, openings below floors are usually more critical than those above a ceiling. However, during discharge the room does get pressurized to some extent and any agent that can be pushed out of the room will not return. Smaller rooms are much harder to seal than larger rooms because each little crack becomes much more significant as the surface area to volume ratio changes.*
10. **ONCE THE AGENT IS DISCHARGED**, *in most jurisdictions, it must remain in the room at its designed concentration for at least ten minutes. The length of time that the agent will remain is directly proportional to the “air tightness” of the room.*

The ten (10) points, which are offered here, do not claim to be all-inclusive or to guarantee that the required tests will pass. They are, however, presented as the most common items, which affect the Enclosure Integrity test and the Concentration test. If, in addition to presenting a few specific areas of concern, they provoke thought about the overall “air tightness” of the enclosure, then they will have served a good purpose.

DESIGN CONSIDERATIONS For SPECIAL HAZARD AREAS

Architectural

1. *The perimeter walls of the room should be full height.*
2. *With subfloor applications, bulkheads shall be installed to properly isolate the suppression zones.*
3. *The access doors to all protected areas should have door seals and sweeps as well as automatic door closures.*
4. *Any penetrations to the exterior walls for cables or conduit should be sealed.*

Mechanical

1. *Any supply or return air from the building system should have motor operated dampers for closure upon the control system's second alarm. These are necessary to help contain the agent within the hazard in the event of a discharge. The dampers become extremely important when the above ceiling area is used as a return air plenum, which is tied into the building air system.*

Electrical

1. *If electrical power to computer equipment is required to have an emergency power off switch, this should be tied into the control panel via a dry contact.*
2. *The dedicated air unit and any dampers should be interconnected for shutdowns with the control panel. All power for these interconnections shall be independent of control panel and located within their own enclosures.*
3. *120 VAC power circuit will have to run through a dedicated 20-amp circuit breaker to the control panel.*
4. *Typically, an interconnection between the control panel and the building Life Safety System is required by local codes.*

For More Information, contact FPS:

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