

Table 9.16.: Clean Agent Systems Requirements

ITEMS	REQUIREMENTS
3. ELECTRICAL CLEARANCE	<ul style="list-style-type: none"> i. All Clean Agent System equipment and component shall be located to maintain the required electrical clearance as per the manufacturer's specifications. ii. Where the design basic insulation level (BIL) is not available and where nominal voltage is used for the design criteria, the highest minimum clearance specified for this group shall be used.
4. LISTING	<ul style="list-style-type: none"> i. All Clean Agent systems, Clean Agent, Equipment, Design, Calculations, Installation and Maintenance manual shall be listed by Civil Defence.
5. COMPONENTS	<ul style="list-style-type: none"> i. Clean Agent container, Detectors, Control System, Pipes, Tubes, Fittings, Valves, Discharge Nozzles, pressure gauges, Manual actuators, Time Delays and Signage.
6. SYSTEM FLOW CALCULATIONS	<ul style="list-style-type: none"> i. System flow calculations shall be performed using a calculation method listed or approved by Civil Defence. The system design shall be within the manufacturer's listed limitations.
7. ROOM INTEGRITY AND AIR TIGHTNESS	<ul style="list-style-type: none"> i. The room Integrity with airtight rooms shall be ensured for effective protection using clean agent systems. ii. Room tightness, measured in n50 value, shall be carried out using a blower door measurement method. (The Blower door measurement is a scientific approach to identify and control air filtration. It is primarily used to check for any possible leakages in a given area by applying two types of pressure: over pressure and under pressure. Calculation is based on the Air Change per Hour (ACH), meaning the number of time each hour, an amount of air equal to the volume of the area to be protected, leaks out at a pressure of 50Pa. The ventilator of the blower door measuring device creates a standard over/under pressure of 10 – 60 pa in the protected area. The air escapes over the leakage surfaces of the walls, doors and windows to the outside during overpressure measurement or enters from there during under pressure measurement. The device measures the required flow volume so that the pressure difference of 50 Pa (as an example) needed for measuring can be maintained in the area. After input of all the relevant values the program calculates the n50 value, which regulates itself and relates to the created pressure value of 50Pa). iii. The protected enclosure shall have the structural strength and integrity necessary to contain the agent discharge. If the developed pressures present a threat to the structural strength of the enclosure, venting shall be provided to prevent excessive pressures. iv. The doors and windows used for the protected areas shall comply with fire regulation and shall also be air tight to prevent leakage. The doors and windows shall have a mechanism for closing automatically in case of an emergency situation. For fire prevention systems the doors and windows shall be kept closed at all times except for access. v. All penetrations in the enclosure shall be sealed to ensure airtightness. vi. The air tightness in terms of n50 values of the protected enclosure shall be as per Table 9.16.C.

Table 9.16.C.: n50 values for Room Tightness

ROOM VOLUME	n50 VALUE
1. 1 m ³	5.0 /hour
2. 100 m ³	1.5 /hour
3. 1000 m ³	1.0 /hour
4. 10,000 m ³	0.1 /hour
5. 50,000 m ³	0.05 /hour
6. 500,000 m ³	0.01 /hour