Table 9.16.: Clean Agent Systems Requirements

ITEMS	REQUIREMENTS
11. STORAGE CONTAINERS	i. The agent shall be stored in containers designed to hold that specific agent at ambient temperatures. Containers shall be charged to a fill density or super pressurization level within the range specified in the manufacturer's listed manual. ii. Each agent container shall have a permanent nameplate or other permanent marking that indicates a. For Halocarbon agent containers, the agent, tare and gross weights, and superpressurization level (where applicable) of the container. b. For Inert gas agent containers, the agent and the pressurization level of the container and nominal agent volume. iii. Containers connected in manifold, for Halocarbon clean agents in a multiple container system, and supplying the same manifold outlet for distribution of the same agent shall be interchangeable and of one selected size and charge. iv. Containers connected in manifold, for Inert gas agents shall be permitted to utilize multiple storage container sizes connected to a common manifold. v. Storage temperatures shall not exceed or be less than the manufacturer's listed limits. vi. Clean agent containers shall be located as close to hazard as possible or in the protected room next to the exit.
12. PIPES AND FITTINGS	i. Pipes and pipe connections shall be made of metal (seamless welding) and be able to withstand the pressures as specified and calculated and any low temperature encountered. ii. The test pressure for the Inert Gas Systems' pipe between the cylinders and the area valve should have 1.5 times of the service pressure. (i.e. if 200-300 bar cylinder – test pressure, then pipe pressure resistance should be 300-450 bar). The test pressure for the pipe between the area valve and the protected area should have 1.5 times of the service pressure (i.e. if 60 bar is test pressure – 90 bar should be pipe pressure resistance). iii. Fittings shall be calculated for the occurring service pressure. Fittings shall be suitable for deeper temperatures (approx. –50°C). In sections of the pipe that are subjected to static head pressure (closed pipe work) the service pressure must not be exceeded and if needed a safety valve shall be fitted. iv. The pipe work between the cylinder and area valve shall be marked by the manufacturer, so that the identification according to the test certificates is possible after installation. Manifolds and distribution pipes may be marked as a kit by an authorized person. An unambiguous assignment to the test certificate shall be possible. Flexible pipes and hoses etc. shall only be used where fixed pipes are unsuitable. Flexible pipes and hoses shall be as short as possible and approved. v. The inside and outside of pipes shall be effectively protected against corrosion if this is necessitated by environmental conditions. To protect sensitive machinery, e.g. computers, from corrosive particles in the pipe work, galvanized steel should be used as a minimum. vi. Special-alloy steels and/or suitable surface protection coatings shall be used if the use of pipes and connections made of steel does not provide sufficient corrosion protection. vii. The pipe work shall be arranged so that it cannot be damaged by its own weight, temperature fluctuations, vibration, release of gas or other installation inherent influences. viii. All pipe work shall be accessible. The gas installation pipe work shall be earthed. If necessary, potential equalization conductors (i.e. regarding non-conductive pipe joints) between all pipes shall be provided or the installation shall be earthed at different points (auxiliary equipotent bonding). ix. Pipes shall be secured especially near nozzles to prevent pipe movement due to the high pressure during discharge.