

2.20. Ventilation for Rooms with Hazardous and Flammable Materials

2.20.1. Rooms containing hazardous and flammable materials shall be provided with ventilation system as per **Table 10.18.** and the relevant general requirements for smoke control systems as per **Section 2.5.**

Table 10.18.: Ventilation for Rooms with Hazardous and Flammable Material

ITEMS	REQUIREMENTS
1. OBJECTIVE	<ul style="list-style-type: none"> i. The ventilation system for rooms storing flammable and hazardous material shall be to maintain the flammable concentration in the room to acceptable levels ii. The same system shall also serve as smoke exhaust system during fire emergencies.
2. DESIGN CRITERIA	<ul style="list-style-type: none"> i. The ventilation system for rooms storing flammable and hazardous material shall be dedicated and shall maintain flammable concentration level below 25% of the low flammable limit (LFL) or the low explosive limit (LEL). ii. The ventilation system shall consist of an exhaust and supply part with a rate of 20 air-changes per hour.
3. MAKE-UP AIR	<ul style="list-style-type: none"> i. The exhaust plenum shall be provided within 300 mm from the floor. Fresh air shall be provided in apposite side within 300 mm from the floor. ii. Make-up air shall be 85 % of the required exhaust of 20 air changes per hour. iii. The ventilation system shall be provided for the complete floor area including pits.
4. EXHAUST DUCTS	<ul style="list-style-type: none"> i. The extract plenum shall terminate minimum 15 m from the ignition source, property limit or nearby building. ii. The exhaust shall be direct to the external and shall not be less than 5 m from any air intake openings. iii. Where such ducts run outside the room they shall either be enclosed in a structure or be constructed to give at least the same fire rating as the room which they serve or that of the room through which they traverse, whichever is higher. The rating shall apply to fire exposure from both internal and external of the duct or structure. iv. Where the duct risers are required to be enclosed in a protected shaft constructed of masonry or drywall complying, they shall be compartmented from the rest of the shaft space containing other ducts or services installations v. Exhaust ducts shall not pass through fire walls. vi. Exhaust ducts passing through fire barriers shall be constructed of materials and supports having a minimum fire-resistance rating equal to the fire barrier.
5. DAMPERS	<p><u>1. DAMPERS PERMITTED</u></p> <ul style="list-style-type: none"> i. Fire dampers shall be permitted to be installed in exhaust systems in the following situations: <ul style="list-style-type: none"> a. Where ducts pass through fire barriers b. Where a vapor collection system installed on the end of the system is protected with an automatic extinguishing system. c. Where the duct system is protected with an automatic extinguishing system. d. Where ducts have been listed with interrupters. <p><u>2. DAMPERS PROHIBITED</u></p> <ul style="list-style-type: none"> i. Fire dampers shall not be installed if the material being exhausted is toxic and if a risk evaluation indicates that the toxic hazard is greater than the fire hazard.