4. Application of Fire Protection Systems

4.1. General Requirements

4.1.1. The selection and application of Fire Protection systems should be carefully executed upon detailed analysis of the Material Safety Data Sheet (MSDS) of the materials involved in the hazard.

4.1.2. Water based fire protection systems shall not be installed or used where water reactive materials are stored and handled.

4.1.3. Medium- and high-expansion foam systems shall not be used on fires in the following hazards:

a. Chemicals, such as cellulose nitrate, that release sufficient oxygen or other oxidizing agents to sustain combustion.
b. Energized unenclosed electrical equipment
c. Water-reactive metals such as sodium, potassium, and NaK (sodium-potassium alloys)
d. Hazardous water-reactive materials, such as triethyl-aluminum and phosphorus pentoxide
e. Liquefied flammable gas

4.1.4. All non-storage and non-industrial occupancies with **more than 20,000 m² plot area** (See Definition in **Section 4.1.10.)** usually with a cluster of all types of buildings shall be provided with Yard Fire Hydrant Systems as per **Section 3.11.**

4.1.5. Auxiliary Room fire protection Systems as required by **Table 9.30.** shall be applicable and shall be required to be installed only when the main building housing these auxiliary rooms is fully protected by fire protection systems as per **Table 9.18. to Table 9.28.**

4.1.6. All storage and industrial occupancies with **more than 3600 m² built-up area** (See Definitions in **Section 4.1. 11.**), or storage and industrial occupancies which have built-up ground floor areas that are **more than 100 m away from** existing, functional and available hydrant/s shall be provided with Yard Fire Hydrant Systems as per **Section 3.11.**

4.1.7. storage and Industrial occupancies having **more than 3 floors above the fire access** Level shall be fully protected with Automatic Sprinkler System, irrespective of their built-up areas.

4.1.8. All High Hazard Industrial, Storage and special purpose occupancies not addressed in this code, a Fire risk analysis report of the facility and the required fire suppression systems, prepared by the Civil Defence approved House of Expertise shall be furnished for Civil Defence review and approval.

4.1.9. Guidelines in this section are minimum requirements for the application of various Fire Protection Systems. The protection criteria, design criteria, required design density, types of suppression methods and Fire Pump capacities may vary and shall be verified with the Civil Defence engineers and the relevant **NFPA** references such as **NFPA 11, NFPA 13, NFPA 14, NFPA 15, NFPA 16, NFPA 20, NFPA 2001,** etc. shall be consulted.