

## **M0-EN.6 Fire Assessment**

### **M0-EN.6.1 Organization of the risk assessment**

If risk assessment has to be performed for large workplaces with multiplicity of activities and processes then the workplace could be separated into sections and an assessment to be performed for each section separately. This procedure could be also followed for the case of fire assessment, however it might be easier to assess fire protection for the premises as a whole, since the fire protection systems (fire detection, fire alarms, sprinklers, evacuation procedures) are usually designed for the entire workplace.

Working areas that should not be overlooked while performing a fire risk assessment include:

- Buildings outside the main building (e.g storage rooms, boiler houses)
- Basements, pits below equipment and confined spaces
- Upper walkways and platforms
- Roof areas where provision is made for maintenance access

For the best organization of the fire risk assessment is extremely helpful the assessor to have an updated layout plan of the premises, where the fire evacuation routes, the positions of detection alarms, the positions of the fire fighting equipment, etc. are marked. The documents prepared for the application for the acquisition of a Fire Certificate could also provide useful background information to be considered before the on-site inspection of the workplace.

### **M0-EN.6.2 Factors to be considered during the fire risk assessment**

#### **M0-EN.6.2.1 Means of Escape**

Every fire escape route in the workplace must be assessed so that all the workers or visitors, who may be in the premises, have a safe access to Fire Exits once the alarm has been raised, before their means of escape are made unsafe by the fire. Among others, assess the width of the exit routes, and the availability of arrangements for people with disabilities. Emergency Doors must open in the direction of escape, not be locked or fastened; revolving or sliding doors must not be used for emergency exits. Emergency routes that require lighting must have emergency lighting.

#### **M0-EN.6.2.2 Signalling**

Proper signs must be placed to indicate the Fire Exits, the positions of the Fire Fighting Means, the Fire prevention requirements (e.g. no smoking, no hot work), the Alarm Warning System, and the Fire protection or Safety Doors.

Signs must have the appropriate size according to the optical view and distance, for example:



1. Move straight (showing exit direction)
2. Move straight and through Exit door (showing exit direction)
3. Move straight and upstairs (showing exit direction).

Lighting of the escaping and safety exit must be located:

- In the basements
- In large united office rooms
- When the level or the passage changes
- Outside of the final escaping exit- meeting points

Lighting devices of escaping exits and routes must have lighting all the time and in case of power cut off, to be able to light by a standby source (10 lux for 90 minutes).

### **M0-EN.6.2.3 Fire Detection and Warnings**

Appropriate types of fire detectors must be used, in each workplace, to safeguard the safety of the employees and the premises in case of fire. In general, smoke alarms are the first choice, although heat detectors can be often used. The installation of fire detectors in less occupied areas is necessary (e.g. storage rooms, thinly populated work areas), since in those areas fires could develop undetected and spread through the premises. Alarms must be able to be heard above any noise likely to be present and in areas where people will be able to respond (e.g. heard in a central operating area to cover warehouses, stores etc). In large workplaces the conventional type of electrical fire alarm system should either incorporate a number of manually operated sounders, or a bell and battery (always kept charged). The manual alarms should be positioned so to be easily accessible by anyone in the premises. In cases that a dual alarm system is used (an alarm for the detection of fire, and a different alarm for the evacuation of the site) then the evacuation alarm is better to be accompanied by oral directions, especially for people not familiar with the premises.

### **M0-EN.6.2.4 Fire-fighting equipment**

All workplaces should be equipped with means of fire fighting to be used by people in the premises. These means include:

- Portable fire extinguishers (see below)
- Fire blankets
- Hose reels (inside fire hose cabinets)
- Sprinkler system
- Other fixed fire fighting systems

The non-automatic equipment (e.g. manual extinguishers, hose reels) must be placed near exits, be easily accessible, simple to use and indicated by signs. The equipment must be regularly maintained and tested. Basic training should be provided for employees on the suitability of different portable extinguishers for different types of fire (see later in the section), and for some practical fire fighting techniques. However, fires should mainly be tackled, by trained fire fighters.

When deciding on the types of extinguisher to be provided, consider the nature of the materials likely to be found in the working area under consideration. The following table is indicative:

Type of Fire Extinguisher	Color Code	Suitability
 <p><b>Water</b></p>	<p><b>Red</b></p>	<p>Wood, Paper, Textiles, Fabric (ordinary combustibles) (Class A fires)  <b>Not</b> for electrical or flammable liquid fires</p>
 <p><b>Foam</b></p>	<p><b>Cream</b></p>	<p>Flammable liquids, such as grease, gasoline, oil, Petrol, Diesel, etc (Class B fires)  Also suitable for Wood, Paper, Textiles, Fabrics (Class A fires)  <b>Not</b> for electrical fires</p>
 <p><b>Dry Powder</b></p>	<p><b>Blue</b></p>	<p>Flammable liquids (Class B fires) and electrically energized fires (Class C fires)  Also suitable for Wood, Paper, Textiles, Fabrics (Class A fires)</p>
 <p><b>Carbon Dioxide (CO<sub>2</sub>)</b></p>	<p><b>Black</b></p>	<p>Flammable liquids (Class B fires) and <b>best</b> for electrically energized fires (Class C fires)  <b>Not</b> for paper fires</p>
<p><b>Class D Extinguishers</b></p>		<p>Designed for use on flammable metals (such as aluminium, magnesium, sodium potassium) and are often specific for the type of metal in question.</p>

<b>Vaporizing Liquid</b>	<b>Green</b>	Flammable liquids and electrically energized fires
<b>Fire Blankets</b>	-----	Flammable liquids in containers, such as deep fat fryers, cooking oils, chip pan (Class F Fire)

An extinguisher or a hose reel should be provided for approximately each 200 square metres of floor space, with a minimum of one per floor. If each floor has a hose reel, which is known to be in working order and of sufficient length for the floor it serves, there may be no need for water-type extinguishers to be provided. Fire extinguishers, if properly maintained and serviced, may be in service for at least 20 years.

Fire extinguishers should normally be located in noticeable positions on escape routes, preferably near exit doors or outside a specific hazard area. Wherever possible, fire-fighting equipment should be grouped to form fire points. These should be clearly visible or their location be clearly indicated so that fire points can be readily identified. Where workplaces are uniform in layout, extinguishers should normally be located at similar positions on each floor. If for any reason extinguishers are placed in positions hidden from direct view their location should be indicated by signs and, where appropriate, directional arrows.

Where practicable, fire extinguishers should be securely hung on wall brackets. Where this is impracticable, extinguishers should be placed on a suitable base plate (not on the floor). To assist in lifting, the carrying handle of larger, heavier extinguishers should be about 1 metre from the floor but smaller, lighter extinguishers may be mounted at a higher level.

Other fire fighting means include the automatic extinguishing materials used mainly for the property protection (HALON being forbidden since 1/1/2004 in all EU Member States), Chemical Gases, Inert gases, Aerosol, Sprinklers of water mist, CO<sub>2</sub>, etc.

Periodic **inspection and testing** is required for any kind of fire safety system (detectors, sprinklers, alarms, etc). Reports of inspection, testing and maintenance must be kept at the workplace for review. The frequency of Inspection and Maintenance of passive and active fire protection and safety systems is given in the table below:

<b>Systems</b>	<b>Frequency of inspections</b>	<b>Maintenance</b>
Fire Detection and Warning System	Weekly	Three months
Safety lighting	Monthly	Six months
Autonomous lighting apparatus with batteries	Weekly	Do not apply

Fire extinguishers	Weekly	Yearly
Water hose	Weekly	Yearly
Sprinklers	Weekly	Six months
Fire safety doors	Weekly	Do not apply
Escaping exits, signalling and labels of action plans	Weekly	Do not apply
Fire safety and fire protection training	Six months	Do not apply

In every working place a Fire Protection and Fire Safety Team must be formed. The team is composed of a Leader/Head of Fire Safety, a Deputy Leader/Assistant Officer of Fire Safety and of Fire Safety Officers (according to the fire risk assessment and the size of workplace – minimum 2 persons). The training that the Fire Safety Team must undertake should include issues such as:

- The Theory of fire
- Fire prevention
- Actions in emergency situations
- Actions in case of a fire (how to contact the Fire Brigade)
- Actions in case the alarm activates
- How to activate the alarm system
- Evacuation of the building from visitors and people with special capabilities
- Location and type of fire fighting means
- How to use the appropriate fire extinguisher
- Escaping exits and assembly area
- Actions followed according to the fire risk assessment of the workplace

#### **M0-EN.6.2.5 Evacuation Procedures**

A fire evacuation procedure should be established and communicated effectively to employees. This procedure should include at least the following issues:

- Action on finding a fire
- Reaction to the fire alarm
- Description of the designated assembly points

Regular fire evacuation drills are an essential part of ensuring that the evacuation procedure will be effective when is really needed. Drill frequencies are usually specified in the Fire Certificates, otherwise they should be held at intervals of from 3 to 12 months, depending on the level of fire risk. Records should be maintained of the dates of the drills, the time taken to account for the safe evacuation of the premises and any other relevant details.

#### **M0-EN.6.3 Key Elements for Fire Prevention**

Fire prevention can be achieved through several ways, such as:

- Reduction of ignition sources (e.g. replacement of naked flame and radiant heaters with central heating systems, having strict no smoking areas, electrostatic dischargers)
- Reduction of quantity of dangerous, flammable substances to a minimum
- Storage of flammable substances and materials at low temperatures
- Prevention in the formation of explosive atmospheres (including appropriate ventilation)
- Decrease of the quantity of easily accessible potential fuel
- Reduction of sources of oxygen
- Segregation of incompatible dangerous, easily ignited substances