

Fire protection in offices

CFPA-E Guideline No 16:2016 F





Foreword

The European fire protection associations have decided to produce common guidelines in order to achieve similar interpretation in the European countries and to give examples of acceptable solutions, concepts and models. The Confederation of Fire Protection Associations Europe (CFPA E) has the aim to facilitate and support the fire protection work in the European countries.

The market imposes new demands for quality and safety. Today fire protection forms an integral part of a modern strategy for survival and competitiveness.

The guideline is primarily intended for those responsible for safety in companies and organisations. It is also addressed to the rescue services, consultants, safety companies etc. so that, in the course of their work, they may be able to help companies and organisations to increase the levels of fire safety.

The guideline is based on a Swedish guideline and has been produced by Lars Rang and Lars Brodin of the Swedish Fire Protection Association.

This guideline has been compiled by the Guidelines Commission and adopted by all fire protection associations in the Confederation of Fire Protection Associations Europe.

These Guidelines reflect best practice proposed by the members of CFPA Europe. Where the Guidelines and national requirements conflict, national requirements must apply.

Copenhagen, October 2016
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Contents

1	Introduction	4
2	Fire protection management.....	4
3	Fire hazards	5
3.1	Electrical equipment.....	5
3.2	Hot work.....	6
3.3	Arson.....	6
3.4	Candles.....	6
3.5	Smoking.....	6
3.6	Cooking	7
4	Devices for fire safety	7
4.1	Exit devices	7
4.1.1	<i>Choice of exit devices in office buildings</i>	7
4.1.2	<i>Intruder protection locking devices</i>	7
4.1.3	<i>Operation and maintenance</i>	8
4.2	Guidance signs	8
4.2.1	<i>Design</i>	8
4.2.2	<i>Placing</i>	9
4.3	Fire fighting equipment	9
4.3.1	<i>Choice of fire extinguishers</i>	9
4.3.2	<i>The placing of fire extinguishers</i>	9
4.3.3	<i>Hose reel with semi-rigid hose</i>	10
4.4	Escape plan.....	10
5	Training	10
5.1	Training plans	11
6	Control system	12
6.1	Checklist	12
7	European guidelines.....	14

Keywords: Fire, office, arson, electrical fire, electrical appliances, cooking, hot work, escape, training



1 Introduction

Many fires occur in offices every year and there are also many near misses. Good fire safety has many advantages. Active work on fire safety issues makes this evident to all who work in the office, and makes it visible to outsiders such as insurance companies, certification companies and the rescue service.

Suitable fire safety management also means that the risk of the outbreak of fire is reduced and work will not therefore be disrupted because the premises have been made unfit for use or because information is not available. Costs are reduced because there are no disruptions. There will also be a positive effect on the insurance premium.

The consequences for a company that has been damaged by fire can be disastrous. Customers may believe that the company is no longer able to deliver its services and may therefore turn to others. Serious disruptions are never good for a good reputation.

Active work on fire safety issues means that there is systematic planning, implementation and monitoring of fire protection. It means that the company has its own objectives, training plans, rules and procedures for the work.

This recommendation does not include every possible fire safety risk and measure.

Individual countries may have higher requirements for fire safety than recommended in this guideline. In such cases the national rules apply.

2 Fire protection management

Well-designed fire protection forms an integral part of a modern strategy for survival and competitiveness. Markets and individuals impose new demands for quality and safety. Being responsive to customer concerns is an essential factor for success. Good relations are just as important as products and services. Business between companies is also characterised by increasing demands for quality. The open European market makes it essential to formulate systems to secure competence, precision of delivery, environmental considerations and ethics. Many companies and organisations have established a fire protection management system in order to systematically pinpoint hazards, set up goals, organise, train, check, document, monitor and protect their business.

Fire protection management system is a tool for business fire protection activity as part of its total management system, the aim of which is to ensure, secure etc. the survival of the company. In order that a system for fire protection work may be put into operation, the following elements can provide guidance as to what needs to be established and resolved.

For more information see CFPA European Guideline No 1:2015 F.



3 Fire hazards

Many fires are caused through misunderstanding, carelessness or unlucky circumstances. The following are some of the most common causes:

- electrical equipment
- hot work
- arson
- candles
- smoking
- cooking

3.1 Electrical equipment

Fluorescent tubes often flicker until they go out when a component fails. Condensers and glow starters which are still hot may fall down and ignite combustible material below the light fitting.

Spotlights with directed beams can cause a fire through sustained heating of surrounding combustible material.

The following should be checked:

- that there is no blinking or "glowing" fluorescent tubes. Replace ordinary glow starters by safety glow starters.
- that there are no leaking condensers (discolouration on the cover can be an indication), there is a protective cover and that it is intact.
- that light bulbs, spotlights, uplights and other forms of electric light fittings are positioned in such a manner that they do not encourage people to hang clothing on them.
- that electric light fittings are not equipped with overly powerful bulbs.
- that electric light fittings are stable or are fixed properly.

Electric hobs, electric hot water kettles, micro wave ovens and percolators have caused many fires. Above all, fires often start in kitchenettes in staff rooms or rest rooms. Most fires where kitchenettes are involved start because someone has forgotten to switch off a plate or has by accident turned a knob so that a plate is switched on. Using a kitchenette as a storage space, keeping materials on top of hot plates, may cause them to catch fire. For this reason, such electrical equipment should be fitted with a timer or a heat fire detector that automatically turns electricity off.

Other types of electrical equipment, such as copiers, can also cause fire, and for this reason they should be fitted with a timer that turns off power out of working hours. Computers should also be turned off at the end of the working day.

To avoid fire in electrical equipment, it is also important to check:

- that technical spaces, such as electrical signal boxes and distribution boxes, are not used as storage facilities.
- that cables are intact and not pinched, and that areas surrounding heat radiating equipment are clean and clear.
- that lids and doors to distribution boxes, controller cabinets and switch bays are closed.
- that distribution boxes and other electrical installations are not exposed to humidity.
- that electrical heating equipment such as electric radiators, coffee makers and sauna heating units are not covered or placed in an unsuitable environment.
- that hot plates are cleared of all combustible materials and knobs cannot accidentally be turned on.
- that hot plates not in use are disconnected.



Use electrical products that are CE marked. Through the CE mark, the maker or importer certifies that the product complies with all the fundamental health and safety requirements in directives that are specified in harmonised European standards.

The CE mark applies to products in all countries in the European Union (EU), and without this mark the products must not be sold. The rules that apply for EU countries also apply for countries within EEA, the European Economic Area.

Defective or overloaded electrical installations can cause overheating or a short circuit that may cause a fire or a breakdown in production. Early detection of such defects can be instrumental in saving human lives or property. Modern thermographic equipment is a tool for detecting and eliminating hot areas in electrical equipment and circuits. For more information, see CFPA European Guideline No 3:2011 F.

3.2 Hot work

Fires caused by craftsmen or contractors often have serious consequences. It is in most cases hot work that is involved. Hot work is work that develops heat or causes sparking, such as cutting, welding, soldering or the use of heat guns. Over the years, this type of work has been the cause of many conflagrations. The fires are caused by heat transmitted by conduction through metals, spray from grinding or spatter from welding. Fire starts when the hot surface comes into contact with combustible material. Fires often start in concealed spaces. Since the fire is not detected immediately, it has time to grow and spread. When it is finally detected, it is often too late.

For more information, see CFPA Guideline No 12:2012 F.

3.3 Arson

Arson is a common cause of fire. It is most usual for fires to be started outdoors. Other common areas where fires are started are basements and stairways. In many cases, arson can be prevented by relatively simple measures. Make sure that unguarded rooms are kept locked and that combustible waste is not piled up along the facades or stored in open containers. Make sure that waste containers are not stored below windows or in front of doors - especially escape routes.

For more information, see CFPA Guideline No 1:2010 S.

3.4 Candles

Common causes of fires are candles or tealight candles. It is easy for a candle in a combustible holder to be forgotten, or for the candle to flare up and ignite a curtain or something similar. The management of the business should decide whether or not it is permitted to use candles in the workplace. If candles are permitted, rules should be established to regulate under what conditions they can be used.

3.5 Smoking

Apart from its pleasurable and working environment aspects, smoking is also a fire protection issue. At the places where smoking is permitted, ashtrays should be provided. These prevent cigarettes falling down from the ashtray. In this case also, the management should decide what rules apply to smoking. All EU countries have adopted measures to protect citizens against exposure to tobacco smoke. National measures differ considerably in extent and scope but smoking in the workplace is prohibited in most countries. The primary



reason is to limit threats to health caused by passive smoking. In order to lower the risk of fire caused by lit cigarettes, specially designed (smoke free systems) Smoking Stations with fire proof ash handling systems can be installed.

3.6 Cooking

Many fires have resulted from the use of toasters and microwave ovens in an open office environment. Where such equipment needs to be provided it should be located in a room that provides at least 30 minutes fire resistance. The door to this room should normally be kept shut and not wedged open.

4 Devices for fire safety

4.1 Exit devices

Doors shall normally open outwards in the direction of escape and be openable without a key or some other implement. In order to ensure that escape doors are easy to open, it is recommended that only panic exit devices in accordance with EN 1125 or emergency exit devices in accordance with EN 179 are used.

In case of doubt the more stringent requirement shall at all times be selected, i.e. a panic device can always be used.

For examples of solutions see CFPA European Guideline No 2:2013 F, Appendix No 1.

4.1.1 Choice of exit devices in office buildings

Total level surface	Position of door	Panic exit device (EN 1125)	Emergency exit device (EN 179)
<2000 m ²	To stairway		X
	From stairway to external air		X
> 2000 m ²	To stairway		X
	From stairway to external air	X	

The reason for the more stringent requirement in large office buildings is that in an evacuation people are crowding into stairways from several floors. This means that so many people gather at the exits that a more secure exit function is necessary.

4.1.2 Intruder protection locking devices

If doors are fitted with intruder protection locking devices (night locks), further measures in the form of connecting these via micro switches or similar are required.



They shall be connected to the function essential for the activity in such a way that work cannot be carried on in the premises until all escape routes have been unlocked. One usual method is to connect the lighting in such a way that it cannot be switched on until all escape routes have been unlocked.

Local regulations may under certain conditions allow for "night locking" when the building is not open to the public or for general occupancy. For example, it may be a requirement that each person who has access to the building (such as cleaning, security or maintenance staff) must have their own key allowing them to escape from the building in case of an emergency.

4.1.3 Operation and maintenance

The doors and devices which form part of escape routes must be maintained so that their function in an emergency situation is secured.

Inspections shall be made at regular intervals by a person appointed by the person responsible for the building or firm. Inspection intervals are to be determined by the responsible person.

The way inspection is to be performed varies depending on the function which the door has. See CFPA European Guideline No 2:2013 F Appendix No 1.

4.2 Guidance signs

All fire exit routes should be clearly marked in accordance with the requirements of national legislation which implements the EU Safety Signs Directive. Signs should also be displayed, as necessary, indicating fire doors that should be kept shut and any lift that should not be used in the event of fire.

The EU Directive specifies that the sign shall have the symbol of a running man, a door and an arrow.

The premises shall be provided with signs so that satisfactory evacuation can take place in the event of fire. The need for guidance signs shall be judged on the basis of

- the risk of fire
- the number of people to be evacuated
- the risk of lighting failure
- whether or not the premises have daylighting
- ease of finding one's way around in the premises
- the type of activity.

For more information see CFPA European Guideline No 5:2016 F.

4.2.1 Design

A guidance sign shall be rectangular or square in shape. The sign shall have a green background with white symbols.

In dark premises, e.g. premises situated in a basement storey or premises without daylighting, it is recommended that the guidance sign be provided with emergency lighting. The emergency lighting shall function for as long as national regulations require.

Emergency lighting for guidance signs is not normally required in dark office corridors, provided that the office rooms have daylighting.

The symbol height on any of the signs should not be less than 60 mm.

Lighting for translucent or illuminated signs shall always be switched on when activity is being carried on in the premises.



Photoluminescent signs are to be illuminated by general lighting.

In other cases, lighting should be on a separate circuit or provided with an emergency power supply via a central or local battery. As the lowest level, electric emergency lighting or photoluminescent signs are recommended.

4.2.2 Placing

Guidance signs shall be sited in such a way that there is no ambiguity in the event of evacuation. Consideration should however be given to the fact that the people in the premises are familiar with the layout of the premises. Signs shall as far as possible be placed at an appropriate height which in most cases is directly above the door with regard to the normal sight line. Any obstacles, for instance fixed installations or furnishings, may cause the sign to be raised, lowered or supplemented by further signs.

4.3 Fire fighting equipment

There should be adequate provision of suitable fire extinguishers and other appropriate equipment. All fire extinguishing equipment, fixed or portable, should be provided in accordance with European and national standards or national building regulations, which may have to be applied.

All fire extinguishing equipment should be serviced and maintained in accordance with the relevant national standards by competent engineers.

Suitable records should be kept of the servicing and maintenance of all fire protection equipment.

4.3.1 Choice of fire extinguishers

When a portable fire extinguisher is selected, it is important that it should have sufficient extinguishing effectiveness for the fire that may be expected. Above all, the possible damage to office facilities by extinguishing agents should be considered and minimised. For fire extinguishing in an office, it is recommended that the first choice should be a certified portable extinguisher. In office environments with computer rooms, distribution boards or similar, attention should be paid to the electrical environment. If possible, CO₂ as well as water/foam extinguishers should be provided.

Suitable extinguishers in offices:

Extinguishing medium	Powder	Foam	Carbon Dioxide
Quantity, not less than	6 kg	9 litres	5 kg
Effectiveness class, not lower than	43A 233BC	21A 183B	70B

4.3.2 The placing of fire extinguishers

Portable fire extinguishers should be sited in a prominent place and should be clearly marked. The travel distance to an extinguisher should not exceed 25 m. The exact placing of an extinguisher also depends on



where people are present and where exits and normal travel routes are situated. There should be at least one extinguisher per storey.

The extinguisher should be mounted on the wall so that the handle is normally about 90 cm above the floor and at no time higher than 1.5 m above the floor.

A sign indicating the position of the extinguisher should be displayed on the wall above the extinguisher.

The basic principle for placing an extinguisher is that there should be an extinguisher near the usual entrance to the premises or the building. Other extinguishers should be sited with reference to the rule concerning distance and near special risks.

4.3.3 Hose reel with semi-rigid hose

Fixed installation of manual fire hose reels may serve as alternative fire extinguishing equipment in office buildings. Fire hose reel is an effective fire extinguishing equipment with a continuous supply of water available immediately. The installation shall be such as to ensure that sufficient water flow and pressure is provided to all the hose reels in the building.

The European Standard EN 671-1 specifies requirements and methods of test for the construction and performance of fire hose reel systems with semi-rigid hose for installation in buildings and other construction works, permanently connected to a water supply, for use by the occupants.

4.4 Escape plan

On each storey there should be evacuation plans which schematically show the escape routes, the placing of alarm buttons and fire extinguishing equipment, and the place of assembly.

There shall also be information on how the alarm is to be communicated to the rescue service and ambulance.

However, an evacuation plan is not required for premises of such size and layout that a sketch serves no useful purpose.

5 Training

Good fire protection necessitates certain insights, knowledge and skills. In turn, this implies that certain training and exercise are needed. In principle, each company must itself decide on the content and scope of the training provided.

The employer shall ensure that the employees have good knowledge of the conditions under which the work is carried out, and that they are informed of the risks that may be associated with the work. The employer shall satisfy himself that the employees receive the necessary training. The employer is also responsible for ensuring that the workforce receives the required training in fire protection.

It is also advisable that evacuation exercises should be held regularly. Exercises can be replaced by information if this provides knowledge of the same value as an exercise.



All new staff should receive introduction information on their first day at work and subsequently receive additional fire safety awareness training and instruction in any specific duties they may have in the event of a fire.

This information is obligatory and shall normally be communicated by word of mouth. It may take the form of a discussion of the appropriate chapter in a staff brochure or similar document that has been handed to the new employee. The information should be given by the person responsible for the rest of the introduction, generally perhaps the person responsible for staff, a supervisor or the person appointed by the company to be in charge of fire protection.

5.1 Training plans

The aim is to make all personnel aware of fire safety issues in the workplace. They must be able to act on their own initiative and to play their part in ensuring that the company has proper fire protection.

For different levels of training and also recommendations concerning the number of people in the company who should have a certain level of training, see CFPA Europe Guideline *Number of Fire Protection Trained Staff*, No 11:2015 F.

In order to create awareness of fire safety on the part of all employees and to ensure that they can act appropriately in an emergency situation, it is recommended that training should be provided regularly at least once every 4 years. In some countries national regulations require evacuation exercises at shorter intervals. It is recommended that this training should contain the following elements:

- fire safety policy
- fire safety organisation
- fire hazards in the building and past incidents
- information on fire protection in the building
- escape routes, rules for keeping escape routes free of obstruction, and emergency exits
- protection against the spread of fire and fire gases
- fire extinguishing system and fire extinguishing equipment. How to use fire extinguishers
- alarm routines
- routines for evacuation

For new employees, it is recommended that at the time of introduction, the person responsible for fire safety should acquaint them with the following:

- fire safety policy
- fire hazards
- fire protection of the workplace
- alarm routines
- in conclusion, a walk round the workplace to show where fire extinguishing equipment and emergency exits are situated



6 Control system

Preventive safety work that is unplanned, not monitored and reported on, is both irrational and expensive. Security is not achieved until the fixed fire protection systems are inspected systematically and continuously.

Inspection of the fire protection systems shall be carried out regularly and preferably by the fire protection inspectors appointed in the company. The inspection is to be based on the description of fire protection and the operating and maintenance instructions.

6.1 Checklist

This checklist will give you advice on how an inspection of fire protection can be carried out. Using a checklist, the performance become more uniform regardless of who makes the inspection.

Example of a checklist (items may be unfounded due to national requirements)

Compartmentation	<input type="checkbox"/> There are no holes, cracks, etc. in the walls or floors <input type="checkbox"/> Openings in walls for e.g. pipes, cables, ventilation ducts are sealed in an approved manner <input type="checkbox"/> Fire resistant glass in walls and doors is intact
Escape routes	<input type="checkbox"/> Doors in escape routes can be easily opened without a key, code or card and that they can be opened at least 90° <input type="checkbox"/> When the door is opened, inspect hinges, lock, handle, frame, the fixing of any glazed panel; check the fire rating label, the function of door handle etc., and see if there is any damage <input type="checkbox"/> Nothing obstructs the escape route
Portable fire extinguishers	<input type="checkbox"/> The extinguisher is in the intended place <input type="checkbox"/> The pointer of the pressure gauge is in the green zone <input type="checkbox"/> The sign for the extinguisher is easy to see <input type="checkbox"/> The extinguisher has been checked annually <input type="checkbox"/> The extinguisher is not obstructed and is readily accessible
Electrical installations	<input type="checkbox"/> Cables are not damaged or trapped <input type="checkbox"/> Socket outlets or switches are not damaged <input type="checkbox"/> Combustible material is not stored nearer than 1 metre from distribution boxes <input type="checkbox"/> Door or hatch of distribution box is locked <input type="checkbox"/> There are no cables hanging down <input type="checkbox"/> Nothing is stored on cable ladders and the cable ladders are properly fixed <input type="checkbox"/> Charging of cellular phones, computers etc. are made in non-combustible areas.



Kitchen and/or staff room	<input type="checkbox"/> Candles are not left alight and combustible candlesticks are not used <input type="checkbox"/> There is no combustible material near stoves which may fall down or otherwise cause a fire <input type="checkbox"/> Electric kettles, coffee makers, microwave ovens etc. are of good quality and in good condition <input type="checkbox"/> Fan filters are clean
Cleaning/orderliness	<input type="checkbox"/> Rubbish or empty packaging is not kept in large quantities or in an unsuitable place indoors or too near the facade
Protection against arson	<input type="checkbox"/> Rubbish or empty packaging or other combustible material is not stored along the facade or under a canopy <input type="checkbox"/> Open containers for combustible materials are not kept nearer than 6 metres from the building <input type="checkbox"/> Closed containers for combustible materials are not kept nearer than 4 metres from the building <input type="checkbox"/> Storage rooms etc. are locked <input type="checkbox"/> Piles of combustible materials, leaves and dry twigs in corners or similar that are not easily overlooked are removed <input type="checkbox"/> There are no ladders or other material that can be used to climb up to the roof <input type="checkbox"/> Windows and roof-lights are closed <input type="checkbox"/> External lighting is not damaged <input type="checkbox"/> Loading platforms are cleared of combustible material and anything else that should not be there



7 European guidelines

Fire

- Guideline No. 1:2015 F - Fire protection management system
- Guideline No. 2:2013 F - Panic & emergency exit devices
- Guideline No. 3:2011 F - Certification of thermographers
- Guideline No. 4:2010 F - Introduction to qualitative fire risk assessment
- Guideline No. 5:2016 F - Guidance signs, emergency lighting and general lighting
- Guideline No. 6:2011 F - Fire safety in care homes for the elderly
- Guideline No. 7:2011 F - Safety distance between waste containers and buildings
- Guideline No. 8:2004 F - Preventing arson – information to young people
- Guideline No. 9:2012 F - Fire safety in restaurants
- Guideline No. 10:2008 F - Smoke alarms in the home
- Guideline No. 11:2015 F - Recommended numbers of fire protection trained staff
- Guideline No. 12:2012 F - Fire safety basics for hot work operatives
- Guideline No. 13:2015 F - Fire protection documentation
- Guideline No. 14:2007 F - Fire protection in information technology facilities
- Guideline No. 15:2012 F - Fire safety in guest harbours and marinas
- Guideline No. 16:2016 F - Fire protection in offices
- Guideline No. 17:2015 F - Fire safety in farm buildings
- Guideline No. 18:2013 F - Fire protection on chemical manufacturing sites
- Guideline No. 19:2009 F - Fire safety engineering concerning evacuation from buildings
- Guideline No. 20:2012 F - Fire safety in camping sites
- Guideline No. 21:2012 F - Fire prevention on construction sites
- Guideline No. 22:2012 F - Wind turbines – Fire protection guideline
- Guideline No. 23:2010 F - Securing the operational readiness of fire control system
- Guideline No. 24:2016 F - Fire safe homes
- Guideline No. 25:2010 F - Emergency plan
- Guideline No. 26:2010 F - Fire protection of temporary buildings on construction sites
- Guideline No. 27:2011 F - Fire safety in apartment buildings
- Guideline No. 28:2012 F - Fire safety in laboratories
- Guideline No. 29:2013 F - Protection of paintings: Transport, exhibition and storage
- Guideline No. 30:2013 F - Managing fire safety in historical buildings
- Guideline No. 31:2013 F - Protection against self-ignition and explosions in handling and storage of silage and fodder in farms
- Guideline No. 32:2014 F - Treatment and storage of waste and combustible secondary raw materials
- Guideline No. 33:2015 F - Evacuation of people with disabilities
- Guideline No. 34:2015 F - Fire safety measures with emergency power supplies
- Guideline No. 35:2016 F - Fire safety in warehouses
- Guideline No. 36:2016 F - Fire prevention in large tents



Natural hazards

- Guideline No. 1:2012 N - Protection against flood
- Guideline No. 2:2013 N - Business Resilience – An introduction to protecting your business
- Guideline No. 3:2013 N - Protection of buildings against wind damage
- Guideline No. 4:2013 N - Lightning protection
- Guideline No. 5:2014 N - Managing heavy snow loads on roofs
- Guideline No. 6:2015 N - Forest fires

Security

- Guideline No. 1:2010 S - Arson document
- Guideline No. 2:2010 S - Protection of empty buildings
- Guideline No. 3:2010 S - Security system for empty buildings
- Guideline No. 4:2010 S - Guidance on key holder selections and duties
- Guideline No. 5:2012 S - Security guidelines for museums and showrooms
- Guideline No. 6:2014 S - Emergency exit doors in non-residential premises