



Guide to the Law and Best Practice in Fire Safety on Farms in South Africa



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PRODUCED BY SUSTAINABILITY INITIATIVE OF SOUTH AFRICA NPC

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INTRODUCTION

South Africa has two fire seasons according to rainfall patterns: the dry summer months in the Western Cape and the dry winter months in the rest of the country. Often wild fires are started by lightning or, in mountainous regions, by falling rocks. Most, however, are started by accident by people being careless with open flames and indifferent to the consequences of their carelessness.

About 70% of the ecosystems covering South Africa are fire-adapted. They need to burn in order to maintain their ecological integrity. But because of human activity there is a need to manage fire in a manner that is appropriate for the land use and land type, while maintaining natural processes and patterns as far as possible.

The South African fruit industry has an annual turnover of approximately R30 billion and employs almost 300 000 people, whose families rely on their income from the fruit sector. Unlike in most other countries, the provision of accommodation for permanent and seasonal employees is a common phenomenon on South African farms, and it is the responsibility of the farm owner or the management of pack houses, cold or chemical stores, etc. to ensure fire safety for people living and working on these premises.

This document is a guideline on fire safety and has been developed as a useful resource for producers. It also provides a comprehensive checklist for fire equipment that can be used.

The guide can be downloaded from the SIZA website under the Library section: www.siza.co.za. We hope you will find this resource useful.

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Section 1. Guidelines for Fire Safety on Farms

THIS SECTION PROVIDES GUIDELINES FOR FIRE SAFETY ON FARMS.

- A. Accommodation**
- B. Storage areas**
- C. Storage of flammable liquids and chemicals**
- D. Controlling fires**
- E. Events on farms**

A. Accommodation

Where accommodation is provided, it is the responsibility of the farm owner to ensure that fire safety equipment is provided to people living in it.

1. Location

What do the law and regulations say?

For all new accommodation built on farms, the building plans have to be submitted to the relevant local authority for approval. No building may be erected on a farm without the permission of your local authority. Only competent persons as prescribed in SANS codes are permitted to draw plans for farm dwellings.



There must be a clearly visible access route to the living facilities for the purposes of firefighting and rescue. No building should be erected on a site unless the site provides access to local authority fire services for purposes of firefighting and rescue from the building.

In cases where the farm is locked for security purposes, access to accommodation should be made available during emergencies. There should be appointed fire officers who can take responsibility in case of a fire emergency at workers' accommodation.

2. Important aspects to consider with regards to accommodation on farms

- Fire extinguishers should be supplied in hostels and farm workers' houses as per Table II of SANS 10400-T: 2011. (Refer to Annexure 1.)
- Classification of buildings is done according to Table 2 – SANS 10400 building regulation. Residential accommodation typically falls under E3, H2, H3, H4. (Refer to Annexure 2.)
- Accommodation (especially in the case of hostels) must have fire walls between units or different occupations, e.g. between housing and storage areas. Fire walls should be stable and fire resistant for at least 30 minutes.
- Space heating (fire places) must comply with SANS 10400-T: 2011 part V, especially chimneys which should be at least 1m above the roofline.
- Where 25 or more persons are housed in one room, an alternative escape route must be supplied.
- Dormitories or hostels must have an alarm system that everyone is aware of.
- Dormitories or hostels must be equipped with firefighting equipment, signage, exit doors and emergency evacuation plans.
- Gas appliances must be in good working condition.
- Storage of gas must be secure and compliant with SANS 10087-1:2008.
- The number of gas bottles allowed per building should be regulated.
- Evacuation procedures should be communicated to all workers living in the farm accommodation or hostels.

B. Storage areas

Where any storage areas are used on the farm, e.g. pack houses, cold stores, chemical stores etc., it is the responsibility of the farm owner to ensure that fire safety guidelines are followed to ensure that fires can be fought during emergencies.

1. Location

What do the law and regulations say?

For all new storage areas and pack houses built on farms, the building plans have to be submitted to the relevant local authority for approval. No building may be erected on a farm without the permission of the local authority. Only competent persons as prescribed in SANS codes are permitted to draw plans for farm buildings, including dwellings and storage facilities. The occupation certificates must be available for such buildings.



No building should be erected on a site unless the site provides access to local authority fire services for purposes of firefighting and rescue from the building. In cases where the farm is locked for security purposes, access to storage areas should be made available during emergencies. Emergency and evacuation procedures must be communicated to all workers.

2. General requirements for buildings

Any building should be designed, constructed and equipped in such a way that in case of fire:

- a. the protection of occupants or users, including persons with disabilities, therein is ensured and that provision is made for the safe evacuation of such occupants or users;
- b. the spreading and intensity of a fire within a building and the spreading of fire to any other buildings will be minimized;
- c. sufficient stability will be retained to ensure that the building will not endanger any other building, and that in the case of any multi-story building no major failure of the structural system will occur;
- d. the generation and spreading of smoke will be minimized or controlled to the greatest extent reasonably practicable; and
- e. adequate means of access and equipment for detecting, fighting, controlling and extinguishing of a fire is provided.

3. Important aspects to consider with regards to storage areas on farms

- Fire extinguishers should be supplied in all storage areas, including workshops, chemical stores, pack houses, tractor stores etc. as per Table II of SANS 10400-T: 2011. (Refer to Annexure 1.)



- Classification of buildings is done according to Table 2 – SANS 10400 building regulation. Storage areas are classified from low risk to high risk. Classes J1-J4. (Refer to Annexure 2.)

- All firefighting equipment and escape routes must be clearly marked.
 - o Signage may be internally or externally illuminated, or photo luminescent.
 - o If the population is less than 25 persons no signage is required.
- If the storage area is also occupied, e.g. office space in a pack house, the

fire resistance of the occupancy-separating elements should be at least 120 minutes for low risk storage areas (class J1).

- In cases where an automatic sprinkler system is available and installed and maintained by competent persons according to SANS10287, there is no need for the occupancy-separating element.
- Doors which are classified as fire doors should comply with the fire resistance classification table. (Refer to Annexure 3.)



- ESCAPE ROUTES

- All buildings including storage areas should be provided with one or more escape routes that can be used in case of fire or other emergencies. Two important aspects are that the route should:
 - a. at all points, be wide enough to allow the population using such route to move rapidly along it, and
 - b. not, at any time, be obstructed in any way.
- To determine which provisions are required for escape routes, check the travel distance from the furthest point of the storage area, measured along the escape route.



- If the distance is less than 45m, no emergency route is required.
- Where the travel distance is more than 45m, two or more escape routes should be made available as far apart from each other as possible.
- Where a building has a population of more than 25 persons, and the escape route exceeds 35m, an additional emergency route must be made available.
- The distance to any escape route shall not exceed 45m, except in cases where there is a sprinkler system compliant with and maintained by competent persons according to SANS 10287. The escape route may not exceed 60m.
- The width of the escape route should be determined by the number of persons in the storage areas. (Refer to Annexure 4.)

- The last component of the emergency route shall open up at ground level directly into an open-air space.
- No emergency route may be obstructed.
- A door frame or door leaf may not protrude into the width of the emergency route by more than 100mm.
- **EMERGENCY EXIT DOORS**
 - Where the population of any room is not more than 25 persons, the clear width of any exit door should not be less than 750mm. Where two or more doors are required they should be positioned as far apart as possible.
 - The exit doors should open in the direction of travel along the escape route.
 - The width of an escape route, including the exit doors, should not decrease in the direction of the emergency travel. (Refer to Annexure 4.)
 - It is recommended that the width of a door at highly populated work areas should be that of a double door.
- Emergency lighting should be provided as per the SANS 10114-2 requirements.
- All storage areas which are occupied by people and which exceed a building height of 30m or contain any story exceeding 5000m² in floor area should be equipped with a category M and a category L fire detection service as stipulated in SANS 10400-T.



C. Storage of flammable liquids and chemicals

Storage areas of flammable liquids and chemicals are high-risk areas on farms. Regulations should be considered when managing the risk relating to storage of chemicals and flammable liquids e.g. diesel.

1. Location

What do the law
and regulations
say?



It is important that the location of such storage areas does not pose a threat to any natural resources such as dams, rivers or wetlands. Buildings should have approval from the local

authorities.

All storage areas should provide access to fire emergency services at all times.

SANS10206 should be considered when storing chemicals

2. Important aspects to consider with regards to storing of flammable liquids

- Storage areas must be clearly indicated.
- Firefighting equipment should be made available in relation to the amount of liquid stored.
- Workers may not be required or permitted to work in flammable liquid storage areas without the necessary training and protective equipment.
- Where flammable liquid is stored in a building, the employer should ensure that the storage area is fitted with efficient intake and exhaust ventilation to remove any vapor and to prevent recirculation that can contaminate the workplace.
- With storage of flammable liquids in a room the employer should ensure every such room:
 - o with a floor exceeding 20 square meters has at least two separate entrances at the opposite ends of the room, which should be fitted with a door opening to the outside and
 - o is fitted with an inspection window of strengthened glass.
- No open fires near or at the place of storage are permitted.
- No smoking is allowed in any place where flammable liquids are stored.

-

- Every flammable liquid storage area must be:
 - o separated by means of fire resisting material with a fire resistance of 120 minutes;



- o constructed of fire-resistant material with a fire-resistance of two hours;
 - o constructed in such a way that, in case of spillage, a volume of the flammable liquid in question equal to the quantity of flammable liquid ordinarily kept in store plus 10 per cent of that quantity can be contained;
 - o ventilated to the open air in such a manner that vapor cannot accumulate inside the store; and
 - o clearly marked with a sign indicating that it is such a store and indicating the amount of flammable liquid which may be stored in it.
- Standard operating procedures should be made available for the use and storage of flammable liquids.

3. Important aspects to consider with regards to storing of chemicals

- In the case of storage of chemicals, the following should be considered when deciding on the location:
 - It should be above the 50 year flood line, preferably above the 100 year flood line.
 - It should be out of reach of rock falls, falling trees and veld fires.
 - It should preferably be in a separate building, at least 10m from the house, stables and stores for animal feed, fuel and flammable material.
 - If part of a complex, the store should be totally sealed off from the rest of the complex, i.e. no free movement of air between the store area and the rest of the building.
 - There should be an approved firewall (RF 30) if flammable products are stored.
 - It should be away from rivers, dams, boreholes and areas likely to be flooded. Spills and flooding should not contaminate water sources, crops or pastures.
 - It should be situated where it can be supervised.
 - There should be easy access for delivery or dispatch.
 - There should be easy access for firefighting, and vegetation within 5m of the building should be cleared.
- The walls, roof and floor should be made of non-combustible materials that are impervious.
- The store should be protected against lightning strikes in regions where required.
- Electrical installations may be installed inside the store room, but according to SANS10108 regulations and with proof on installation by a qualified electrician.
- Signage should at least include the following at the entrance: No Smoking; No Naked Flames; No Fires; Position and types of fire related equipment (signs at least 290 x290 mm).



- Standard operating procedures should include at least the following:
 - Emergency telephone numbers should be available at the nearest telephone: nearest poison center, doctor, hospital, fire brigade and ambulance service.
 - Responsible personnel must have immediate access to a telephone and emergency numbers, even in the absence of the employer.
 - At least one farm worker should be trained in basic first aid. Information on relevant first aid procedures for all pesticides in the store must be available in a prominent place.
 - An emergency procedure which clearly outlines actions to be taken in an emergency should be available in the store and responsible personnel must be familiar with it.
- Firefighting equipment:
 - Portable fire extinguishers (carbon dioxide, dry chemical or foam type) of minimum 9 kg or 9l should be available.
 - Ratio: 1 extinguisher to every 100m² storage, unless more are deemed necessary by the local fire authority.
 - Fire hose mounted outside store and connected to a water supply.
 - For stores a larger 9m³ sprinkler system is recommended.
- Fire extinguishers should be inspected and maintained annually by a registered person (SANS 10105-1, SANS 10105-2, SANS 1475-1, SANS 1475-2).

D. Controlling fires

Certain farming practices require regular controlled fires. In cases where controlled fires are needed the following should be considered:



- Approval for a controlled fire must be obtained from the local authority.
- It is good practice to inform neighbors of the intention to have controlled fires.
- It is good practice to make fire breaks prior to a fire, especially if houses are surrounded by veld or bush area.
- Provincial legislation determines that during the fire season no controlled fires are allowed. Contact your local authority to find out when fire season starts and ends.
- Controlled fires should only be for agricultural purposes, e.g. burning of plant material - no refuse may be burned. If no alternative is available, at least have a designated area, cordoned off and clearly marked.
- There should be adequate fire extinguishing resources on farms, e.g. a pump with a container of water of at least 600l capacity.
- Permanent workers should be trained in firefighting as a general practice. It is recommended that workers required to assist with the controlled fire are formally trained by competent persons.

E. Events on farms

It is important to note that for all farms where events are held, there is a Safety at Sports and Recreational Events Act (No. 2 of 2010). Farms that have as part of their business activities any events such as functions, conferences, shows, exhibitions etc. are to be compliant with this act.

1. Important aspects to consider with regards to hosting of an event

- Every business owner, controlling body or event organizer must put in place measures as may be prescribed to ensure the safety and security of persons and their property at an event.
- An event safety plan must be available for each event, and in terms of fire safety should include:
 - o event risk assessment;
 - o proactive and reactive fire measures;
 - o access control and
 - o emergency evacuation procedures detailing action to be taken by designated persons in the event of an incident.
- Any person organizing or hosting an event should apply for permission to both SAPS and the relevant authority to do so.



Section 2. Management Systems

A. Policies, procedures and risk assessments

A **management system** is the framework of [processes](#) and [procedures](#) used to ensure that an [organization](#) can fulfill all tasks required to achieve its objectives.

Fire safety is part of your management system for health and safety in your business.

*THIS SECTION LOOKS AT THE
MANAGEMENT SYSTEMS THAT
ARE NECESSARY TO
EFFECTIVELY MANAGE FIRE
SAFETY ON FARMS*

**A. Policies, procedures and risk
assessments**

B. Management and staff

1. Policies

There should be a documented policy on health and safety that serves to confirm that senior management will ensure that the working environment and facilities provided as part of the workplace (including residential facilities) are safe and hygienic and will take appropriate measures to prevent accidents and injury in the workplace. Fire safety is integral to any health and safety management system.



The policy on health and safety should be:

- documented;
- authorized by senior management;
- accessible to management and employees;
- communicated to permanent and non-permanent employees and
- reviewed regularly (at least annually).

Health and safety policies are essential to any business to ensure that the safety of employees are managed properly and that both parties (management and employees) are aware of their responsibilities and the legal requirements.

When developing a health and safety policy special attention should also be given to fire safety on farms.

2. Procedures



Procedures clearly stipulate the processes that are required to perform certain functions. When developing workplace procedures, attentions should be given to fire safety procedures in all tasks. Special attention should be given to high-risk processes such as the handling of chemicals, flammable liquids and controlled fires. In the case of any accommodation provided to workers, fire safety procedures must be amended to incorporate accommodation. In the case of storage of chemicals and flammable liquids, procedures must accommodate these risks.

The following procedures in your management system are important in the case of fire emergency:

- Fire procedure
- Emergency evacuation procedure
- Bomb threat procedure
- Civil or labour unrest procedure
- Criminal activity procedure – what to do in case of robbery, hostage situations etc.

All procedures should be communicated to workers on a regular basis (at least annually).

Any standard operating procedure must include the following:

- HOW and WHEN to make alarm.
- HOW and WHO to control.
- WHAT and WHEN must be done to ascertain or minimize the risk or threat.
- WHO must make sure everybody is in a safe place and WHERE safe places or assembly points are.



3. Fire safety management plan

A specific fire safety plan should be in place which includes training of fire wardens, periodic testing, availability and monitoring of fire safety equipment and periodic drills. This could include training a fire warden (in the case of a smaller sites) and/or a fire team (for larger sites).

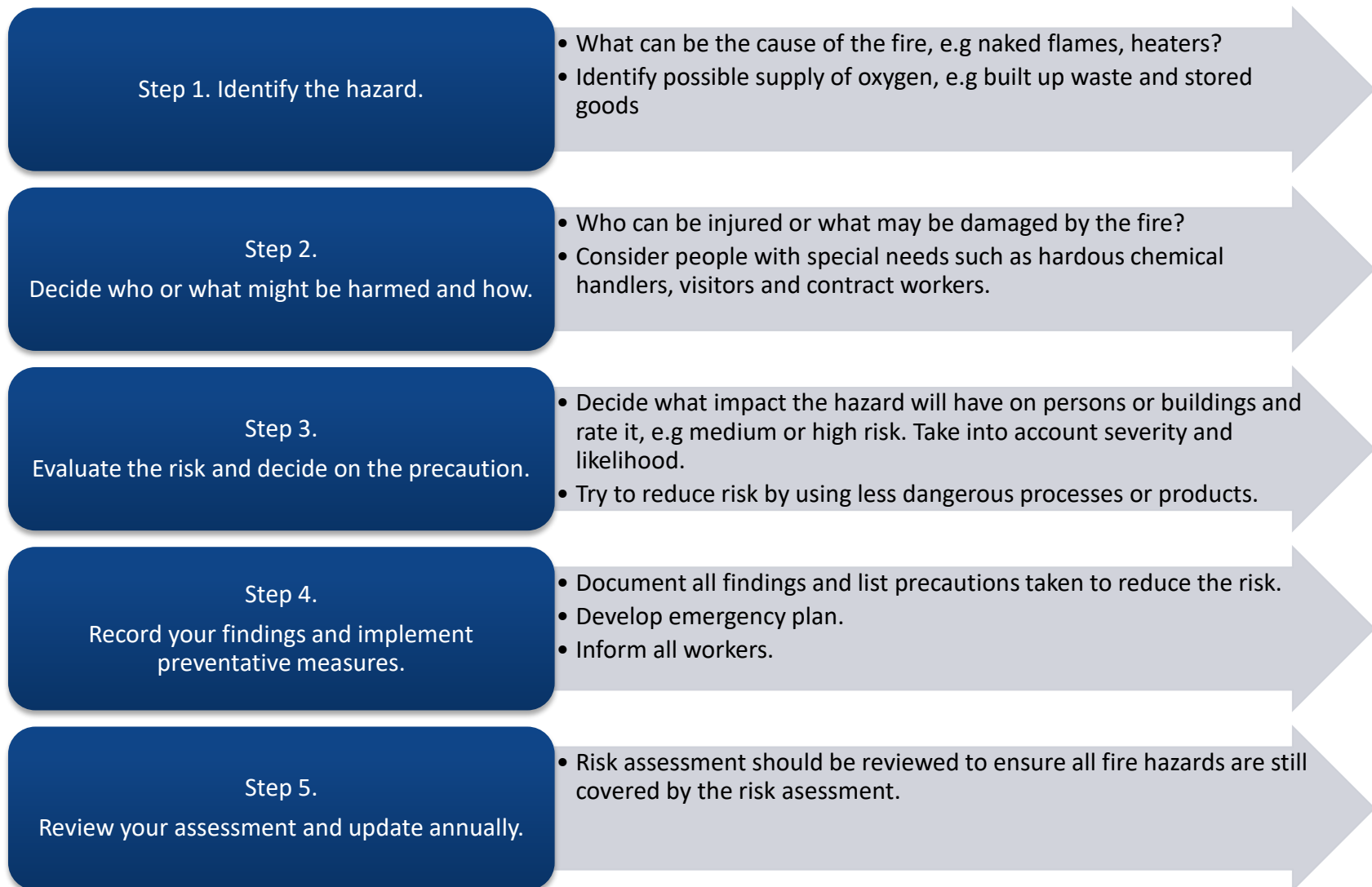
Fire drills should be held from time to time to raise awareness and ensure people are able to respond if there is an emergency. Record the dates of the drills. If there is a real emergency this will help you demonstrate that all reasonably practicable measures were taken to minimize the risks.

4. Risk assessment

A risk assessment is the identification, evaluation, and estimation of the levels of risks involved in a situation, their comparison against benchmarks or standards, and determination of an acceptable level of risk.

In terms of fire safety all workplaces, including accommodation and storage areas such as pack houses and storage areas for chemicals and flammable liquids, should be evaluated for their risk regarding fires. This must be included in the risk assessment.

Quick 5 step guide to determining risks related to fire in the workplace



B. Management and staff

1. Appointment of senior management

As part of the requirements of the Occupational Health and Safety Act, section 16.1, a senior manager should be appointed in writing.

The duties of this person are to take overall responsibility to ensure that the workplace is safe. This includes fire safety.

The responsibility in terms of fire safety includes:

- Carry out a fire risk assessment and identify possible hazards and risks.
- Take general fire precautions.
- Fire safety arrangements, fire safety policy and procedures.
- Consider persons with special needs such as young people, those with disabilities and people working with hazardous substances and flammable liquids.
- Provide a suitable solution to warn people, such as a fire detection system and a fire alarm.
- Eliminate or reduce fire hazards.
- Provide adequate means of escape.
- Provide serviced firefighting equipment.
- Review all processes and procedures regularly.

1. Appointment of fire officers

It is recommended that fire officers be appointed to take responsibility in case of fire emergencies. Attention should be given to all areas identified to be of high risk in terms of fire safety, especially worker accommodation, pack houses, and chemical and flammable liquid storage areas.

The fire officers will lead the team in partnership with management during any evacuation or fire emergencies.

2. Staff training

Fire officers should receive training from competent persons in terms of SANS 102872 or any other SABS accredited training service provider.

All other employees should be trained in all fire emergency procedures, including emergency and evacuation procedures for housing and storage areas.



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Section 3. Legal Framework

THERE ARE SEVERAL LAWS AND REGULATIONS GOVERNING VARIOUS ASPECTS OF FIRE SAFETY ON FARMS. OF PARTICULAR IMPORTANCE FOR THE PURPOSES OF THIS GUIDE ARE THE SOUTH AFRICAN NATIONAL BUILDING REGULATIONS THAT GOVERN CONSTRUCTION OF NEW BUILDINGS AND ALTERATIONS TO OLD BUILDINGS. PART OF THIS REGULATION PROVIDES THE MOST GUIDANCE

The legal aspects of the Guide to the Law and Best Practice in Fire Safety on Farms were drawn from the following laws and standards:

- *Occupational Health and Safety Act (1993);*
- *General Safety Regulations 1031 (1993);*
- *General Administrative Regulations 929;*
- *Sectoral Determination: 13 Farm Worker Sector (2009);*
- *South African National Standards: The application of the National Building Regulations – Part T: Fire Protection (SANS 10400-T);*
- *South African National Standards: The handling, storage and disposal of pesticides (SANS 10206:2010);*
- *South African National Standards: Automatic sprinkler installations for firefighting purposes (SANS 10287);*
- *South African National Standards: The handling, storage, distribution and maintenance of liquefied petroleum gas in domestic, commercial, and industrial installations Part 1 (SANS 10087-1:2008) and*
- *South African Building Regulations (Building Standards Act (1977)).*

ACTION PLAN

**Guidelines for
assessing
compliance in
terms of FIRE
SAFETY WITHIN
THE LEGAL
FRAMEWORK**

- Conduct a self-assessment based on the guidelines provided.
- Use the results from your self-assessment to identify areas where improvement is needed.
- Draw up an improvement plan – set clear objectives and targets.
SMART – Specific, Measurable, Attainable, Relevant and Time-bound
Document the improvement plan. This gives an indication to stakeholders that you are serious about continuous improvement.

Annexure 1

Table 11 — Provision of portable fire extinguishers

1	2	3	4	5	6
Class of occupancy	Number of portable fire extinguishers required ^a per m ²	Minimum charge ^b			
		Water	Foam	Carbon dioxide	Dry chemical powder
A1	1/200	9 L	9 L	5 kg	4,5 kg
A2	1/200	9 L	9 L	5 kg	4,5 kg
A3	1/200	9 L	9 L	5 kg	4,5 kg
A4	1/400	9 L	9 L	5 kg	4,5 kg
A5	1/400	9 L	9 L	5 kg	4,5 kg
B1	1/100	9 L	9 L	10 kg	9 kg
B2	1/200	9 L	9 L	10 kg	9 kg
B3	1/400	9 L	9 L	10 kg	9 kg
C1	1/200	9 L	9 L	10 kg	9 kg
C2	1/200	9 L	9 L	10 kg	9 kg
D1	1/100	9 L	9 L	10 kg	9 kg
D2	1/100	9 L	9 L	10 kg	9 kg
D3	1/200	9 L	9 L	10 kg	9 kg
D4	1/400	9 L	9 L	10 kg	9 kg
E1	1/200	9 L	9 L	5 kg	4,5 kg
E2	1/200	9 L	9 L	5 kg	4,5 kg
E3	1/200	9 L	9 L	5 kg	4,5 kg
E4	1/200	9 L	9 L	5 kg	4,5 kg
F1	1/200	9 L	9 L	5 kg	4,5 kg
F2	1/200	9 L	9 L	5 kg	4,5 kg
F3	1/200	9 L	9 L	5 kg	4,5 kg
G1	1/200	9 L	9 L	5 kg	4,5 kg
H1	1/200	9 L	9 L	5 kg	4,5 kg
H2	1/200	9 L	9 L	5 kg	4,5 kg
H3	1/400	9 L	9 L	5 kg	4,5 kg
H5	1/100	9 L	9 L	5 kg	4,5 kg
J1	1/100	9 L	9 L	10 kg	9 kg
J2	1/100	9 L	9 L	10 kg	9 kg
J3	1/400	9 L	9 L	10 kg	9 kg
J4	1/400	9 L	9 L	10 kg	9 kg
^a The owner shall install by extinguisher charge mass. If the required size of extinguisher required is 1 x 9 kg powder extinguisher per 200 m ² as with a C2 occupancy, the owner of the building may install 2 x 4,5 kg extinguishers of the same type per 200 m ² .					
^b See SANS 1910 for required minimum performance ratings.					

Annexure 2

Building Occupancy Classes

(Regulation applicable to green highlighted sections)

SANS 10400 Part A Building Occupancy applicable to Regulation XA1			
A1	Entertainment & Public Assembly	E3	Other institutional (residential)
A2	Theatrical & indoor sport	E4	Health care
A3	Places of instruction	F1	Large shop
A4	Worship	F2	Small shop
A5	Outdoor sport	F3	Wholesalers' store
B1	High risk commercial service	G1	Offices
B2	Moderate risk commercial service	H1	Hotel
B3	Low risk commercial service	H2	Dormitory
C1	Exhibition hall	H3	Domestic residence
C2	Museum	H4	Dwelling house
D1	High risk industrial	H5	Hospitality
D2	Moderate risk industrial	J1	High risk storage
D3	Low risk industrial	J2	Moderate risk storage
D4	Plant room	J3	Low risk storage
E1	Place of detention	J4	Parking garage
E2	Hospital		

Annexure 3**Table 7 — Class of fire doors or fire shutters**

1	2	3
Type of wall	Required minimum fire resistance of wall min	Class of fire door or fire shutter
Occupancy separation	60	A
	120	B
Occupancy separation – Plant rooms or other ancillary accommodation	120	C
	60	A
Divisional separation	60	A
	120	D
Emergency route	120	B
Protected corridor and protected stairs.	30	E
Service shafts not fire stopped at every floor level	60 or 120	A or B
Openings in all walls	30	F

Annexure 4**Table 10 — Width of escape routes**

1	2	3
Maximum number of persons	Building not required in terms of Part S of the National Building Regulations to provide facilities for persons with disabilities	Building required in terms of Part S of the National Building Regulations to provide facilities for persons with disabilities
	Minimum width mm	
≤ 100	1 000	1 500
≤ 120	1 100	1 500
≤ 130	1 200	1 500
≤ 140	1 300	1 500
≤ 150	1 400	1 500
≤ 160	1 500	1 500
≤ 170	1 600	1 600
≤ 180	1 700	1 700
≤ 190	1 800	1 800
NOTE This table does not contemplate simultaneous evacuation from multi-storey buildings.		