

FLAMMABLE STORES

Every store intended for the storage of any flammable liquid, solid shall comply with the following requirements:

- 1) No store shall be situated in such a position that it will impede the escape of any person or animal from the premises, or endanger any room, building, or premises in the case of fire.
- 2) Plans of the proposed store or alteration to existing store or building shall be submitted in accordance with Regulation 6.1.
- 3) Construction of the store shall be as follows:
 - (a) All foundations shall be of approved concrete.
 - (b) All external and internal walls shall be of brick or other impervious materials having similar stability and fire resistance characteristics. Should the store be attached to a building the material used shall have a fire resistance and stability rating of 240 minutes. In the case of a freestanding store the rating of the walls may be reduced to 120 minutes, where so permitted by the Chief Fire Officer.
 - (c) The floor shall be of concrete or other suitable impervious material, constructed in such a manner that in the event of a spillage, the liquid spilt shall be confined to the store. The bund so created must either be recessed below the door threshold or incorporate a sill. The capacity of the bund must contain the entire contents of the store plus 10%.
 - (d) The entire roof structure shall be of approved incombustible materials. Where the store is internal to the workplace, the roof structure shall be of reinforced concrete, thereby ensuring the stability and fire rating detailed in Regulation 3 (b) above.
 - (e) Where windows are installed the window frames shall be of metal and non-openable. Each pane shall not exceed 450mm x 450mm. The glazing shall be of wire-woven glass, which shall be secured by means of angle-iron brackets or frames that are screwed to the window frames. In the case of stores attached to other buildings, windows are only permitted on external walls.
 - (f) The door(s) and frame(s) serving the store shall be of Class B rating in terms of SABS 1253. In the case of attached stores, any communicating door(s) and frame(s) shall be of a Class D rating (SABS 1253). All doors shall open outwards in relation to the store interior. Solid hardwood door(s) of a minimum thickness of 40mm may be clad with metal of not less than 0.9mm in a thickness all round that is fitted in a metal door

frame with a minimum of 25mm rebate all round may be substituted for a Class B door when used in a free-standing store where any other buildings in the vicinity of the store have no openings in these buildings within 6m of the store. Any wall facing the store must be of an approved fire rating. Cognizance must also be taken that the last mentioned door might not cause any escape route to be less effective.

- (g) Where the floor area of the store exceeds 20 square meters, or, where in the opinion of the chief Fire Officer, either due to the nature of the goods stored or excessive travel distances, an additional escape door shall be installed. These doors shall be situated at such a distance from each other as to allow the free and unimpeded escape of persons within the store from either of the doors in the case of a fire or other danger. This door will open outwards in relation to the store interior, preferably to a safe open area, external to the work place. All doors shall be fitted with a bolt having a horizontal panic bar, or, any other approved locking device that can easily and readily be opened from the inside of the store without specialized knowledge or the use of keys. This panic-bolt locking device shall override any external locking mechanism or device.
4. Adequate cross-flow ventilation shall be provided in such a manner as will adequately prevent the accumulation of flammable liquid vapour within all parts of such store and discharge the vapour into the open air at a point or points where the vapour is not likely to come into contact with any fire, flame, open light or other agency likely to ignite it; or, where it will not constitute a danger to any persons or animals. This may be achieved by:
- (a) Installing terra-cotta airbricks of sufficient size and number, immediately above the level of the door-sill and as near the ceiling as possible. These airbricks (ventilators) shall be installed in free-standing walls: provided that at least two such free walls shall be opposite each other. All ventilators must be covered with woven copper, brass or bronze wire mesh of at least 28 meshes per 25mm and such gauze shall be held in position by metal strips or frames, or cement; or
 - (b) Where natural cross ventilation is not possible, or where the sump is deeper than 300mm, or, where due to the nature of the flammables stored or the use to which the store is put, the residual vapours will be in the flammable or explosive ranges, mechanical ventilation shall be required:
 - i) Such mechanical ventilation apparatus installed shall be of intrinsically safe construction and shall be capable of removing flammable or explosive vapour and changing the air through any cross-section of the store at a minimum rate of 30 air changes per hour.
 - ii) The blade of the fan shall be non-ferrous or of an approved material that does not generate static electricity.

- iii) The extraction point shall be at threshold height and should discharge through vertical ducting terminating 1m above the roof or at least 3.5m above the ground.
 - iv) The fresh air inlets shall be substantially equivalent to the exhaust capacity of the mechanical ventilation.
 - v) Ducting external to the store but in communication with other working areas, shall be encased in 100mm brick or 50mm asbestos lagging. Where this is impractical then fire dampers must be installed in ducting where it passes through the wall of the store. It may be necessary to connect this damper to an automatic smoke and fire detection system, thereby ensuring immediate operation of the damper in an emergency situation. Ducts shall be as short as possible and not have sharp bends.
 - vi) The exhaust fan(s) shall be operated by means of a courtesy switch that is connected to the door to ensure that the fan(s) are in operation whilst the store is occupied by any persons.
 - vii) Should decanting take place within the store, the fan shall be connected to a delay-off timing device to ensure that the vapour concentration within the store will be below 25% of the lower flammable limit before the fan switches off.
 - viii) Where the store communicates with the workplace, or where due to the nature of the goods stored, the residual vapour present within the store is within the flammable or explosive limits, the exhaust fan may be required to run permanently.
5. No electrical lights or any other electrical equipment or installation may be used in any store, or ventilation system for such store, unless it complies with the requirements detailed in SABS Codes of Practice 086 and 0108, and SABS Specification 549 [reg 11 (5)].
 6. Where due to nature of the goods stored all shelving, ducting, etc. may be required to be earth-bonded in order to prevent the build-up of static electricity.
 7. All shelving and racking must be constructed from non-combustible materials.
 8. A notice in letters 75mm in height and bearing the words "DANGER FLAMMABLE LIQUIDS" in English and Xhosa, including the appropriate symbolic signage in terms of SABS 1186 for "NO SMOKING" and "NO NAKED FLAMES" shall be prominently displayed on the outside of the store, immediately adjacent to the entrance door, in such a position where it will not be obstructed by the door when in the open position.
 9. A sign must be installed in the store denoting the maximum quantity of liquids that the store is licensed to contain.

10. The owner or person in charge of any store shall ensure that all the doors of any store be kept locked when not in use.
11. No person shall use any store or cause or permit such store to be used for any purpose other than for the storage, use or handling of flammable substances.
12. No person shall enter any store or cause or permit any store to be entered without the express permission of the occupier or other responsible person in charge of the store.
13. No person shall engage in or permit any other person to be engaged in any store unless all the doors of the store are fully open and kept entirely unobstructed.
14. The owner of every store shall display in a conspicuous place and easily accessible position such number and type of SABS approved fire extinguishers, or any other fire extinguishing equipment or fixed fire extinguishing installation as may be required by the Chief Fire Officer.

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