

Foreword

This document (EN 14470-1:2004) has been prepared by Technical Committee CEN/TC 332 “Laboratory equipment”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2004, and conflicting national standards shall be withdrawn at the latest by October 2004.

Annexes A and B are normative.

This document includes a Bibliography.

EN 14470, *Fire safety storage cabinets*, consists of the following parts:

Part 1 — Safety storage cabinets for flammable liquids

Part 2 — Safety storage cabinets for pressurised gas cylinders (in preparation)

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This European Standard describes the design and testing criteria for safety cabinets to be used in laboratories to store flammable liquids in closed containers at normal room temperatures.

Primarily, this European Standard covers the three major safety requirements for storage of flammable liquids, which are:

- a) minimising the fire risks associated with the storage of flammable substances and protection of the cabinet's contents in the event of fire for a known (tested) minimum length of time (fire rating);
- b) minimising the amount of vapour released into the working environment;
- c) retention of accidental spillage within the cabinet.

Testing of the cabinet [see a) above] under fire conditions is a normative part of the standard and the procedures and interpretation of the tests are described in detail.

The fire test [see a) above] provides for four categories of fire protection / ratings. In practice the degree of fire protection/rating allows the user to select, depending on individual circumstances, a cabinet which will allow sufficient time for personnel to leave, and fire fighters to enter the laboratory before it is likely to that the flammables stored turn a possible minor / extinguishable fire into an uncontrollable one. The methods of achieving b) and c) above are sufficiently flexible to allow for local/national needs.

Caution should be exercised when determining the appropriate cabinet fire rating when flammables having auto-ignition temperatures below 200 °C and/or having high vapour pressures at room temperature are involved. When such flammable materials are being stored, expert advice should be sought.

1 Scope

This European Standard is a product specification, giving performance requirements for fire safety cabinets to be used for the storage of flammable liquids in laboratories. It is applicable to cabinets with a total internal volume of not greater than 1 m³, which may be free standing, restrained to a wall or mounted on wheels or castors. It is not applicable to brick enclosures or walk-in storage rooms.

This European Standard is not applicable to cabinets which do not take their weight on their base.

Requirements are given in respect of the construction of the cabinet and its capacity to resist fire conditions on the outside. A classification of cabinets is given, according to the level of fire resistance offered, and a type test is included, which draws on already existing fire resistance tests, such as those given in ISO 834-1 [1] and EN 1363-1.

The tests described in this European Standard are type tests.

NOTE 1 This European Standard does not discriminate between different flammable liquids, which may have considerably different physical properties. The suitability of the standard in respect of any given flammable liquid should be ascertained by the user.

NOTE 2 Attention is drawn to national regulations which may apply with regard to the storage of flammable liquids.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1363-1:1999, *Fire resistance tests — Part 1: General requirements*.

EN ISO 4796-2, *Laboratory glassware — Bottles — Part 2: Conical neck bottles (ISO 4796-2:2000)*.

EN ISO 13943:2000, *Fire safety — Vocabulary (ISO 13943:2000)*.

ISO 3864 (all Parts), *Safety colours and safety signs*.

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Standard EN14470-1



The European standard EN 14470-1 refers to cabinets freely positioned and to wall-mounted cabinets for the storage of inflammables.

All CHEMISAFE cabinet models have undergone a destructive test in a fire room performed in an independent accredited laboratory.

STANDARD DESCRIPTION

→ FIRE TEST

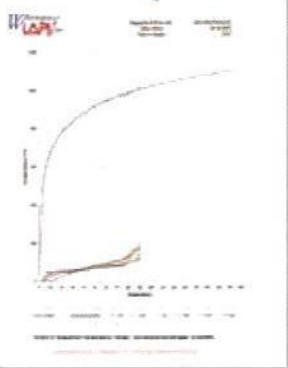
The wall of the cabinet must be positioned in the fire room at a distance of 100 mm from the wall. The fire resistance of the cabinet must be validated by the destructive test of an identical model. Possible reductions in the dimensions of the cabinet tested:

- Height and width max. 100 mm
- Depth max. 150 mm

The temperature increase inside the cabinet should not exceed 180 K or 200 °C. According to the time taken to reach this temperature, the cabinet will be classified as Type 15, 30, 60 or 90 min.

These different flammability classes allow leaving sufficient time for the staff to leave the laboratory and for the firefighters to get in before the stored flammable products may cause fire.

Each CHEMISAFE cabinet model has passed the compliance control according to standard EN14470-1 and it has the certificates of tests carried out by Bureau Veritas (BV).



Report of fire resistance test with
Temperature/Time diagram.
Contact thermocouple increase.

→ CONSTRUCTION

The cabinet doors must close automatically in case of fire.

The side and rear walls must have the same construction and the same thickness.

On the other hand, the requirements of the standard cover the cabinet construction itself and its capacity to withstand external fire conditions (fire tests carried out according to ISO 834-1 [1] and EN 1363-1).

The tray volume must contain: at least 110 % of the volume of the largest container stored in the cabinet or 10 % of the total volume stored.



CHEMISAFE cabinet series FIRE MY11
BEFORE fire resistance test.

→ SIGNALLING

The cabinets must be equipped with suitable signals: standard pictograms complying with ISO 3864 (inflammables), maximum load per shelf, fire resistance of the model (15, 30, 60 or 90 minutes).

→ QUALITY CONTROL

CHEMISAFE submitted its safety cabinet manufacturing to a continuous and extremely rigorous check by Bureau Veritas.

So twice a year, BV checks the production and verifies the quality and the manufacturing process.



CHEMISAFE cabinet series FIRE MY11
AFTER fire resistance test.

CHEMISAFE will make all the cabinet documents
and certifications available.



Storage cabinets for inflammables



**FIRE-RESISTANT
CERTIFIED**
90 minutes (TYPE 90)



➤ MAXIMUM PROTECTION FOR SAFETY FIRST!

For obvious safety reasons (fire, corrosion, intoxication...), all the high or low flammables must be handled and stored in fireproof cabinets (fire resistance of 90 minutes) certified according to standard EN14470-1.

We opted for the maximum safety by offering a complete range of fire-resistant cabinets TYPE 90 minutes.

The cabinet construction, the automatic closing of the doors (present on all our models), the thermo-expanding seals and the fire dampers ensure the cabinet containment for 90 minutes and a maximum protection of the people.

➤ WHAT DOES IT MEAN FOR THE USER

- A use according to the regulations
- A maximum use safety
- A certification documentation identifying the safety cabinet (traceability)