

Safety cabinets for flammable liquids as per DIN EN 14470-1

Hazardous substances may only be stored in workrooms if storage is compatible with the protection of workers and is carried out in special facilities!

◆ **The classification of fire resistance was set to 4 types:**

- Type 15 = ≥ 15 minutes**
- Type 30 = ≥ 30 minutes**
- Type 60 = ≥ 60 minutes**
- Type 90 = ≥ 90 minutes**

As in Germany safety cabinets type 15 minutes are not approved and safety cabinets types 30 minutes and 60 minutes are only of limited use, **in Germany safety cabinets are confirmed with a fire resistance of 90 minutes (type 90) as a state of the art.**

In many other European countries, however, is due to lack of legal regulations, the use of other type classes is also possible. That is why we also have low-class hazardous materials cabinets in the delivery program (for example type 30 = ≥ 30 minutes).



**Fig.: SiS Type 30 / 1200 GL
(≥ 30 minutes - type-approved)**

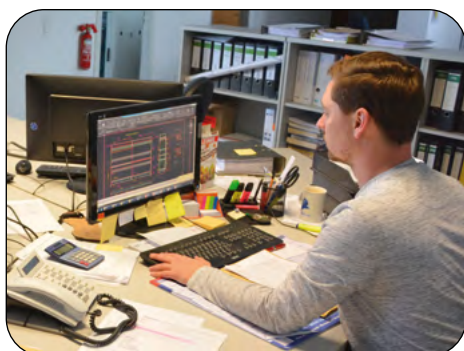
◆ **Construction and testing of safety cabinets:**

- ❑ The type examination of the entire cabinet construction area in a fire chamber of an independent materials testing institute (flame impingement) is in accordance with European standard test conditions.
- ❑ Deviations without comparative tests are limited to a reduction in height and width to a maximum of 100 mm and reduction in the depth of 150 mm.

◆ **Protective goals:**

- ❑ Sufficient escape time for the employees in the working area.
- ❑ Firefighters and rescue teams must have a plenty of time to get into the working area before the hazardous substances stored in a safety cabinet turn a small erasable fire into an uncontrollable one.

Development and construction



Examination by an independent materials testing institute



Approval / certificates



PRACTICAL INFORMATION 6

The operator of safety cabinets as per DIN EN 14470, part 1 is responsible for their proper use. The corresponding requirements are covered in the TRGS 510, annex 1 and represent the basic safety requirements for operating safety cabinets for the storage of flammable liquids.

1. Fire resistance capability:

Safety cabinets within the meaning of the TRGS 510 are particular devices with a fire resistance capability of > 90 minutes (as per DIN EN 14470-1) - technological state-of-the-art in Germany. In the case of fire they ensure sufficient time for escape and rescue (requirement as per DIN EN 14470-1). Safety cabinets with a fire resistance of less than 90 minutes (at least 30 minutes) may be used only to a limited extent (see page 100).

2. Installation and operation:

... to protect employees and third parties, in particular from fire and explosion hazards.

3. Sump capacity:

Each cabinet has to be equipped with a base sump tray acc. to the requirements of the StawaR, which has to contain at least 10% of the total storage volume of all storage containers and / or 110% of the largest container.

4. Self-closing doors:

Doors of safety cabinets as per DIN EN 14470-1 are fundamentally self-closing. All storeLAB® safety cabinets are equipped with a hold-open device (doors remain open during operation); this ensures safe operation, loading and removal. A thermal mechanism automatically closes the doors at a max. room temperature of 50°C.

5. Ventilation:

With forced ventilation:

- Operation of safety cabinets have to ensure that air inlet and outlet system work constantly effective; the rate of air exchange when cabinet is closed has to be at least 10 times per hour. Herewith, the occurrence of a hazardous explosive atmospheres inside the cabinet is going to be avoided in normal operation.
- Ventilation has to be effective immediately above the base sump tray of the cabinet.
- The ventilation system has to discharge into the atmosphere at a non-hazardous location.
- Air inlet and outlet opening has to be automatically sealed at a max. temperature of 70°C (+/- 10°C).

Without technical-forced ventilation:

- Avoidance of electrostatic charges - the cabinet has to be grounded.

6. Operation:

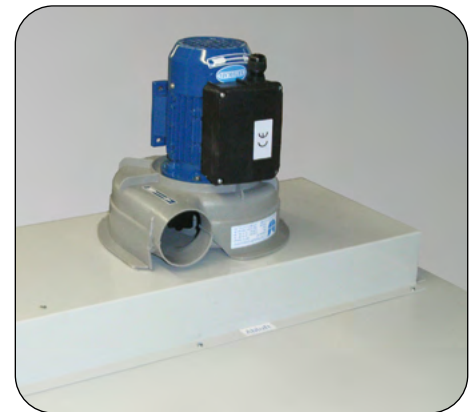
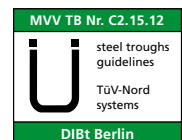
- Flammable liquids do not have to be stored together with hazardous substances which may lead to fires, e.g. self-reactive or pyrophoric substances.
- Hazardous substances with an ignition temperature below 200 °C (e.g. sulfur carbon) and hazardous substances classified with R12 (highly flammable) or H224 (extremely flammable) may only be stored in ventilated safety cabinets type 90 (DIN EN 14470-1).

7. Ex-zones:

The employer has to determine whether ex zones are to be defined in a hazard assessment. DGUV rule 113-001, provides information on this.

For example, the following requirements apply to a non-ventilated safety cabinet:

- Zone 1 inside of the cabinet
- Zone 2 around the cabinet in a radius of 2.5 m and up to a height of 0.5 m above the floor level



Our new safety cabinets with 30 minutes fire resistance ...

... according to DIN EN 14470-1



Practical information: Storage of flammable liquids in safety cabinets (Excerpt of TRGS 510, annex 1)

A.1.2 General Requirements

- (2) Safety cabinets have to be designed, installed, operated and maintained in such a way as to guarantee the protection of employees and third persons, particularly against hazards due to fire or explosion.
- (3) The safety requirements for the design of safety cabinets shall be deemed to have been met if the cabinets at least satisfy the requirements under DIN EN 14470-1 and have a fire resistance rating of at least 90 minutes.
- (4) Safety cabinets with a fire resistance of less than 90 minutes but at least 30 minutes may be further used for combustible liquids, if
 1. only one cabinet per fire fighting unit is installed; if fire fighting unit is larger than 100 m², one cabinet may be installed 100 m² each, or
 2. if fire fighting unit is equipped with an automatic fire alarm system and if there is an authorized plant fire brigade with max. response time of 5 minutes after the alarm has been occurred or if there is available an automatic fire-fighting system.