Flammable Storage Cabinet

Why do we need Flammable Safety Cabinet

- ✓ Nearly all governments place duties on employers to eliminate or control the risk from explosive atmosphere in the workplace
- ✓ For security reason employee have to store your flammable or explosive products in a safety cabinet. No matter your business branch or the degree of flammability of your products, they have to be stored in case of fire in order to delay the risk of explosion

Testing Parameters for EN 14470-1 and FM

STANDARD	TESTING TEMP.	FIRE RESISTANCE	MAX TEMP	RELATED PRODUCT
EN14470-1 TYPE 90	900°C	90 min	105 min	ECOSAFE 795EJ
EN14470-01 TYPE 60	900°C	60 min	60 min	ECOSAFE 795EJ
EN14470-01 TYPE 30	900°C	30 min	30 min	ECOSAFE 3035E
EN14470-01 TYPE 15	900°C	15 min (min. requirement)	15 min	VentiStore ZYC range
FM	700°C	10 min	10 min	VentiStore ZYC range

*based on temperature curve NFPA 251

What need to be stored in the flammable cabinet

Hazard classification for flammable liquids			
Class	Flash point	Boiling point	Examples
I-A	Below 23°C	Below 38°C	Diethyl ether, pentane, ligroin, petroleum ether
I-B	Below 23°C	At or above 38°C	Acetone, benzene, cyclohexane, ethanol
I-C	24°C – 38°C	-	p-xylene
Hazard classification for combustible liquids			
II	39°C – 60°C	-	Diesel fuel, motor oil, kerosene, cleaning solvents
III-A	61°C – 93°C	-	Paint (oil base), linseed oil, mineral oil
III-B	93°C or above	-	Paint (oil base), neatsfoot oil

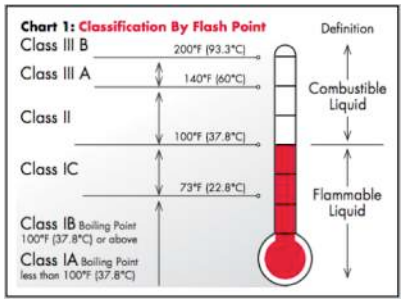
International Standard for Flammable Safety Cabinet

➢ **European Norm EN 14470-1**

EN 14470-1 is the highest safety and most stringent standard available in the market. It is applicable for storage of flammabel and highly flammable chemicals in laboratory.
The flammables used in laboratories must be stored in one or several safety cabinets which are fire resistant from 15 minutes (minimum required), to 30, 60 or 90 minutes.

➢ **FM (Factory Mutual Research Corporation),USA**

FM is commercial entity, an USA National Recognised Testing Laboratory (NRTL) by OSHA (USA). They offers industrial and commercial product certification and testing services. The FM certification requires a fire-resistance of only 10 minutes for Safety Cabinets accordingly to the heating curve NFPA 2511969



Based on EN147701 & OSHA & NFPA 30 standard, below are the classifications of flammable & combustible liquid at different flash point

How about the Ventilation?

When it comes to storing flammables, the risk of having an explosive atmosphere trapped inside the storage cabinet can never be totally eliminated! But the risk can be controlled!

EN14770-1 stated that the cabinet must have air change at least 10 times the volume of the safety cabinet. The ductless filtration box/system, able to protect worker from chemicals vapors, reduce the risk of explosive atmosphere and improve productivity by storing chemicals in Code Compliance Safety Cabinet

General specification for flammable storage cabinet?

Ventilation :

Safety Cabinets must have air inlet and outlet. These could be used to connect to a forced ventilation system. The air change must be at least 10 times the volume of the safety cabinet (closed doors).

Build up quality and labeling :

- ✓ Designed to meet OSHA and NFPA 30 standards
- ✓ Cabinets are constructed of sturdy 18-gauge (1mm) thick double wall, welded steel with $1^1/_2$ inch (38mm) of insulating air space for fire resistance
- ✓ Fail-safe closing mechanism ensures 3 point stainless steel bullet latching system works every time
- ✓ Labels are highly visible under fire conditions
- ✓ Adjustable self leveling feet

Spill Containment sump

A spill containment sump shall be installed underneath the lowest storage level.
The sump shall have :

- ✓ A minimum capacity of 10% of the volume of all containers stored in the cabinet
- ✓ Or at least 110% of the volume of the largest single container, whichever is greater

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CABINET TYPE/ STANDARD	HOW TO CHOOSE	VENTILATION SYSTEM	ORDER INFO
 **FM/EN14470-1 TYPE 15 (10/15 MIN)**	When require to store sizeable amount of either flammable chemical or corrosive chemical Suitable for Chemical Room	Filtration Box Venticap 502 	22G/83L ZYC0022 22G/83L ZYC0022B 45G/170L ZYC0045 45G/170L ZYC0045B 60G/227L ZYC0060 60G/227L ZYC0060B Note : ZYC00xx (Flammable/Yellow) ZYC00xxB (Acid/Blue)
 **FM/EN14470-1 TYPE 30 (30 MIN)**	When there is need to meet higher safety standard with longer fire resistance time (up to 30 min) Suitable for Chemical Room	Filtration Box Venticap 502 	170L 3035E – 2 doors 130L 3034E – 1 door
 **EN14470-1 TYPE 90 (60/90/105 MIN)**	When there is need to achieve highest safety requirement with the longest resistance time (up to 105 min) Suitable for Chemical Room	Filtration Box Venticap 502 	170L 795EJ – 2 doors 130L 794EJ – 1 door
 **NFX15-211 SEFA-9**	When require to store many group of chemicals in small quantity/volume When require to segregate your chemical in your storage, with additional spillage tray When the need for convenience, to store routinely used chemical near to your lab bench	Build in Smart Filtration and Alert Technology 	Smart 822 – Underbench Storage Cabinet, up to 50 bottles Smart 834 – 2 doors Storage Cabinet, up to 160 bottles Smart 1634 – 4 doors Storage Cabinet, up to 320 bottles Note : Estimation base on 500ml chemical bottles