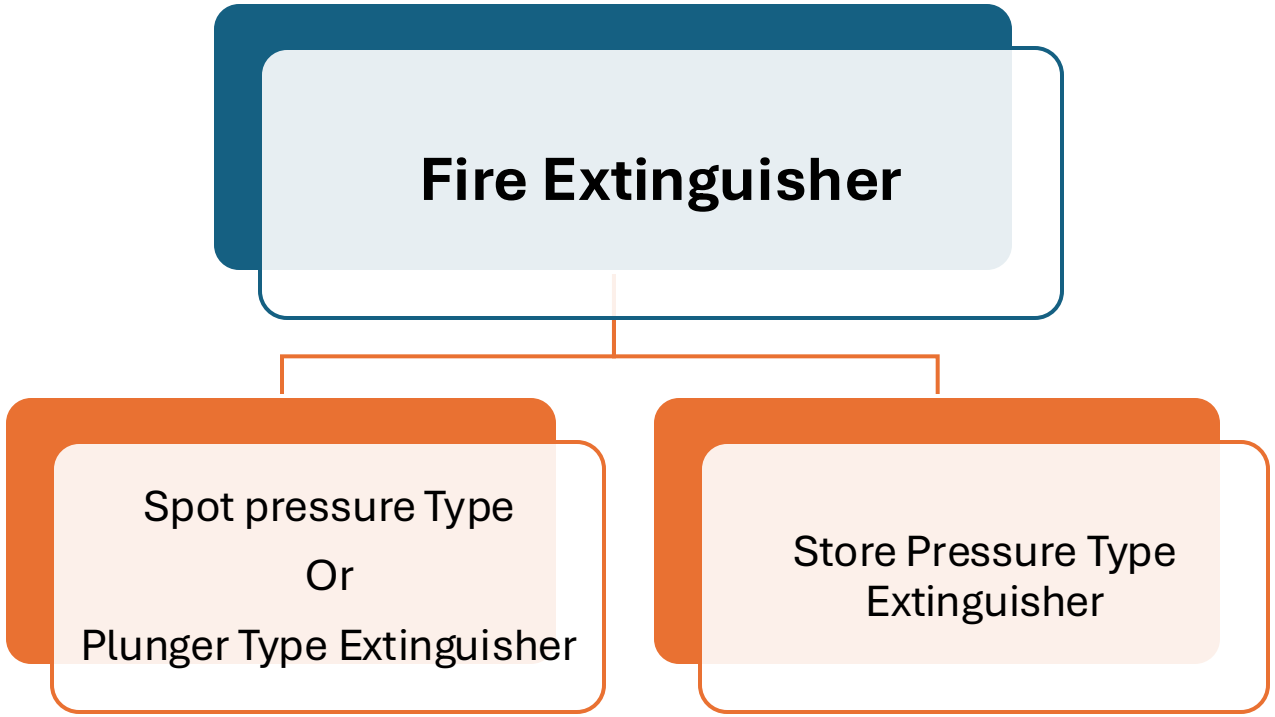
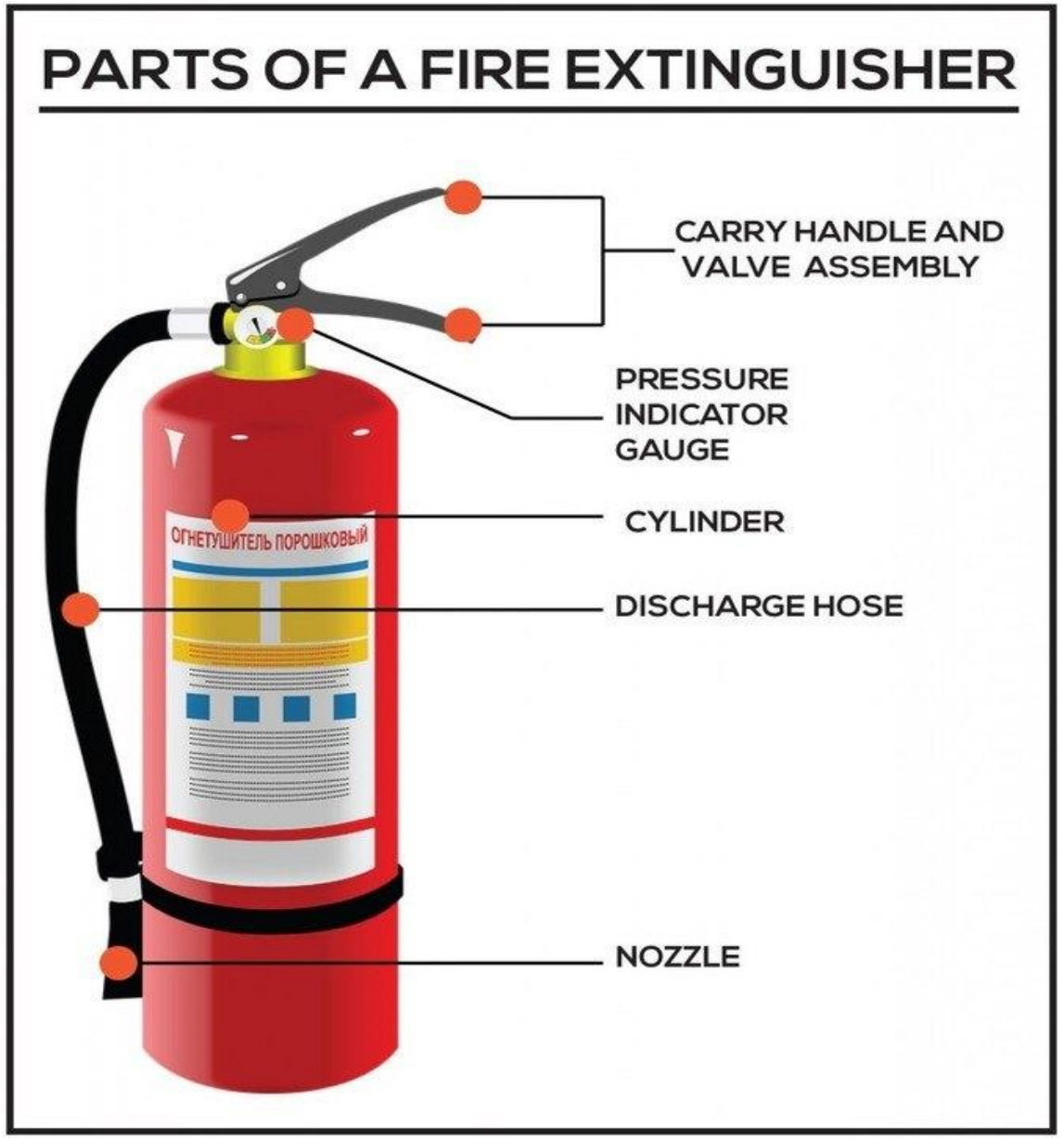
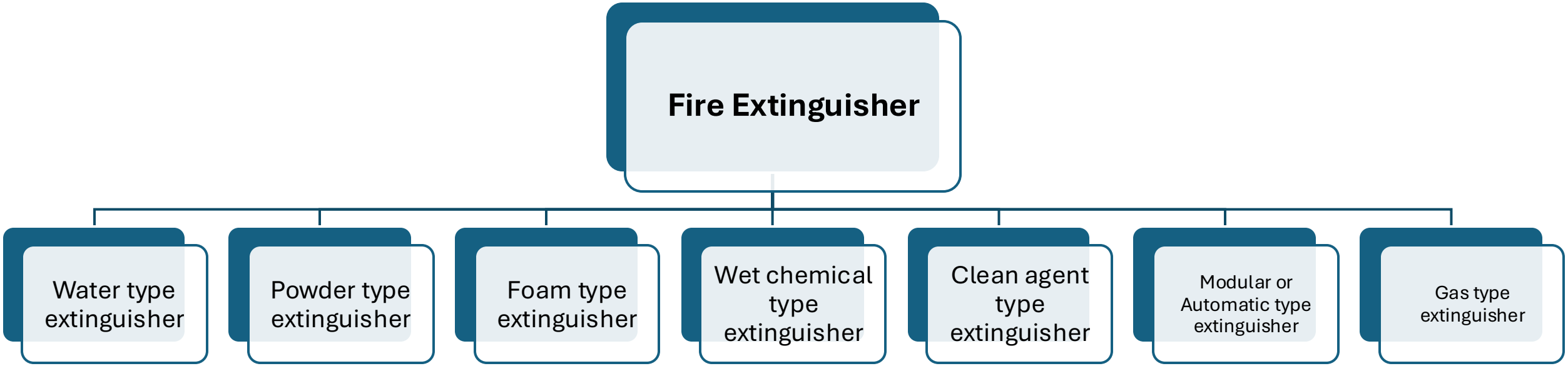
TYPES OF FIRE EXTINGUISHER

Different types of fires require **different types of fire extinguishers**. Using the wrong one can be dangerous and make the fire worse. Fire extinguishers are classified based on the **type of fire** they are designed to fight.

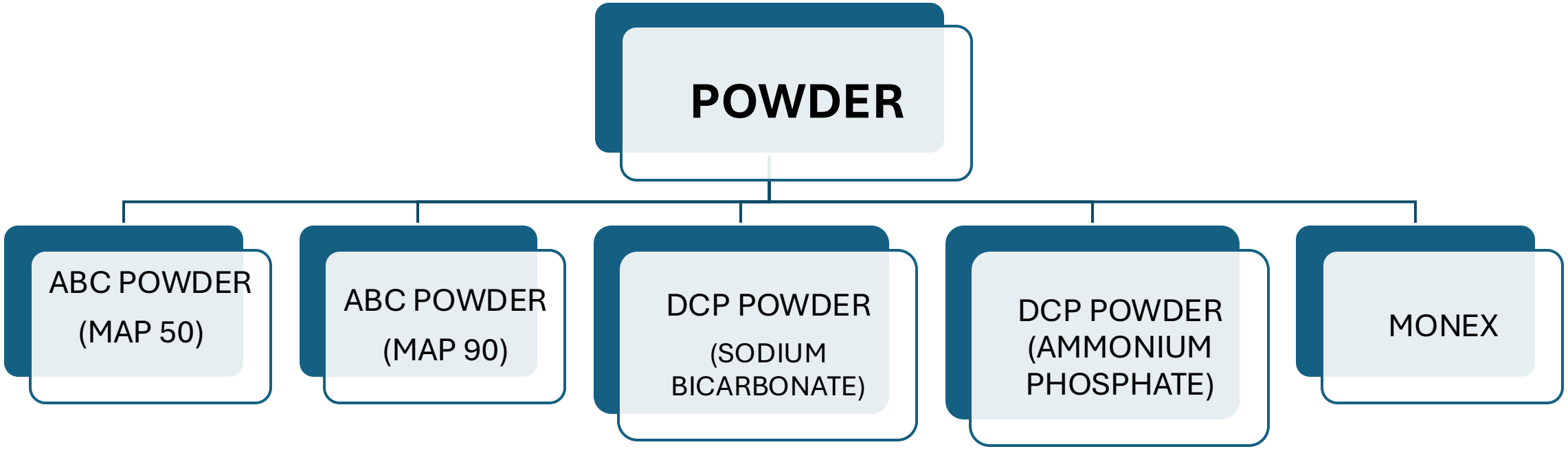



PARTS OF A FIRE EXTINGUISHER
CARRY HANDLE AND VALVE ASSEMBLY
PRESSURE INDICATOR GAUGE
CYLINDER
DISCHARGE HOSE
NOZZLE
ОГНЕТУШИТЕЛЬ ПОРОШКОВЫЙ

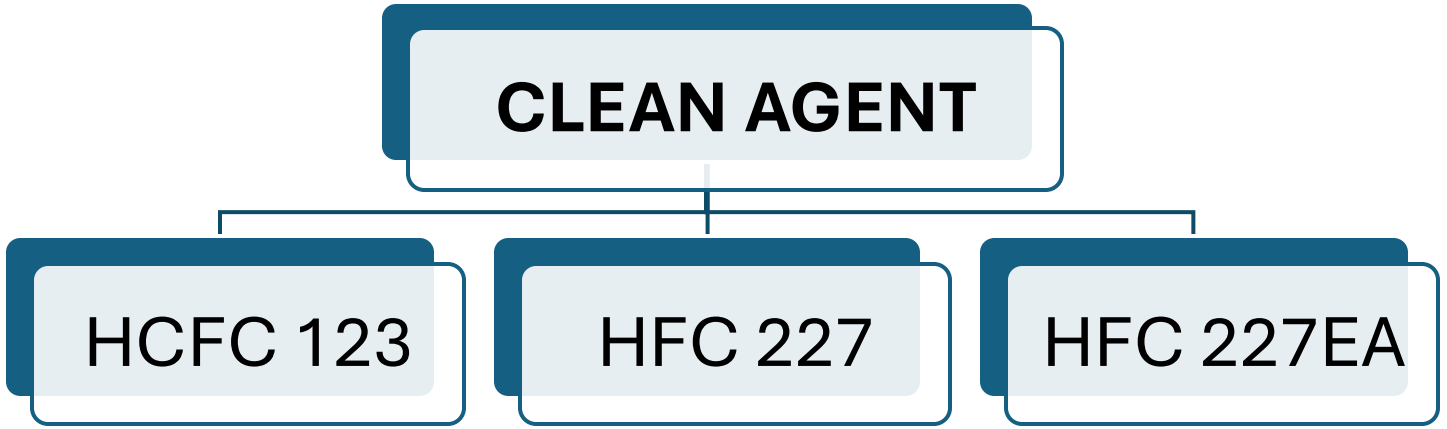

Fire extinguisher
CO_2 Catridge
CO_2 Discharge tube
Siphon tube
Water
Discharge tube
CO_2

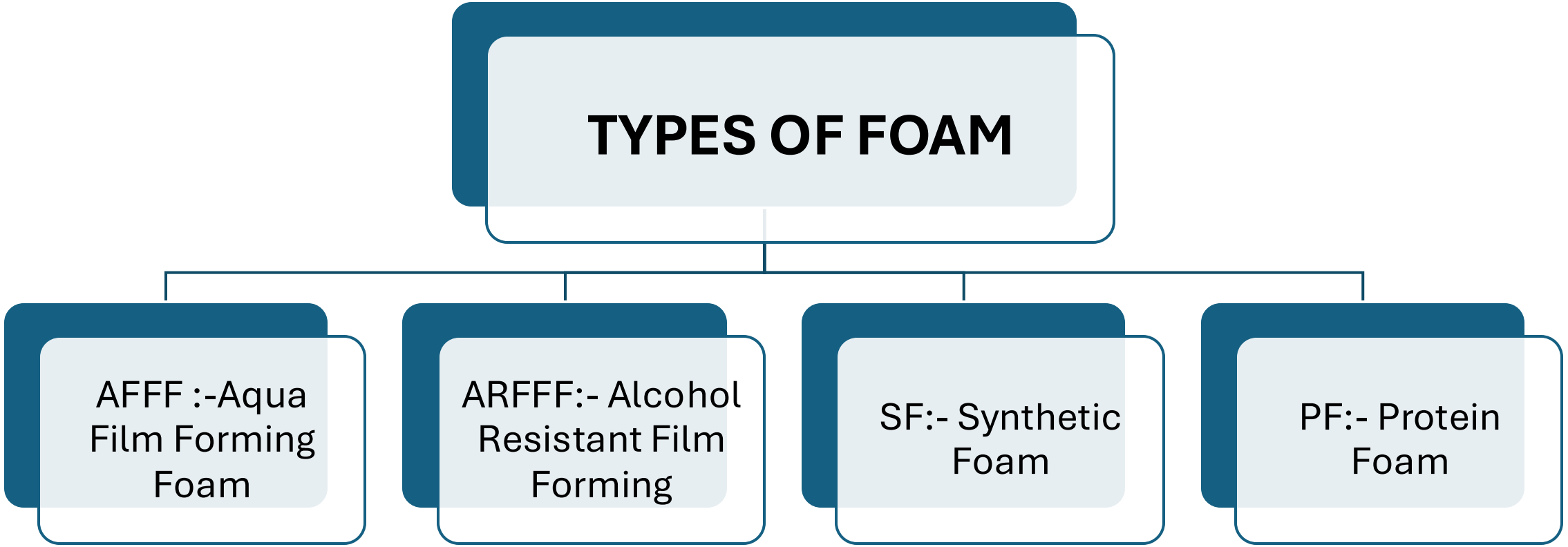


With the developing of modern fire science types of extinguishers are increasing day by day



MAP = Mono Ammonium Phosphate
DCP = Dry Chemical Powder

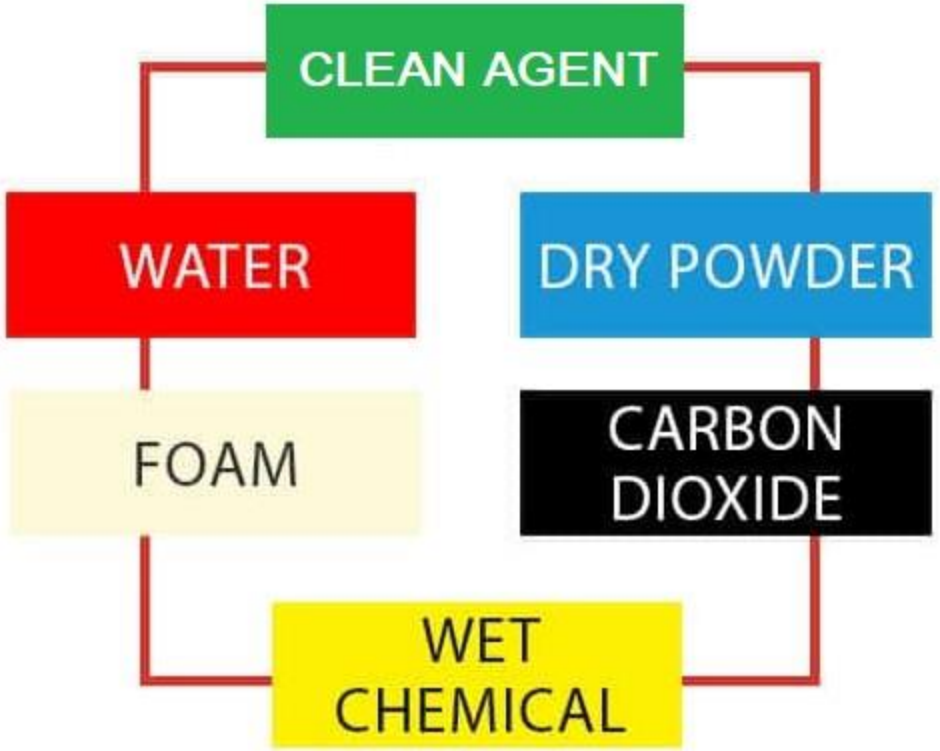




Properties of Foam:-

a) A foam solution can spread/expand on any surface area effectively to create a layer
b) Size of the bubbles is larger the size of the bubbles better the quality of the foam
c) Stability of the bubbles
d) Expansion ration to create a good quality foam solution expansion ration should be accurate.

COLOR CODE OF FIRE EXTINGUISHER



Water (H_2O) Type

Fire Extinguisher – Red Label

Use for:

✅ **Class A Fires** – Paper, wood, cloth, plastics, etc. (ordinary combustibles)

Do NOT use on:

❌ Electrical fires (risk of electrocution)

❌ Oil or fuel fires (can spread the fire)

Foam Type

Fire Extinguisher – Cream Label

Use for:

✅ **Class A Fires** (solids like paper, wood)

✅ **Class B Fires** (flammable liquids like petrol, diesel)

Do NOT use on:

❌ Electrical fires

❌ Cooking oil fires

CO_2 (Carbon Dioxide) Type

Fire Extinguisher – Black Label

Use for:

✅ **Class B Fires** (flammable liquids)

✅ **Electrical Fires** – Safe to use on live equipment

Do NOT use on:

❌ Confined spaces (can cause suffocation)

❌ Class A fires (not effective on solids)

Dry Powder Type

Fire Extinguisher – Blue Label

Use for:

✅ **Class A, B, C Fires** (multi-purpose)

✅ **Electrical fires**

✅ **Flammable gases (LPG, CNG)**

Special Version:

•**Class D powder** (for combustible metal fires like aluminium, magnesium)

Caution:

⚠️ Can reduce visibility and cause breathing issues indoors

Wet Chemical Type

Fire Extinguisher – Yellow Label

Use for:

✅ **Class K (or F) Fires** – Cooking oils and fats (kitchens)

✅ Also works on **Class A Fires**

Do NOT use on:

❌ Flammable liquids or gases

❌ Electrical fires

Clean Agent Type

Fire Extinguisher – Green Label

Use for:

✅ **Class A Fires** – Solid materials (paper, wood, cloth, etc.)

✅ **Class B Fires** – Flammable liquids (petrol, thinner, paint, etc.)

✅ **Class C Fires** – Flammable Gaseous fires (LPG, CNG etc.)

✅ **Class E Fires** – Electrical fires (computers, panels, servers, etc.)

Do NOT use on:

❌ Class D Fires – Combustible metals

❌ Class K/F Fires – Cooking oil/fat fires

Automated Fire Extinguisher

Ceiling mounted modular suppression system

Perfect for areas where human traffic is low and the chances of detecting a fire early mine these are available in powder variant (MAP90) and clean agent (HCFC 123 and FE36) and come 5kg and 10kg size.

HCFC= hydrochlroflurocarbon

FE = Hydrochlrocarbon

- Residue Free
- World class and CS
- A,B,C And E

FIRE EXTINGUISHING BALL

SAFE

No need to get close to the fire.
The ball will not self-ignite when shaken or damaged.
The outward driving force from activation of the ball does not harm human or environment.
Non-toxic to the environment. Fire Extinguisher Ball is made from human and environmentally friendly materials.

FAST AND EFFECTIVE

It activates within 5-10 seconds after contacting the fire.
When used together with two or more balls, it can suppress a large fire.

SELF ACTIVATING

The Fire Extinguisher Ball works automatically when in contact with fire.
Install within 30cms over any fire hazard.

ALARM

When the ball explodes, the built-in alarm goes off releasing an approximately 138-decibel noise.

LIGHTWEIGHT

Weighing at 1.3 Kg Approx, it is suitable for anyone, Women, Children and Elderly people.

EASY TO USE

No training required. Just throw the ball with one hand into the fire.

SPECIFICATIONS

Dimension : Sphere, Diameter 15cm
Gross Weight : 1.30 Kg Approx
Chemical Weight : 1.25 kg
Fire Extinguishing Agent : Non-Toxic MAP

FIRE TYPE

Fire Rating : 1A* , 5B* , C*
Container : Outer Layer of Pent Foam, about 11 mm thick shield by PVC film
Function : Flame Activated

LAUNCHER

The first extinguisher in the world that works on autopilot. Launcher is a revolutionary fire extinguisher that also double up as a modular suppression system.

- ❖Fight A/B/C and E class fire
- ❖Unique discharge mechanism
- ❖Self actuation
- ❖Quick and effective
- ❖Two heat sensor
- ❖Extinguisher + Modular suppression system sizes 4kg/6kg/9kg
- ❖Agent - MAP 90 (mono ammonium phosphate)
- ❖5 years warranty
- ❖Standards:- Virtually every ceasefire extinguisher has ISO 9001 and CE certification and conforms to ISI standards

AGENT	DESCRIPTION	DISADVANTAGES
DCP POWDER (Dry Chemical) Sodium bicarbonate	➢ Interrupts chemical reactions ➢ Sodium bicarbonate (baking soda) ➢ Very effective on Class B and C fires ➢ Not considered toxic	➢ Leaves a residue ➢ Obscures vision ➢ Not good on deep-seated Class A fires ➢ Absorbs moisture and may "cake" within container ➢ May be irritating ➢ Nozzle pressure may cause burning liquids to splash
ABC POWDER Multi-Purpose Dry Chemical Ammonium phosphate	Interrupts chemical reactions Ammonium phosphate Effective on Class A, B, and C fires Non-conductive	Obscures vision More irritating than ordinary dry chemical Nozzle pressure may cause burning liquids to splash
WATER	Removes heat Effective on Class A fires Inexpensive Plentiful Non-toxic	Conducts electricity May spread Class B fires Freezes in cold climates May carry pollutants as run-off water

AGENT	DESCRIPTION	DISADVANTAGES
Carbon Dioxide (CO2)	Reduces oxygen to less than 15% Effective on Class B and C fires No residue Relatively inert	Generally >35% concentration by volume required for total flooding system Toxic to humans at >4% by volume Not the best agent for smoldering deep-seated fires (maintain concentration for >20 minutes) Dissipates rapidly - allows reflash Has a cooling/chilling effect on some electronic components Vapor density = 1.5 (collects in pits and low areas)
Halon	➢ Interrupts reaction ➢ Effective on A, B,and C fires ➢ No residue ➢ No chilling effect on equipment.	➢ Toxic at > 10% ➢ Exposure effects unknown ➢ Decomposition in fire ➢ Vapor density ➢ Restricted production

Powder Based Vs Watermist Based Fire Extinguishers	
Powder Based Extinguishers	**Watermist Based Extinguishers**
Fights class A,B,C and Electrically Started Fires	Fights Class, A,B,C, F & Electrically Started Fires
Leaves Residue after putting out fire	Leaves no residue after putting out fire
Requires clean up of the place and surroundings after fire fighting	Does not require any clean up after putting out the flames.
Reduces visibility at the time of fire fighting	Does not reduces visibility at the time of fire fighting
Causes irritation to humans	Causes no irritation to humans
Causes suffocation in indoor environments	Causes No Suffocation in Indoor or outdoor environments
Damages sensitive equipment while putting out fire	Does not damage any sensitive equipment while putting out fire
High on toxicity	100% Non Toxic
Contains chemicals that may harm users and the environment	100% Chemicals free, Safe for Humans and Environment

CO2 Based Vs Watermist Based Fire Extinguishers	
CO2 Based Extinguishers	**Watermist Based Extinguishers**
Fights Class B & C Fires	Fights Class, A,B,C, F & Electrically Started Fires
Effective only in indoor environments (in the absence of wind, etc)	Effective in indoor and outdoor applications in both windy & non windy scenarios
Ineffective in vertical applications (fires in walls, towers, etc)	Vertical applications do not effect the fire fifgting effectiveness
Causes thermal shock on heated surfaces (machinery etc) due to cold discharge of the agent	Does not causes any thermal shock
Heavy weight of the extinguisher makes it diffcult to move and manevour in the fire zone.	Light weifht and portable makes it highly mobile and manevourable
Causes freeze burn due to extremely cold discharge	No problem like a freeze burn because agent discharges at room temperature.
Causes static charge / shock due to rapid transformation of the agent from liquid to gaseous state	No such problem is associated
Causes suffocation in indoor environments	Causes No Suffocation in Indoor or outdoor environments
Highly pressurised (upto 70 bar)	Low pressure, hence safer (10-15 bar)

Clean Agent Based Vs Watermist Based Fire Extinguishers	
Clean Agent Based Fire Extinguishers	**Watermist Based Extinguishers**
Fights class A,B,C and Electrically Started Fires	Fights Class, A,B,C, F & Electrically Started Fires
Causes irritation to humans	Causes no irritation to humans
Causes suffocation in indoor environments	Causes No Suffocation in Indoor or outdoor environments
Contains chemicals	100% Chemicals free, Safe for Humans and Environment
Have an element of Toxicity. Is Not 100% Non Toxic	100% Non Toxic

Fire Extinguisher Size

As per IS-15683:2018

i.	Powder type Extinguisher (DCP)	:- 5kg/10kg (Old model) 4kg/9kg (New model)
ii.	Powder type Extinguisher (ABC)	:- 1kg/2kg/4kg/6kg/9kg/25kg/50kg/75kg
iii.	Water type Extinguisher	:- 10ltr/50ltr(Old model) & 9ltr/45ltr (New model)
iv.	AFFF M. Foam type Extinguisher	:- 10ltr/50ltr(Old model) & 9ltr/45ltr (New model)
v.	CO2 type Extinguisher	:- 2kg/3kg/4.5kg/6.5kg/9kg/22.5kg
vi.	Clean Agent type Extinguisher	:- 0.5kg/1kg/2kg/4kg/6kg
vii.	Wet Chemical type Extinguisher	:- 2ltr/4ltr/6ltr
viii.	Water mist type Extinguisher	:- 4ltr/9ltr
ix.	Fire Ball (Automatic)	:- 1.3kg
x.	Modular type (Powder/Clean Agent) type Extinguisher	:- 2kg/5kg/10kg/15kg

Fire Extinguisher Uses as per different classes of Fire	
ABC POWDER TYPE FIRE EXTINGUISHER	CLASS A , B, C, E
DRY CHEMICAL POWDER TYPE FIRE EXTINGUISHER	CLASS B, C
CO2 TYPE FIRE EXTINGUISHER	CLASS B, C, E
AFFF M FOAM TYPE FIRE EXTINGUISHER	CLASS A, B
WATER TYPE FIRE EXTINGUISHER	CLASS A
CLEAN AGENT TYPE FIRE EXTINGUISHER	CLASS A, B, C, E
WET CHEMICAL TYPE FIRE EXTINGUISHER	CLASS F or K
MODULAR TYPE FIRE EXTINGUISHER	CLASS A, B, C, E
WATER MIST TYPE FIRE EXTINGUISHER	CLASS A, C
SPECIAL DRY CHEMICAL POWDER TYPE FIRE EXTINGUISHER	CLASS D

CLASSES OF FIRE AND FIRE EXTINGUISHER USE	
A CLASS	POWDER / AFFF M FOAM / WATER TYPE
B CLASS	CO2 / POWDER / AFFF M FOAM
C CLASS	AFFF M FOAM / CO2 / POWDER
D CLASS	POWDER (SPECIAL)
E CLASS	CO2 / POWDER / CLEAN AGENT
F CLASS	WET CHEMICAL

LIFE OF FIRE EXTINGUISHER

1) Powder Type Extinguisher – 10 Years
2) CO_2 Type Extinguisher – 15 Years
3) Foam Type Extinguisher – 10 Years
4) Water Type Extinguisher – 10 Years
5) Clean Agent Type Extinguisher– 10 Years

- ✓ Life of Extinguisher shall be considered from date of manufacture of extinguishers
- ✓ In case of failure in hydraulic pressure testing extinguisher shall be rejected immediately before the life time given above.

UNDERSTANDING FIRE RATING OF FIRE EXTINGUISHER

Fire Rating refers to the capacity or effectiveness of a fire extinguisher or fire-resistant material to handle a certain type, size, and intensity of fire for a specific period or under certain conditions.

It tells you:

- **What type of fire** it can control (Class A, B, C, etc.)
- **How much fire** it can extinguish (quantity/size)
- **How long** a fire-resistant material or system can withstand fire (in case of doors, walls, safes, etc.)

TYPES OF FIRE RATINGS:

Extinguisher Fire Rating (Performance-Based)

This rating is marked on fire extinguishers to define **how powerful** the extinguisher is against specific fire types.

Examples:

- **13A** – Can control a standard Class A fire of size "13"
- **55B** – Can extinguish 55 liters of flammable liquid fire (Class B)
- **C / Electrical Symbol** – Indicates suitability for electrical fires (no numeric rating)

Explanation:

- Higher the number → More powerful the extinguisher
- Given by **IS codes**, **EN3 standard**, or **UL ratings**

Fire Resistance Rating (Time-Based)

Used for **building materials**, **fire doors**, **walls**, **glass**, **vaults**, and **safes**.

Common Ratings:

- **30 Minutes (30 Min FR)**
- **60 Minutes (1 Hour FR)**
- **90 Minutes (1.5 Hour FR)**
- **120 Minutes (2 Hour FR)**

Indicates:

How long the item can **resist fire, heat, and smoke** before it fails structurally or allows fire to pass through.

Key Differences Between Fire Ratings:

Type	Used For	Units	Measures What?
Extinguisher Rating	Fire extinguishers	A/B/C, Numbers	How big a fire it can extinguish
Resistance Rating	Buildings, materials, structures	Minutes / Hours	How long material resists fire & heat

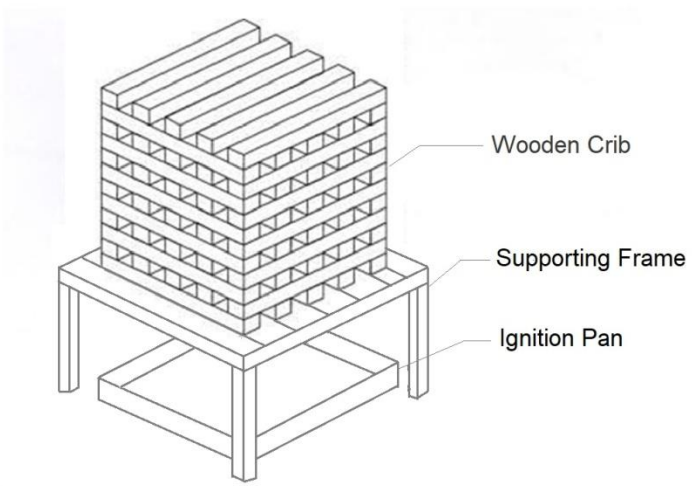
Summary:

Fire Rating Type	Example	Meaning
13A	Fire Extinguisher	Can extinguish a Class A fire of standard size 13
55B	Fire Extinguisher	Can extinguish a 55-liter flammable liquid fire (Class B)
1 Hour FR	Fire Door / Wall	Can resist fire for 60 minutes without failure
2 Hour FR	Safe / Wall	Can contain fire or protect contents for 2 hours

CLASS A FIRE RATING

The test-fire for class A fire test is created by igniting a crib made of pieces of wood of specified dimensions and quantities. A wooden crib is supported with angle irons or appropriate supports, placed on concrete blocks or support frames so as the height of the supports above the floor is 400 ± 10 mm.

Below the wooden crib on the floor ignition pan is placed. The ignition pan is filled with an appropriate volume of fuel and sufficient water as specified. Fuel is ignited which triggers the fire in the wooden crib. Fire is allowed to burn until its mass is reduced to wooden crib mass is reduced to 55 ± 2 percent of its original mass, it approximately takes 6 min to 10 min. Then discharge of the extinguisher is applied to the test fire, by the operator who needs to cover all sides of the crib.



Class A Test fires shall be regarded as extinguished if there are no flames visible 3 min after the complete discharge of the extinguisher.

Class A Rating	Number of pieces of wood	Dimension of Wood	Arrangement of Pieces of wood
1A	72	500 x 39 x 39	12 layers of 6 pieces of wood
2A	112	635 x 39 x 39	16 layers of 7 pieces of wood
3A	144	735 x 39 x 39	18 layers of 8 pieces of wood
4A	180	800 x 39 x 39	20 layers of 9 pieces of wood
6A	230	925 x 39 x 39	23 layers of 10 pieces of wood

CLASS B FIRE RATING

Fire extinguishers with a Class B rating are effective against flammable liquid fires. These can be fires involving flammable liquids i.e. petrol, diesel, oils, kerosene, paints or dyes, etc. Class B fires become increasingly problematic, dangerous, and tough to exterminate if not tacked in the initial stages.

Class B test-fires utilize a range of welded-sheet-steel cylindrical trays. Fuel used is commercial grade n-heptane and appropriate volume of water as specified in Table. Fire is allowed to burn freely for a period of 60 ± 5 s before operating the extinguisher. The extinguisher is discharged continuously or in intermittent bursts on the fire. To achieve a class “B” rating, the extinguisher must completely put out a fire.

Everyone must understand the fire ratings of the fire extinguishers. Having this knowledge can be crucial in the event of a fire, as you know which type of fire extinguisher you need to use on the type, class, and size of the fire.

Class B Rating	Volume of Liquid in Ltr	Dimensions of Test Fire Tray		
	One-third water and two-third n-heptane	Diameter mm	Internal Depth mm	Surface Area of Fire m²
8B	8	570 ± 10	150 ± 5	0.25
13B	13	720 ± 10	150 ± 5	0.41
21B	21	920 ± 10	150 ± 5	0.66
34B	34	1170 ± 10	150 ± 5	1.07
55B	55	1480 ± 15	150 ± 5	1.73
70B	70	1670 ± 15	150 ± 5	2.20
89B	89	1890 ± 20	200 ± 5	2.80
113B	113	2130 ± 20	200 ± 5	3.55
144B	144	2400 ± 25	200 ± 5	4.52
183B	183	2710 ± 25	200 ± 5	5.75
233B	233	3000 ± 30	200 ± 5	7.32

HOW TO USE A FIRE EXTINGUISHER

PULL SAFETY PIN

AIM AT THE BASE OF FIRE

SQUEEZE THE LEVER

SWEEP SIDE TO SIDE