SHREE GANESH ENTERPRISES
NEW DELHI · AMC MEP 24x7 · sge.org.in

DOC: SGE-EB-2026-09

E-BOOK 09 BEGINNER EDITION

Fire Extinguishers, Home & Office Safety

Classes of Fire, Choosing Cylinders, Inspection Tags and Mock Drills

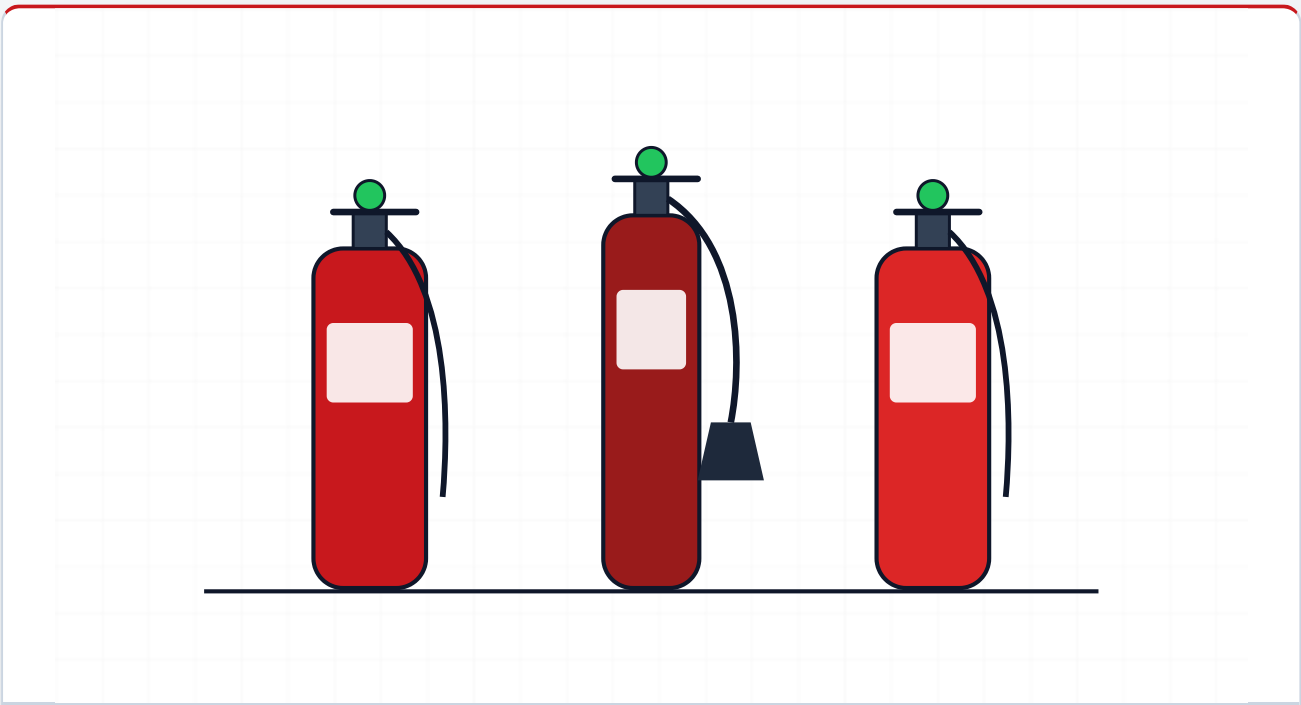


FIG 09.1 — ABC STORED PRESSURE, CO2 HORN & FOAM EXTINGUISHER CLASSES

SYLLABUS
10 Structured Chapters

CALCULATIONS
Worked SI Examples & Tables

SITE READY
Forms & Hinglish Glossary

Fire Extinguishers, Home & Office Safety

Classes of Fire, Choosing Cylinders, Inspection Tags and Mock Drills

An accessible, everyday safety manual for homeowners, office admins, schools, shops, and security teams covering classes of fire, IS 2190 portable extinguisher selection and mounting, the PASS operating technique, when to fight vs evacuate, kitchen/electrical/EV home hazards, gauge checks, and practical mock drill templates.

Intended Audience: Homeowners, RWA committees, office and shop managers, HR leads, school staff, security guards, and front-line workplace fire wardens.

Engineering Notice & Standards Policy

This publication is an educational and field-reference guide prepared by **Shree Ganesh Enterprises (SGE)**. It is **not** a substitute for a stamped project design, statutory approval, or the governing text of the National Building Code of India (NBC), Bureau of Indian Standards (BIS) codes, Indian Electricity Rules / CEA Regulations, or your State/Municipal Fire Service Bye-Laws. Standards are cited at document level; always verify the **current applicable edition**, manufacturer datasheets, and local amendments before design, procurement, testing, or certification.

Worked numerical examples across this book are illustrative engineering demonstrations. All design inputs, pipe friction factors, battery deratings, and protective clearances must be re-checked for project conditions by a competent licensed professional. High-voltage electrical testing, pump-room servicing, and gaseous fire suppression operations can be fatal if undertaken without qualified personnel, written Permits-to-Work, and Lockout-Tagout (LOTO) controls.

Roman-script Hindi/Hinglish site terms are included cleanly to assist execution teams; formal English engineering terminology governs contractual and code interpretations.

Copyright & Licensing

© 2026 Shree Ganesh Enterprises (SGE). All rights reserved. No part of this manual may be reproduced, redistributed, or resold publicly without written authorization. Licensed strictly for purchaser and internal engineering team reference.

Publisher: Shree Ganesh Enterprises (SGE) — AMC MEP 24x7 | **Web:** sge.org.in | **Support:** support@amcmep.in

Contents

01 Chapter 1: Fire Behaviour for Everyone and Fire Classes

02 Chapter 2: Extinguisher Types, Colour Bands and Suitability Matrix

03 Chapter 3: Selection, Sizing, Mounting Height and Travel Distance

04 Chapter 4: Step-by-Step Operation (PASS) and Fight vs Evacuate Rules

05 Chapter 5: Monthly Visual Inspection, Pressure Gauges, Refilling and Hydro-Testing

06 Chapter 6: Room-by-Room Home Fire Safety (Kitchen, LPG, Bedroom, EV & Inverters)

07 Chapter 7: Office, Shop and Warehouse Practical Fire Hygiene

08 Chapter 8: Evacuation Planning, Emergency Signage and Fire Warden Roles

09 Chapter 9: Running a Mock Drill + Register and Drill Report Templates

10 Chapter 10: Quick-Reference Chart, FAQ and Hinglish Glossary

What You Will Learn

- Identify Classes A, B, C, D, Electrical (E), and Cooking Oil (F/K) fires cleanly before picking a cylinder
- Match Water, Foam (AFFF), ABC Powder, CO2, Clean Agent, and Wet Chemical cylinders without deadly mistakes
- Calculate practical cylinder placement counts, mounting heights, and exit travel distances
- Operate any cylinder correctly using the PASS technique — and follow the 'waste-bin rule' for safe evacuation
- Eliminate silent home and office fire traps: LPG leaks, kitchen oil pans, overloaded extension strips, and EV charging
- Perform monthly cylinder gauge inspections and run timed 4-minute office evacuation mock drills

Chapter 1: Fire Behaviour for Everyone and Fire Classes

Why Water Can Make Some Fires Explode

Many household injuries happen not from the original spark, but because someone panics and throws a bucket of water onto a burning frying pan or sparkling electric main board. Understanding **classes of fire** takes five minutes and saves lives.

Fire grows fast: a tiny wastebasket spark can fill an entire bedroom with thick toxic black smoke inside **3 to 4 minutes**. Never spend precious seconds searching blindly—know what burns and which cylinder matches it!

Fire Class	Burning Fuel Type	Everyday Home & Office Examples	Safe Extinguishing Medium	NEVER USE THIS!
Class A	Solid ordinary combustibles	Wood, paper files, curtains, sofas, cardboard cartons	Water, Foam, ABC Dry Powder	—
Class B	Flammable liquids & melting solids	Petrol, diesel, thinner, paint, wax, kerosene	Foam (AFFF), CO2, ABC/BC Powder	**NEVER Water Jet** (splashes burning fuel!)
Class C	Flammable gases	LPG cylinder leak, PNG pipe leak, CNG, acetylene	**Shut Gas Valve First!**, Dry Powder	Water (doesn't stop invisible gas cloud!)
Class D	Combustible reactive metals	Magnesium, sodium, potassium, fine titanium swarf	Special Metal Dry Powder (TEC / Class D)	**NEVER Water or CO2** (explosive reaction!)
Electrical (Class E concept)	Energised live wires & boards	MCB distribution boards, AC motors, UPS racks, laptops	CO2, Clean Agent, Dry Powder	**NEVER Water or Foam** (fatal electrocution!)
Class F / K	Deep cooking oils & fats	Restaurant fryers, heavy commercial ghee kadai	Wet Chemical extinguisher, Metal Lid	**NEVER Water** (violently erupts into grease fireball!)

NOTE

Classifications and cylinder color markings depend on BIS code **IS 2190** and **IS 15683** (Indian standards) alongside international EN/NFPA labels. Read the clear pictorial fuel icons directly printed on each cylinder front label and confirm with current BIS editions!

HINGLISH

Class of fire = aag kis cheez se lagi hai uski pehchan. Live electrical fire = chalti bijli ke taar ya board mein aag (yahan paani bilkul nahi daalna hai!).

Chapter 2: Extinguisher Types, Colour Bands and Suitability Matrix

Decoding What Sits Inside Every Cylinder

Walk down any office corridor and you may notice red cylinders carrying different coloured identification bands or nozzle tips. Don't look only at the outer red paint—read the **Agent Name** and **Black / Cream / Blue / Red label**:

Extinguisher Agent Type	Distinct Physical Clue on Site	Suitable Fire Classes	Key Field Pros & Cons
Water / Water Mist	Plain metal nozzle / wide lever; **Red label**	**Class A only** (Wood, paper)	Cheap, clean cooling; **deadly on live wires/oil!**
Mechanical Foam (AFFF)	Long aerated foam aspirating horn; **Cream label**	**Class A & B** (Liquid spills)	Forms smothering film over diesel/petrol; conducts electricity!
ABC Dry Chemical Powder (MAP)	Narrow conical tip nozzle + pressure gauge; **Blue label**	**Class A, B, C & Electrical**	Best multi-purpose starter unit! Leaves thick sticky powder cleaning mess on servers
Carbon Dioxide (CO2)	**NO pressure gauge!** Thick wide hard black plastic flare horn; **Black label**	**Class B & Electrical**	Zero residue on servers/panels! **Watch out: freezes bare hands (hold insulated grip!), suffocates tiny sealed rooms!**
Clean Agent (e.g., HFC / FK gas)	Pressure gauge + metal narrow nozzle; **Green/Teal label**	**Class A, B & Electrical**	Best clean protection for server racks & medical scanners; zero dust, safe hold
Wet Chemical	Long stainless lance spray wand; **Canary Yellow label**	**Class F/K Kitchen Oils** + A	Converts hot cooking grease rapidly into cool non-flammable foam soap layer!

HINGLISH

Pressure gauge = cylinder ke upar laga chhota dabav meter (CO2 cylinder mein yeh meter nahi hota—use wajan tol kar check karte hain). Horn = CO2 cylinder ke aage laga kaala bhopu.

Chapter 3: Selection, Sizing, Mounting Height and Travel Distance

Where Cylinders Belong (Not Hidden Behind Filing Cabinets!)

Even the cleanest ABC cylinder fails if locked inside a pantry cupboard or too heavy for a receptionist to lift off high hooks!

- **Ergonomic Mounting Height:** Hang top valve handle at comfortable chest/shoulder level (**~1.0 m to 1.2 m** above floor for heavy 6–9 kg units, slightly higher ~1.5 m max for light 2–4 kg cylinders; bottom clear of floor mopping water!).
- **Exit Path Placement:** Mount directly beside exit doors and corridors so someone grabs a cylinder **with their back safely toward the exit**, never trapped deep inside a dead-end room!

- **Clear Photoluminescent Sign Directly Above:** Visible cleanly over office partition cubicles.

WORKED EXAMPLE 1

Office Floor Extinguisher Placement Count (Illustrative). Assume an open commercial office measures **800 m2** (`40 m x 20 m`), plus a dedicated electrical LT panel room and small hot tea/fryer pantry. Using an illustrative office planning assumption of ~200 m2 general area per multi-purpose unit and <= 15 m travel distance (verify exact table numbers against **IS 2190** / local NOC rules!):

General Office Area Units = `800 m2 / 200 m2 = 4 units` of **4 kg or 6 kg ABC Dry Powder** spaced near both exit doors and central columns. Add Specialized Electrical Hazard: **2 x 4.5 kg CO2** cylinders mounted directly outside/inside the Electrical DB panel bay. Add Kitchen/Pantry (if commercial fryer operates): **1 x Wet Chemical** (or ABC/Clean Agent for light induction pantry) + 1 Fire Blanket. Result: Total **6 to 7 well-positioned units** covering every hazard without leaving blind dead zones!

Chapter 4: Step-by-Step Operation (PASS) and Fight vs Evacuate Rules

Learn PASS Before You Ever Unpin a Cylinder

Every portable extinguisher operates cleanly using four intuitive words (**P-A-S-S**):

1. **P — PULL** the metal safety pin breaking the thin plastic tamper seal cleanly (twist gently first to snap seal!).
2. **A — AIM** the rubber hose/horn strictly at the **BASE OF THE FLAMES** (shooting high smoke flames achieves nothing—attack the fuel surface!), standing ~2 to 3 metres back with an open exit cleanly behind you!
3. **S — SQUEEZE** the upper carrying lever down firmly while holding the base steady.
4. **S — SWEEP** the nozzle smoothly side-to-side across the burning fuel edge until flames die—then step slowly backward watching closely for hot re-ignition!

When NOT to Fight — Evacuate Immediately!

WARNING

Use the **"Waste-Paper Bin Rule"**: If a fire has grown larger than an ordinary office dustbin, fills the ceiling with thick dark choking smoke, blocks your exit behind you, or involves pressurized LPG cylinders venting flames -> **DO NOT TRY TO BE A HERO! Drop the cylinder, shout "FIRE!", hit the nearest Manual Call Point (MCP), shut the room door gently behind you to slow smoke, and EVACUATE immediately via stairs!** Never hold bare metal CO2 discharge horns without insulated gloves—sub-zero dry ice causes instant severe frostbite burns!

HINGLISH

PASS formula = Pin kheenchho, Nishana base par lagao, Handle dabao, Aur Jhadu ki tarah ghumao. Waste-bin rule = agar aag ek dustbin se badi ho chuki hai toh ladne ke bajaye turant bahar bhaago!
