

FIRE FIGHTING PROCEDURES IN GODOWNS / WAREHOUSES



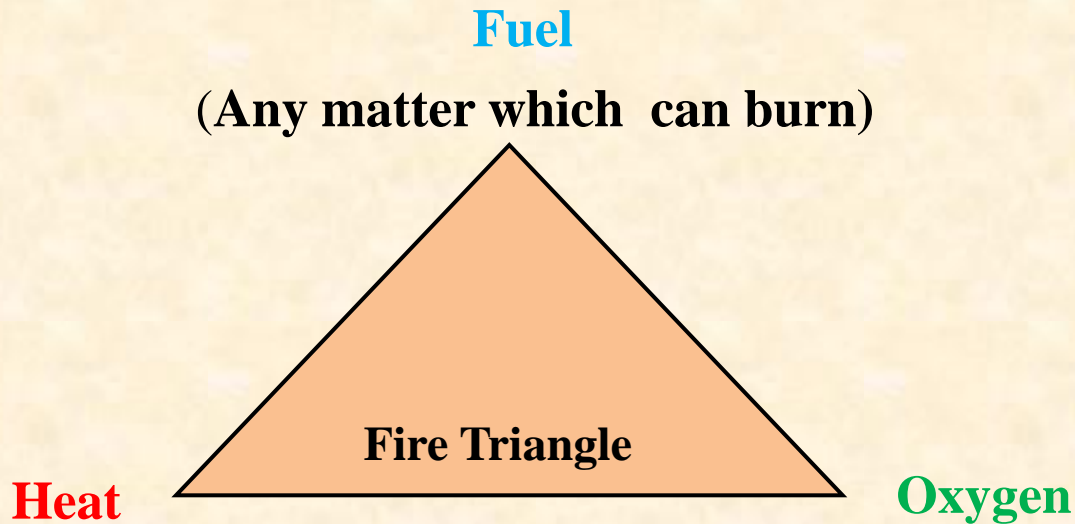
तकनीकी अनुभाग
छ०ग० स्टेट वेयरहाउसिंग कार्पोरेशन
नवा –रायपुर (छ०ग०)

What is Fire ?

- Fire is any combustion intense enough to emit heat and light.
- Fire may broke out any moment if adequate preventive arrangements are not made and may cause immense loss to the stocks.
- The majority of the commodities handled and stored in the godowns and warehouses such as food grains, fertilizers, oilseeds, fibres etc. all catch fire immediately.
- If the commodities are of explosive nature such as petrol, diesel and LPG then risks due to the fire and the losses are quantitative more.
- The Bureau of Indian Standards has classified Fires according to the nature of materials on Fire (IS: 2190-1971).

FIRE TRIANGLE

In order to have Fire, the Fuel, Oxygen and the Heat / Ignition Temperature must be present.



Ignition temperature is the temperature at which the articles catch fire or ignite.

Oxygen is a gas abundantly present in the air and it supports combustion

If any of the factors is omitted there will be No fire

Steps to prevent Fire

- Prepare layout and the construction of building to minimize the fire risks.
- Create enough fire consciousness and awareness among staff.
- Prohibit smoking, lightening of match sticks and use of naked light in the godown.
- Never keep waste papers, torn pieces of gunny bags, old mats, unserviceable polythene liners in the godowns.
- Avoid dumping of fire hazards materials in and around the godowns.
- Provide perfect and safe electric wiring and circuit system in the godown.
- Check the godown before locking to ensure that no cigarette ends etc, are lying in the godown.
- Store extra hazardous and hazardous goods separately.
- Equip godown with appropriate and duly charged Fire Extinguishers.
- Keep water and sand buckets ready in each godown.
- Display the telephone number and address of Fire Service Station at the godown.

Prevention is Better than Cure.

Fundamental Principles Of Fire Extinguishment.

(A) STARVATION:

This means reduction or removal of unburnt fuel from fire . The separation of fuel will limit the amount of fuel which can contribute to the growth of fire. It is separation of the fire from the fuel.

(B) COOLING:

This means the cooling of fuel below the ignition temperature. Water is the most effective agent for cooling.

(C) SMOTHERING:

This means cutting of the supply of air or oxygen from the fuel. Fire can not continue if the supply of air is cut off.

Types Of Fire Extinguishers

Class Of Fire	<u>Description</u>	Extinguisher Type
A.	Fires involving ordinary combustible materials like food grains, wood, paper textiles etc. where the cooling effect of water is essential for the extinguishment of Fire.	Water Soda Acid Type, Gas Cartridge Type
B.	Fires in flammable liquids like Oils, Solvents, Petroleum products, Varnish, Paints etc. where a blanketing effect is essential.	Foam, Carbon dioxide. Dry powder
C.	Fires involving gaseous substances under pressure where it is necessary to dilute the burning gas at a very fast rate with an inert gas or powder.	Carbon dioxide, Dry Powder.
D.	Fires involving metals like Magnesium, Aluminum, Zinc, Potassium etc, where the burning metal is reactive to water and which require special extinguishing media or technique.	Special Dry Powders
E.	Fires involving electrical equipment's where the electrical non-conductivity of the extinguishing media is of first importance.	Carbon dioxide, Dry powder

FIRE EXTINGUISHERS At A GLANCE

1. WATER EXPELLING FIRE EXTINGUISHERS : SODA ACID TYPE

- Soda acid type is the commonly used water expelling Fire Extinguisher.
- Water acts as an extinguishing agent which is released in the form of a jet by means of pressure from the extinguisher.
- It has a bottle containing Sulphuric Acid lodged in cage just below the mouth inside the cylinder and the container or body of the extinguisher contains Sodium bicarbonate solution.
- In order to operate the extinguisher its guard cap is removed and the plunger is struck against a hard surface like floor. As a result, the acid bottle is broken and Sulphuric acid reacts with Sodium bicarbonate solution releasing Carbon dioxide.
- The Carbon dioxide generated creates pressure which forces water out of the extinguisher. The jet of water from the nozzle is directed on the base of fire to extinguish it.
- The Carbon dioxide released acts only as a propellant while water extinguishes the fire by cooling effect.
- The water expelling extinguishers are used mainly in class 'A' Fires. These should not be used for class 'E' Fires involving electrical equipment's till the equipment is de-energised.

GAS CARTRIDGE TYPE

- The Gas Cartridge type Extinguisher consists of a Cylindrical body, an Outlet connection with a Sealing device (disc).
- In Gas Cartridge operated units, the extinguishing media is stored in the non pressurized cylinder while the propellant (typically Carbon dioxide gas or Nitrogen) is stored in a separate cartridge located inside the cylinder body.
- A gas cartridge needs to be activated to pressurize the Fire Extinguisher.
- It can be operated by using the PASS method.

WATER CO2 पानी और कार्बन डाईऑक्साईड



9, 50, 150
LITRES / लिटर
IS : 940
IS : 13385

**HOLD UPRIGHT,
REMOVE SAFETY CLIP**
अग्निशामक सीधा खड़ा करके
सुरक्षा क्लिप निकालिये।



STRIKE KNOW
नॉब पर जोर से प्रहार किये।



DIRECT JET AT THE BASE OF FIRE
सीधे आग के मूल स्थान पर पानी का फवारा मारीये।

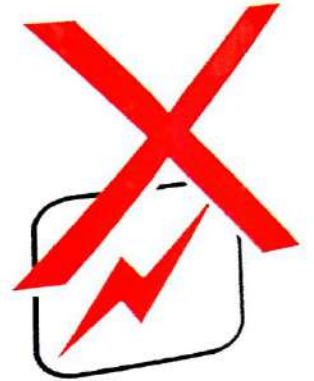


**WATER
COOLING**



GAS CARTRIDGE TYPE & SQUEEZE GRIP V

SUITABLE CLASSES OF FIRE



TYPE 'A' FOR
USE ON PAPER
WOOD CLOTH
PLASTICS ETC

TYPE 'B' FOR
USE ON PETROL
OIL PAINTS, SPIRIT
CHEMICALS ETC

TYPE 'C' FOR
USE ON COOKING
& WELDING GAS,
ELECTRICAL FIRE ETC

OPERATING INSTRUCTIONS

KEEP THE EXTINGUISHER
UPRIGHT, UNROLL HOSE.



PULL OUT SAFETY CLIP AND
AIM DISCHARGE HORN AT THE
BASE OF FIRE.



PRESS SQUEEZE GRIP
A DIRECT THE JET
TOWARDS THE NEAR
EDGE OF FIRE, WITH
A RAPID SEEPING
MOTION.



INSPEC

undamag

2. DRY POWDER TYPE FIRE EXTINGUISHERS

- The gas cartridge type dry powder extinguisher contains chemical powder in the main shell and Carbon dioxide gas under high pressure in sealed cartridge.
- When operated, the cartridge is broken allowing the Carbon dioxide gas to escape to the main shell and push out the powder in the form of fog.
- In order to operate the extinguisher, the safety clip is removed and the knob on the cap of extinguisher is struck to actuate the piercing mechanism which in turn breaks the sealing disc of the cartridge.
- The stream of the powder should be directed at the base of the flame.
- This type of extinguishers are mainly recommended for gas fires, petroleum fires and textile fires etc.
- Special dry powders containing mixture of Sodium, Potassium and Barium are useful in extinguishing fires in metals such as Sodium and Magnesium.

DRY CHEMICAL POWDER

सूखा रासायनिक पावडर



1, 2, 5, 10, 25, 50,
75, 150 KGS./ कि.ग्र.
IS: 2171, IS: 10658,
IS: 11833

**HOLD UPRIGHT,
REMOVE SAFETY CLIP**
अग्निशामक सीधा खडा करके
सुरक्षा क्लिप निकालिये।



STRIKE KNOB
नॉब पर जोर से प्रहार किये।



DIRECT JET AT THE BASE OF FIRE
सीधे आग के मूल स्थान पर पावडर का फवारा
मारीये।



**DRY CHEMICAL POWDER
BLANKETING**



DRY POWDER TYPE

GAS CARTRIDGE TYPE & SQUEEZE GRIP

SUITABLE CLASSES OF FIRE

A



TYPE 'A' FOR
USE ON PAPER
WOOD CLOTH
PLASTICS ETC

B

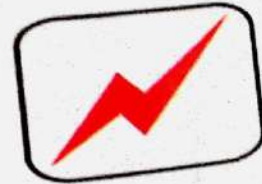


TYPE 'B' FOR
USE ON PETROL
OIL PAINTS, SPIRIT
CHEMICALS ETC

C



TYPE 'C' FOR
USE ON COOKING
& WELDING GAS,
ELECTRICAL FIRE ETC



OPERATING INSTRUCTIONS

KEEP THE EXTINGUISHER
UPRIGHT, UNROLL HOSE.



PULL OUT SAFETY CLIP AND
AIM DISCHARGE HORN AT THE
BASE OF FIRE.



PRESS SQUEEZE GRIP
A DIRECT THE JET
TOWARDS THE NEAR
EDGE OF FIRE, WITH
A RAPID SEEPIING
MOTION.



3. FOAM TYPE FIRE EXTINGUISHERS

- Foam type extinguishers consists of two containers the inner and the outer.
- The outer container contains solution of Sodium bicarbonate to which a foam stabiliser is added and the inner container (a long metal tube) has solution of Aluminium sulphate.
- In order to operate, the operator pulls the knob of extinguisher and turn it over so that the two solutions inside get mixed and the foam gets expelled from the extinguisher.
- The jet of foam is directed at the far end of the liquid under fire with a gentle sweeping movement to drop down the foam on the surface of the liquid.
- This type of extinguisher is used to fight class 'B' Fires involving flammable liquids like Oils, Solvents, Petroleum products, Varnishes, Paints etc,
- The foam expelled forms a blanket over the surface of liquid on Fire and extinguishes the Fire by smothering.

MECHANICAL FOAM

यांत्रिक झाग



9, 50, 150
LITRES / लिटर
IS: 10204,
IS: 13386

**HOLD UPRIGHT
REMOVE SAFETY CLIP**
अग्निशामक सीधा खड़ा
करके सुरक्षा पिन निकालिये।



STRIKE KNOB
नॉब पर जोर से प्रहार किजिये।



DIRECT JET AT THE BASE OF FIRE
सीधे आग के मूल स्थान पर फोम का फवारा
मारीये।



**FOAM
BLANKETING**



4. CARBON DIOXIDE TYPE FIRE EXTINGUISHERS

- Carbon dioxide extinguisher contains Carbon dioxide in the cylinder as liquid under pressure.
- To operate, the safety pin is removed or the valve is unscrewed depending upon the design. Carbon dioxide is released from a discharge horn through a high pressure flexible hose.
- The jet of Carbon dioxide should be seated at the base of fire, starting at one edge and sweeping across the surface of burning material. When using on fires in electrical equipment's the current should be switched off before directing the jet or horn at fire.
- Carbon dioxide released acts as an effective extinguishing agent. It reduces the oxygen content of air to a point where combustion cannot continue.
- This type of fire extinguisher is used to fight fires in Oils, Petroleum products, Gaseous substances under pressure and also on Electrical and Electronic apparatus.

WATER CO2 पानी और कार्बन डाईऑक्साईड



9, 50, 150
LITRES / लिटर
IS : 940
IS : 13385

HOLD UPRIGHT,
REMOVE SAFETY CLIP
अग्निशामक सीधा खड़ा करके
सुरक्षा क्लिप निकालिये।



STRIKE KNOW
नॉब पर जोर से प्रहार किजिए।



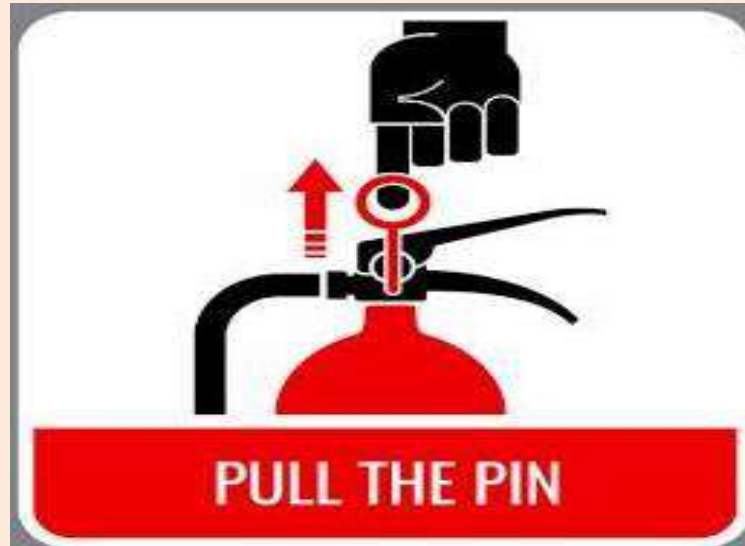
DIRECT JET AT THE BASE OF FIRE
सीधे आग के मूल स्थान पर पानी का फवारा मारीये।



WATER
COOLING



SAFE USAGE OF FIRE EXTINGUISHER



HOW TO USE A FIRE EXTINGUISHER



Remember the **PASS** word (Pull-Aim-Squeeze-Sweep)

P

PULL

Pull the pin



Break seal and test extinguisher



A

AIM

Pull at the base of fire



Ensure you have a means of escape



S

SQUEEZE

Squeeze the operating handle



To operate extinguisher and discharge the agent



S

SWEEP

Sweep from side to side



Completely extinguish the fire



Principle of Fire Fighting (R-Rescue, A-Alarm, C-Confine, E-Extinguish) evacuate

अग्निशामक यंत्र की

P

पिन
खींचो

Pull



A

लक्ष्य
साधो

Aim



S

हैन्डल
दबाओ

Squeeze



S

आग पर
छिड़को

Swipe



आग को हराओ

DO'S OF FIRE MANAGEMENT

Keep godowns neat and clean.

Build stack strictly to stack plan.

Ensure “**No Smoking**” & display “**No Smoking Boards**”.

Arrange periodical check up of electrical installation.

Observe the local fire regulations.

Ensure fire preparedness by maintaining First Aid and Fire Fighting Equipment's.

Keep air inlets and windows free from obstructions.

Maintain contacts with the nearest Fire Service Station.

Conduct periodical mock fire drill.

IN CASE OF FIRE:

Raise fire alarm

Use appropriate Fire Extinguishers

Inform nearest Fire Service Station

Ensure safety of inmates

Inform your senior officers

Inform Police for security

Render First Aid to the injured

Rush them to the nearest Hospital, if necessary.

DON'TS OF FIRE MANAGEMENT

Do not store / keep mats & gunnies in loose condition.

Do not store hazardous and non-hazardous goods together.

Do not carry naked fire lamp or lighted candles in the premises.

Do not block the alleyways and haulages.

Do not allow loose or temporary connections or pendent electric lights.

Avoid using oversize fuses.

Do not allow accumulation of wastages or growth of grass in the vicinity.

Do not misuse of fire extinguishers, hydrants and buckets.

Do not use water on fires of electrical origin or on flammable liquid fires.

Do not keep the Fire Fighting Equipment's inside the godowns.

Important Points To Remember

- The Fire Brigade must be called on outbreak at the earliest, and the alarm raised.
- Attempt to use a Fire Extinguisher should be made only if it is safe to do so.
- If the fire shows the sign of going out of control, it is best not to try to use an Extinguisher.
- To fight a fire, check up the position where access to the fire is unrestricted but where a quick and safe retreat is possible.
- In an indoor fire, stay close to the door, outdoors stay on the upwind side of the fire.
- A crouching posture will minimise the effects of smoke and heat. It will also help to approach close to the fire.
- Care should be taken to ensure that fire is completely extinguished and that it is not left smouldering.

SELECT THE SUITABLE TYPE OF FIRE EXTINGUISHER

अग्निशामक यंत्र का सही उपयोग कीजिए।



TYPE OF FIRE EXTINGUISHER अग्निशामक यंत्र के प्रकार		WATER CO2 पानी और कार्बन डाईऑक्साइड	DRY CHEMICAL POWDER सूखा रासायनिक पावडर	CARBON DIOXIDE कार्बन डाईऑक्साइड गैसवाले	MECHANICAL FOAM यांत्रिक झाग	ABC DRY POWDER STORED PRESSURE अ. बी. सी. सूखा पावडर	FM-200, NAFS-III, HALOTRON, INERGEN एफ एम २००
CAPACITY & ISI SPECIFICATION		9, 50, 150 LITRES / लिटर IS : 940 IS : 13385	1, 2, 5, 10, 25, 50, 75, 150 KGS. / कि. ग्र. IS : 2171, IS : 10658, IS : 11833	2, 3, 4.5, 6.5, 9, 22, 45 KGS. / कि. ग्र. IS : 2878	9, 50, 150 LITRES / लिटर IS : 10204, IS : 13386	500 gr. 1, 2, 5, 10 KGS. / कि. ग्र. IS : 13849	1.25, 2, 2.5, 4, 5, 6.5 KGS. / कि. ग्र.
METHOD OF OPERATION प्रयोग करने का तरीका							
EXTINGUISHING AGENT PRINCIPAL OF EXTINGUISH		WATER COOLING	DRY CHEMICAL POWDER BLANKETING	CARBON DIOXIDE GAS DISPLACES OXYGEN	FOAM BLANKETING	ABC POWDER BLANKETING	FM-200, NAFS-III, HALOTRON BINDS OXYGEN
CLASS OF FIER	SUITABLE IN FIRE INVOLVING आग के लिए उपयोगी।	A	BC	BC	A B	A B C	A B C
SOLID	ORGANIC MATERIAL, PAPER, WOOD, CLOTHS, RUBBER & PLASTICS FIRE ETC. कागज, लकड़ी, कपड़ा, प्लास्टिक, आदि आग के लिए उपयोगी।	✓ SUITABLE / सही	✓ SUITABLE / सही	✓ SUITABLE / सही	✓ SUITABLE / सही	✓ SUITABLE / सही	✗ However, can be used on small surface fires. छोटी आग में इसका उपयोग किया जा सकता है।
LIQUID	FLAMMABLE LIQUID, PETROL, PAINTS, SPIRITS, THINNER & OIL FIRE ETC. ज्वलनशील द्रव्य पेट्रोल, रिपिड, पेन्ट, थिनिर, तेल आदि आग के लिए उपयोगी।	✗ UNSUITABLE / गलत	✓ SUITABLE / सही	✓ SUITABLE / सही	✓ SUITABLE / सही	✓ SUITABLE / सही	✓ SUITABLE / सही
GAS	FLAMMABLE COOKING & WELDING GASES, ELECTRICAL FIRE ETC. प्लाताग्राही गैसों और बिजली के उपकरण आदि आग के लिए उपयोगी।	✗ UNSUITABLE / गलत	✓ SUITABLE / सही	✓ SUITABLE / सही	✗ UNSUITABLE / गलत	✓ SUITABLE / सही	✓ SUITABLE / सही
METAL	FLAMMABLE METALS SODIUM, MAGNESIUM, POTASSIUM ETC. प्लाताग्राही धातुएँ सोडियम, मैग्नीशियम, पोटैशियम आदि आग के लिए उपयोगी।	✗ UNSUITABLE / गलत	✓ With Special Powder can be used. परन्तु स्पेशल पावडर का ही उपयोग करें। SUITABLE / सही	✗ UNSUITABLE / गलत	✗ UNSUITABLE / गलत	✗ UNSUITABLE / गलत	✗ UNSUITABLE / गलत
ELEC	ELECTRONICS & ELECTRICAL APPLIANCES. इलेक्ट्रॉनिक और बिजली के उपकरण आदि आग के लिए उपयोगी।	✗ UNSUITABLE / गलत	✓ SUITABLE / सही	✓ SUITABLE / सही	✗ UNSUITABLE / गलत	✓ SUITABLE / सही	✓ SUITABLE / सही

ASK FOR ANYTHING & EVERYTHING IN FIRE PROTECTION & SAFETY

Decorative - 10038 / 172

The information is for guidance only and should be confirmed from manufacturers, importers, consultants & suppliers. NOT VALID FOR PUBLICITY OF LITIGATION

Life Saving Instructions जीवन रक्षण हेतु अनुदेश
FIRE FIGHTING आग से सुरक्षा

Equipments to fight fire आग बुझाने के साधन



Blanket कम्बल



Water जल



Fire Extinguishers अग्निशामक



Sand bucket and bags रेत से भरी बाल्टी व बोरी

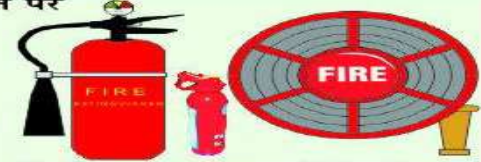
When a building catches Fire भवन में आग लगने पर



Call Fire Station immediately at 101, तुरंत 101 पर फोन कर दमकल केंद्र को सूचित करें।



1. Stay calm शांत रहें।
2. Raise the fire alarm अग्नि-संकेतक का प्रयोग करें।
3. Switch off the electrical mains of the building भवन को बिजली को सप्लाई काट दें।



Use fire extinguishers available at hand अग्निशामक से आग बुझाने का प्रयत्न करें।



Move out through the nearest EMERGENCY EXIT in a queue quickly but do not push others. निकटतम आपात्काल निकास से तेजी से पंक्तिबद्ध होकर, बिना धक्का दिए भवन से शीघ्रता शीघ्र बाहर निकलें।



DO NOT USE LIFT. लिफ्ट का प्रयोग कदापि न करें।

Shut the door of the room कमरे का दरवाजा बन्द कर लें।

If trapped inside a building, move to a safer room यदि भवन में फँस जाएं तो किसी सुरक्षित कमरे में चले जाएं।



Open the window and shout for help कमरे की छिड़की खोल दें और सहायता के लिए पुकारें।

Place a blanket or a carpet against the bottom of the door to keep the smoke out. कोई कम्बल या दरी दरवाजे के नीचे लगाएँ जिससे कि धुआँ बाहर रहे।

Stay low as air is clearest at floor level नीचे रहें। तल पर हवा सबसे स्वच्छ होती है।

If a person catches fire किसी व्यक्ति के आग में झूलझने पर



1. Lie the casualty on the ground. प्रभावित व्यक्ति को जमीन पर लेटा दें।
2. Wrap him tightly in a non-flammable blanket उसे अदहक कम्बल में कसकर लपेटें।
3. Roll him to smother the flames आग बुझाने के लिए उसे जमीन पर गोल करें।
4. Then pour cold water on him. आग बुझाने के बाद उस पर ठंडा पानी डालें।
5. Cover the injured part and rush the casualty to a hospital. प्रभावित अंग को ढक कर रखें और घायल को तुरंत अस्पताल ले जाएं।



When a person is caught in smoke and is unconscious किसी व्यक्ति के धुएँ से मर्छित होने पर



Move the casualty away from danger, harmful gases, etc. मर्छित व्यक्ति को खतरनाक स्थान व हानिकारक गैसों से दूर ले जाएं।



Open all doors & windows to ensure free supply of fresh air to the casualty. छिड़कियों व दरवाजों खोल कर धुएँ व व्यक्ति के लिए शुद्धी व स्वच्छ हवा सुनिश्चित करें।

Instructions to use Fire Extinguisher अग्निशामक के प्रयोग के निर्देश



1. Remove the pin; twist it free and pull it out; पिन को निकालें; उसे गोल घुमाकर बाहर निकालें।
2. Aim the nozzle at the base of the fire; नुड को आग के तल पर निशाना लगाएँ।
3. Keeping your hands off the black cone (it gets very cold), press the lever. अपने हाथ को काले कोन से दूर रखें (यह बहुत ठंडा हो जाता है), उत्तोलक को दबाएँ।
4. When finished, get the extinguisher refilled. खत्म होने पर अग्निशामक को दोबारा भर कर रखें।

FIRE FIGHTING EQUIPMENTS

Fire Fighting Equipments & Safety Items

Hydrant System



Fire Alarm



Hose Reel



Smoke Detector



Sprinkler



Hose Box



Water Monitor



Fire Hose



Fire Man Axe



Fire Bucket



Helmet



Dust Mask & Hand Gloves



Safety Shoos



Hydrant accessories



Hydrant Blank Cap & Washers





प्राथमिक उपचार: जीवन रक्षण हेतु अनुदेश



प्राथमिक उपचार सामग्री



विषम स्थितियाँ



रक्त स्राव



सूक्ष्म जीव



**प्रबंधक (वै०भ० एवं गु०नि०)
तकनीकी अनुभाग
छ०ग० स्टेट वेयरहाउसिंग कार्पोरेशन
मुख्यालय, नवा-रायपुर (छ०ग०)**