

## **FIRE FIGHTING, SAFETY AND SECURITY:**

a. **Fire Fighting Equipment.** Due potential fire hazard onboard naval vessels in particular and other shore units in general, a large variety of fire fighting equipment is being used in PN. Details of some of the common equipment are as follows:

<b>S.NO</b>	<b>ITEM</b>	<b>DESCRIPTION/ SPECIFICATIONS</b>
(1)	AFFF FOAM (20 Ltr Drums)	AFFF liquid is used onboard ships and shore units for extinguishing liquid fire. Foam concentration 6% is required for onboard usage; whereas, 3% is required for the shore establishments.
(2)	Fire Fighting Suits and Gloves	These suits are made of fire retardant material and used by teams onboard ship for fighting the fire. They provide protection against fire and heat.
(3)	Anti Flash Hood	These hoods are being used to safeguard face against heat and flash. These should be Flame proof proban treated in white colour.
(4)	Gloves(Fire Fighter)	They are made of Leather with NOMEX lining and are used for fire fighting.
(5)	Rubber Boots	Different sizes of boots made up of synthetic rubber material are used for countering fire & flooding incidents.
(6)	Cement Rapid Hardening	Rapid hardening cement is used onboard ship to patch up holes/ cracks in under water hull.
(7)	Smoke Curtains	These curtains are made up of Fabric flame retardant, 1.2 m wide and 60 m long. These are used in combination of Flame Retardant luminous sheeting, roll 150 mm wide and 45 m long.
(8)	Fire Blanket	Fire blankets are made up of Silica fabric, 1.6 mm thick 910 mm wide, 10 m lengths and are used for protection against Class F fire (in deep fat fryers).
(9)	Soft Wood Planks, Wedges and Plugs	A large number of Softwood planks, Wedges and Plugs are used for damage control and leak stopping / shoring of varying sizes and shapes (e.g. Square, rectangular, circular etc).
(10)	Fire Extinguishers	Different types of fire extinguishers are used in PN including: (a) 2 Kg CO <sub>2</sub> Fire Extinguisher. (b) 9 Ltr Stored Pressure Extinguisher (AFFF). (c) Stored Pressure Extinguisher

		<p>(Dry Powder) (SPE (DP)).</p> <p>(d) Marinised 2 kg Dry Powder Extinguisher.</p> <p>(e) 6 Ltr Wet Chemical Extinguisher</p>
(11)	Fire Hydrants	These are fitted to the fire-main system to provide water for fire fighting. Each hydrant consists of a screw down or single-action lever operated control valve controlling one or two outlets which should be blanked by caps when not in use.
(12)	Fire Hoses	Impermeable fire hoses are used for fire fighting which vary in length from 2 to 18 m. These are used in 2 x different sizes i.e. 50 mm in diameter for general use and 70 mm diameter for use with FB10X foam branch pipes and fixed inline inductors on flight decks and in hangar.
(13)	Fire Nozzles	Two types of hand-held nozzles are being used. These are Fire-fighter Nozzle and Water wall Nozzle. Turning of fire-fighter nozzle to one eighth of a turn provides a 2 m flat disc for personal protection. A further turn of one eighth of a turn to the right produces a 60° ragged spray, which is used for fighting fires. The output (flow rate) from a fire-fighter nozzle ranges from 10 – 17 m <sup>3</sup> /hr at 100 PSI. Whereas, Water wall nozzles are used to provide protection to fire-fighters. Their output ranges from 15.5 to 44.3 m <sup>3</sup> /hr at 100 PSI.
(14)	Extended Duration Breathing Apparatus (EDBA)	EDBA is a positive pressure, first-breath activated, lightweight, low maintenance set, fitted with a 9 Ltr air cylinder (free air capacity 2430 Ltrs) capable of being charged to 300 bar. The set comprises a one-size facemask with a net head harness, an ergonomically designed back plate with a comfortable flame retardant harness, a lightweight composite air cylinder, a high pressure reducing valve, a warning whistle and a pressure gauge. The facemask assembly is fitted with an oro-nasal mask, an exhalation valve incorporating a speech diaphragm, and an automatic first-breath operated positive pressure demand valve. The demand valve is designed to be re-set by pressing the black rubber re-set button (on the demand valve).

(15)	Emergency Escape Breathing Device (EEBD)	The EEBD is a one-shot, short duration re-breathing set that provides respiratory protection for personnel escaping from a toxic or smoke-filled atmosphere. It is in orange coloured plastic case and comprises of mouthpiece, nose clip, neck strap, an oxygen cylinder, a breathing bag and a face shield.
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b. **Armoured Plating Vehicles / Armoured Plated Vehicles.** A large number of armoured plated vehicles are being used in PN. Moreover, a large number of vehicles are also being converted / protected with armour plating.

a. **Personal Protection Equipment (PPE).** PPE includes Bullet Proof Helmets, Bullet Proof Jackets, and Bullet Proof Vests etc. These are being used in various sizes.

b. **Bulk and Trace Explosive Detectors.** These are being used based on different detection technologies available in the market.

c. **Luggage / Personnel Scanning Systems.** Different types of luggage / personnel scanning systems are used commensurating with latest trends of industry.

d. **Binoculars.** Various types of binoculars are used in PN. These range from normal day use binocular to Night Vision Goggles and Thermal Night Vision (NVDs / NVGs) etc.

e. **Communication Jammers.** Various types of jamming equipment is used in PN covering UHF/VHF, 2G, 3G, 4G communication for mobiles and other wireless communication equipments.

f. **Personnel / Vehicle Access Control System.** Various types of personnel and vehicle access control systems are used. These systems also include biometric system for better security.

j. **Intrusion Detection System.** Various intrusion detection systems are used based on e-fence, optical or movement detection sensors.

k. **CCTV Systems.** Different types of CCTV systems are used for indoor / outdoor, 24/7 surveillance / monitoring. Some of these systems are equipped with motion sensors.