Laboratory	**UL India Private Limited, UL-Jain Fire Laboratory, Jain University Global Campus, Jakkasandra, Kanakpura Taluk, Ramanagara Dist., Karnataka**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Certificate Number	**TC-8159**	**Page 1 of 6**	
Validity	**30.11.2018 to 29.11.2020**	**Last Amended on --**	

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		CHEMICAL TESTING		
I.	**FIRE FIGHTING EQUIPMENTS & ACCESSORIES**			
1.	**Aqueous Film Forming Foam (AFFF), Protein Foam, Film Forming Fluoro Protein & Synthetic Foam**	Sedimentation	IS 4989 Clause 3.1	Qualitative
		pH	IS 4989 Annex A; ICAO Doc 9137-AN/898, Part 1, Fourth Edition Chapter 8, Section 8.1.5	1.00 to 14.00
		Specific Gravity	IS 4989 Annex B	0.5 to 1.50
		Miscibility	IS 4989 Annex C	Qualitative
		Pour Point	IS 4989 Annex D	-30 °C to 30 °C
		Sludge Content	IS:4989 Annex E; ICAO Doc 9137-AN/898, Part 1, Fourth Edition Chapter 8, Section 8.1.5	0.02 % to 2.0 %
		Surface Tension	IS:4989 Annex F	1 to 90 dynes/cm
		Interfacial Tension	IS:4989 Annex F	1 to 90 dynes/cm
		Spreading Coefficient	IS:4989 Annex F	-10 to +10 dynes/cm
		Viscosity	SOP 12-LO-W1013; ICAO Doc 9137-AN/898, Part 1, Fourth Edition Chapter 8, Section 8.1.5	1 to 30 cSt
2.	**Alcohol Resistance Aqueous Film Form Foam (AR-AFFF) a) 3 x 3 b) 3 x 6**	pH	IS 4989 (Part 4) Annex A	1.00 to 14.00
		Specific Gravity	IS 4989 (Part 4) Annex B	0.5 to 1.50
		Pour Point	IS 4989 (Part 4) Annex C	-30^0C to $+30^0$C
		Surface Tension	IS 4989 (Part 4) Annex D	1 to 90 dynes/cm
		Interfacial Tension	IS 4989 (Part 4) Annex D	1 to 90 dynes/cm
		Spreading Coefficient	IS 4989 (Part 4) Annex D	-10 to +10 dynes/cm
		Film Formation	IS 4989 (Part 4) Annex E	Qualitative

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		Polymeric Film Formation	IS 4989 (Part 4)	Qualitative
3.	**Dry Chemical Powder for Fighting B and C Class Fires**	Chemical Content	IS 4308 Clause 4.3	0 to 99 %
		Hygroscopicity	IS 4308 Clause 4.5	0.1 % to 10 %
		Caking Test	IS 4308 Clause 4.6	Qualitative
		Water Repellency	IS 4308 Clause 4.7	0.1 % to 10 %
		Moisture Content	IS 4308 Clause 4.8	0.01 % to 12 %
		Heat Resistance Test	IS 4308 Clause 4.9	Qualitative
4.	**Dry Chemical Powder for Fighting A,B, C Class Fires**	Hygroscopicity	IS 14609 Clause 4.5	0.1 % to 10 %
		Caking Test	IS 14609 Clause 4.6	Qualitative
		Water Repellency	IS 14609 Clause 4.7	0.1 % to 10 %
		Moisture Content	IS 14609 Clause 4.8	0.01 % to 12 %
		Heat Resistance Test	IS 14609 Clause 4.9	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		MECHANICAL TESTING		
I.	**PERFORMANCE TEST**			
1.	**Aqueous Film Forming Foam (AFFF), Protein Foam, Film Forming Fluoro Protein & Synthetic Foam**	Pour Point	IS 4989 Annex D	-30 °C to 30 °C
		Film Formation	IS 4989 Annex H	Qualitative
		Expansion	IS 4989 Annex J ICAO DOC 9137-AN/898 Clause 8.1.7.6	1 to 20
		25 % Drain Time	IS 4989 Annex J ICAO DOC 9137-AN/898 Clause 8.1.7.6	1 sec to 20 minutes
		Fire Control	IS 4989 Annex K	Qualitative
		Fire Test	IS 4989 Annex-K 2.2	Qualitative
		Burn Back Test	IS 4989 Annex-K 2.3	Qualitative
		Sealability	IS 4989 Annex-K 2.3	Qualitative
2.	**Alcohol Resistance Aqueous Film Form Foam (AR-AFFF)** **a) 3 x 3** **b) 3 x 6**	Pour Point	IS 4989 (Part 4) Annex C	-30 °C to +30 °C
		Film Formation	IS 4989 Part 4, E-5 (Amendment No.1)	Qualitative
		Expansion	IS 4989 Part 4 Annex F	1 to 20
		25% Drain Time	IS 4989 Part 4 Annex G	1sec to 20 minutes
		Fire Control	IS 4989 Part 4 Annex J	Qualitative
		Fire Test	IS 4989 Part 4 Annex H	Qualitative
		Burn Back Test	IS 4989 Part 4 Annex K	Qualitative
3.	**Aqueous Film Forming Foam (AFFF), Protein Foam, Film Forming Fluoro Protein & Synthetic Foam**	Fire Performance Test	ICAO DOC 9137-AN/898 Table 8-1, Section 8.1.8, 8.1.9 and 8.1.10	Qualitative
		Fire Extinction test	ICAO DOC 9137-AN/898 Table 8.1	Qualitative
		25% reignition time (Burn back resistance period)	ICAO DOC 9137-AN/898 Table 8.1	Qualitative

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4.	**Dry Chemical Powder for Fighting B and C Class Fires**	Apparent Density	IS 4308 Clause 4.2	0.30 gm/ml to 2.10 gm/ml
		Particle Size Distribution (Sieve Analysis)	IS 4308 Clause 4.4	40 mesh 100 mesh 200 mesh 325 mesh
		Free Flowing Characteristics	IS 4308 Clause 4.10	1 g/sec to 200 g/sec
		Foam Compatibility	IS 4308 Clause 4.11	Qualitative
		Fire Knocking down for Class B fires	IS 4308 Cause 4.12.1	Qualitative
5.	**Dry Chemical Powder for Fighting A,B, C Class Fires**	Apparent Density	IS 14609 Clause 4.2	0.30 gm/ml to 2.10 gm/ml
		Particle Size Distribution (Sieve Analysis)	IS 14609 Clause 4.4	40 mesh 100 mesh 200 mesh 325 mesh
		Free Flowing Characteristics	IS 14609 Clause 4.10	1 gm/sec to 200 gm/sec
		Foam Compatibility	IS 14609 Clause 4.11	Qualitative
		Fire Knocking down For Class A fires	IS 14609 Clause 4.12.1	Qualitative
		Fire Knocking down For Class B fires.	IS 14609 Clause 4.12.2	Qualitative
6.	**Firefighting Portable Fire Extinguishers**	Fill density	IS 15683 Clause 5.3.1	0.5 to 1kg/l
		Filling Tolerance	IS 15683 Clause 5.3.2	Upto 60 kgs.
		Test pressure	IS 15683 Clause 6.1	Upto 200 bar (20 MPa)
		Minimum Burst pressure	IS 15683 Clause 6.2	Upto 600 bar (60 MPa)
		Minimum effective discharge time for Class A rated Extinguishers	IS 15683 Clause 7.2.1	Upto 10 min.

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		Minimum effective discharge time for Class B rated Extinguishers	IS 15683 Clause 7.2.2	Upto 10 min
		Bulk Range Throw	IS 15683 Clause 7.2.3	10 mm to 3 m
		Resistance to temperature changes	IS 15683 Clause 7.3	Amb.to 120 °C & amb.to (-) 80 °C
		Retention of charge following partial discharge	IS 15683 Clause 7.4.2	Up to 100%
		Leakage Test (Type Test)	IS 15683 Clause 7.4.3	Qualitative
		Resistance to Impact (Mechanical resistance)	IS 15683 Clause 7.5.1	Qualitative
		External Corrosion Test	IS 15683 Clause 7.6.1	Qualitative
		Internal Corrosion Test	IS 15683 Clause 7.6.2	Qualitative
		Tapping Test (Type Test)	IS 15683 Clause 7.7	Qualitative
		Intermittent Discharge test	IS 15683 Clause 7.8	Upto 100 %
		Class A Test Fire	IS 15683 Clause 8.1.1 & 8.3	Qualitative
		Class B Test Fire	IS 15683 Clause 8.1.2 & 8.4	Qualitative
		Determination of Maximum Service Pressure (Pms)	IS 15683 Clause 9.2.1.8	Qualitative
		Burst test	IS 15683 Clause 9.2.2.1 to 9.2.2.6	Upto 600 bar (60 MPa)
		Crushing Test	IS 15683 Clause 9.2.3	10mm to 200 mm
		Pressure Cycling Test	IS 15683 Clause 9.2.5	0.2 bar to 10 bar (20 kPa to 1000 kPa)

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		Requirement of mounting bracket	IS 15683 Clause 9.4.3 & 9.4.4	1 g to 80 kg
		Method of Operation	IS 15683 Clause 9.10	1 N to 250 N
		Safety-locking device	IS 15683 Clause 9.11 & 9.11.1	1 N to 250 N
		Requirement of safety-locking pin or other device	IS 15683 Clause 9.11.6	Qualitative
		Colour Test	IS 15683 Clause 9.14	Qualitative

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