

Laboratory **SQAE (ME), Aruvankadu Testing Laboratory, Aruvankadu, The Nilgiris, Tamil Nadu**

Accreditation Standard **ISO/IEC 17025: 2005**

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I.	EXPLOSIVES & PYROTECHNICS			
1.	Glycerine	Glycerol Percent by mass	IS 1796-1986 RA 2016	90.0% to 100.0% by mass
		Relative Density at 30/30°C	IS 1796-1986 RA 2016	1.2400 to 1.2800
		Ash, Percent by mass.	IS 1796-1986 RA 2016	0.001% to 10.00% by mass
		Chlorides as Cl, parts per million.	IS 1796-1986 RA 2016	9 ml/l to 100 ml/l
		Reducing substances	IS 1796-1986 RA 2016	Qualitative
		Ether Soluble organic Matter	IS 1796-1986 (RA 2016)	0.002% to 10.00 % by mass
2	Potassium Nitrate Gr-I	Hygroscopicity	IS 301-1982 RA 2016	0.01% to 10.00% by mass
		Matter insoluble in Water	IS 301-1982 RA 2016	0.01% to 10.0% by mass
		Matter insoluble organic matter	IS 301-1982 RA 2016	0.01% to 10.0% by mass
		Chlorides as KCl	IS 301-1982 RA 2016	0.01% to 10.0 % by mass
		Sulphates as K ₂ SO ₄	IS 301-1982 RA 2016	0.001% to 1.0%
		Potassium nitrate as KNO ₃	IS 301-1982 RA 2016	90.0% to 100.0 % by mass
		Moisture and Volatile Content	IS 301-1982 RA 2016	0.01% to 1.0% by mass
		Particle Size	3.3 of IS 301 – 1982 RA 2016 Method 18 of JSG 0112 : 1997	Passing through 125 micron IS Sieve 1.0% to 100.0%

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3	Cambric Cotton Fabric/ Calico Fabric (Variety No.3)	Ph Value	IS 1390-1983 RA 2017	1.0 to 14.0
		Water soluble chlorides as sodium chloride	IS 5088 – 1982 RA 2011	0.01% to 1.0 % by mass
		Ash content, percent	Clause 6 of IS 199-1989 A 2016	0.01% to 10.0%by mass
		Moisture Regain	Clause 4 of IS199-1989 (RA 2016)	0.01% to 20.0%by mass
		Water extractable matter,	IS 3456-1966 (RA 2010)	0.01% to 10.0%
4	Acrylic Rayon Cloth	Visual Exam	IND/ME/973 (a) Prov Appendix A	Visual
		Ether Soluble Matter	IND/ME/973(a) 2016	0.02% to 20.0%by mass
		Starch,	IND/ME/973(a) 2016	0.02% to 20.0%
		Acrylic fibre content,	IND/ME/973(a) 2016	0.02 to 80.0% by mass
		pH of water extract	IND/ME/973(a) 2016	1.0 to 14.0
		Ash content,	IND/ME/973(a) 2016	0.01% to 10.0%
		Moisture/Regain	Method 4 of JSG 0114:1994	0.002% to 20 .0% by mass
5	Paper Kraft Ammunition/ paper wrapping waxed kraft ammunition	Moisture content at 103°C to 105°C for 1 hour	IS 1060 (Part1) : 1966 RA 2016 Clause 9	0.002% to 15.0% by mass
		pH	IS 1060 (Part1) :1966 RA 2016 Clause 10	1.0 to 14.0
		Water soluble Chlorides calculated as Sodium chlorides	JSG 0114 Method No 7	0 .01%to 10.0% by mass
		Ash on incineration at 800°C ± 25deg C	IS 1060 (Part1) : 1966 RA 2016 Clause 11	0.01% to 10.0% by mass

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6	Nitrocellulose Type A & Type B	Mineral matter/ Ash content	JSS 1376-10:2011 Rev. No.2	1% to 10.0 %
		Nitrogen content	JSS 1376-10:2011 Rev. No.2	10.0% to 14.0 %
		Pulping fineness	JSS 1376-10:2011 Rev. No.2	50 ml to 150 ml
		Heat Test at 170°F	JSS 1376-10:2011 Rev. No.2	1 minute to 50 Minutes
		B & J Test at 132°C ± 0.5°C	JSS 1376-10:2011 Rev. No.2	0.1 mg to 2.5 mg of N ₂ /g
7	Nitrocellulose Low Nitrogen	Nitrogen content	IND/ME/963 Prov 2016	10% to 14%
		Pulping fineness	IND/ME/963 Prov 2016	50 ml to 150 ml
		Heat test 10 mm of TNT	IND/ME/963 Prov 2016	1 minute to 50 Minutes
		Damping medium	IND/ME/963 Prov 2016	1% to 50 % by mass
8	Nitroguanidine	Volatile Matter	JSS 1376-03 : 2016 (Rev. No 3)	0.1% to 10 %
		pH of water Extract	JSS 1376-03 : 2016 (Rev. No 3)	1 to 14
		Water soluble impurities	JSS 1376-03 : 2016 (Rev. No 3)	0.1% to 10 %
		Chlorides calculated as Sodium Chloride (NaCl)	JSS 1376-03 : 2016 (Rev. No 3)	0.01% to 10%
		Picrite content	JSS 1376-03 : 2016 (Rev. No 3)	10% to 100 %
		Ash copounds	JSS 1376-03 : 2016 (Rev. No 3)	0.05% to 10%
		Specific Surface	JSS 1376-03 : 2016 (Rev. No 3)	5000 to 60000 cm ² /cm ³
9	Nitroglycerine	Volatile matter	JSS 1375-04 :2016 (Rev. No 4)	0.01% to 2.0 %
		Acidity	JSS 1375-04:2016 (Rev. No 4)	Upto 1.0 %

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		Alkalinity as Na ₂ CO ₃	JSS 1375-04:2016 (Rev. No 4)	0.001% to 1.0 %
		Heat Test at 82.2°C	JSS 1375-04:2016 (Rev. No 4)	5minutes to 25 Minutes
10	'N' type of Propellant/' NQ' type of propellant	Volatile Matter	Group 104 of JSG 0116 – 1996	0.05% to 5%
		Heat test at 65.5°C±0.5 deg C, minutes	Group 501 of JSG 0116 - 1996	1 minute to 30 minutes
		<u>% Composition</u> Nitrocellulose type B %	Group 219 of JSG 0116 – 1996	15.0% to 25.0%
		Nitroglycerine	Group 202 of JSG 0116 - 1996 or By difference	15.0% to 25.0 %
		Picrite	Group 218 of JSG 0116 – 1996	40% to 60 %
		Carbamite%	Group 209/210 of JSG 0116 – 1996	6% to 8%
		Cal val cal/g	Group 401 of JSG 0116 - 1996	650 to 1200 Cals/g
11	AP type of propellant	Volatile matter	Group 104 of JSG 0116 - 1996	0.01% to 3 %
		Heat test	Group 501 of JSG 0116 - 1996	1 minute to 30 minutes
		<u>Chemical Composition</u> Nitrocellulose	Group 219 of JSG 0116 – 1996	10% to 30 %
		Carbamite	Group 209/210 of JSG 0116 – 1996	2 % to 6 %
		Mineral Jelly	Group 216 of JSG 0116 – 1996	1.0% to 6.0 %

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		Cal val	Group 401 of JSG 0116 - 1996	650 to 1200 Cals/g
12	Prop DB/M 202	Volatile Matter	Group 104 of JSG 0116 - 1996	0.05% to 5%
		Stability Test Heat Test at 150°F	Group 501 of JSG 0116 - 1996	1 Minute to 30 Minutes
		MV Test at 120°C	Group 502 of JSG 0116 - 1996	10 Minutes to 60 Minutes

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<u>MECHANICAL TESTING</u>				
1.	TEXTILE MATERIALS			
1.	N Type of Propellant/	External Diameter	JSS 1376-13 : 2014	0.1mm to 20 mm
		Internal Diameter	JSG 0116-1996	0.1 mm to 5mm
	NQ Type of Propellant	Web		0.1 mm to 5 mm
		Mass/2540 mm		0.1 g to 200 g
2.	AP Type of Propellant/	External Diameter	JSS 1376-12-2013 JSG 0116-1996	0.1 mm to 20 mm
		Internal Diameter		0.1 mm to 5 mm
		Web		0.1 mm to 5 mm
	DB/M Type of Propellant	Mass/2540mm		0.1 g to 200g
		Length		600 mm to 800 mm
Hole dia	0.1 mm to 5 mm			
3.	N Type of Propellant	Density	JSS 1376-13-2014 JSG 0116-1996	1.5 kg/dm ³ to 2.0 kg/dm ³
4.	N Type of Propellant	Closed Vessel Test for Propellant	JSS 1376-13-2014 JSG 0116-1996	
	NQ Type of Propellant	Relative Force %		85% to 110%
		Relative Vivacity %		85% to 110%
		Homogeneity (Variance Ratio)		0.01 to 3.05 (Ratio)
5.	AP Type of Propellant/	Closed Vessel Test for Propellant	JSS 1376-13-2014 JSG 0116-1996	
		Relative Force %		85% to 110%
	DB/M Type of Propellant	Relative Vivacity %		85% to 110%
		Homogeneity (Variance Ratio)		0.01 to 3.05 (Ratio)

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6.	Cambric Cotton fabric/	Ends /cm	IS 5088:1982 RA 2011	10 to 100
		Picks /cm	Clause 5 .2 of IS 1963 : 1981 RA 2014	
	Calico fabric (Variety No.3)	Mass	IS 5088 :1982 RA 2011 IS 1964 :2001 RA 2017	10 g/m ² to 175 g/m ²
		Length	IS 5088:1982 RA 2011 IS 1954:1990 RA 2017	1 m to 3 m.
		Width	IS 5088 : 1982 RA2011 IS 1954 :1990 RA 2017	85 cm to 150 cm
7.	Acrylic Rayon Cloth	Mass in g/m2	IND/ME/973(a):2016 JSG 0114:1994	10 g/m ² to 300 g/m ²
	Paper Kraft Ammunition	Substance g/m2	IS 1060:PART I 1966RA2016/JSS 8135-017:2016 RA 2010	1 g/m ² to 200 g/m ²
		Substance g/m2	IS 1060:PART I 1966 RA : 2016 /JSS 8135-05:2013 RA Rev No.4	1 g/m ² to 200 g/m ²
	Paper Wrapping Wax Kraft Ammunition	Water Proofness	JSS 8135-05:2013 Rev No.4	Qualitative