Laboratory	**Controllerate of Quality Assurance (Military Explosives), Aundh Road, Khadki, Pune, Maharashtra** **Location 1: Aundh Road, Khadki, Pune, Maharashtra** **Location 2: Initiatory Composition at CQA (ME) Cell at AFK, Khadki, Pune, Maharashtra**
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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
		CHEMICAL TESTING		
Location 1				
I.	**TEXTILE (WOVEN & NON WOVEN)**			
1.	**Cloth cambric bleached or dyed and cloth calico bleached**	pH value	IS 1390-1983 (RA 2009)	3 to 11
		Water soluble chloride as NaCl % by mass	IS 5088-1982, AMD-2 (RA 2007)/Appendix B	0.01% to 0.8%
		Water extractable matter % by mass	IS 3456-1966 (RA 2010)	0.25% to 5%
		Ash Content %	IS 199-1989 (RA 2010)	0.1% to 10%
II.	**PAINTS & SURFACE COATING**			
1.	**R/M , A/D , paints for general purpose all colours**	Viscosity, Seconds	IS 101-Part 1 sec-5-1989 (RA 2014)	20 Sec to 300 Sec
		Water content %	IS 101-Part 2 sec-1-1988 (RA 2014)	0.2% to 7%
		Flash Point ^{0}C	IS 101-Part I sec-6-1987 (RA 2014)	5^{0}C to 80 ^{0}C
		Mass per 10 ltr. in kg	IS 101-Part-1-sec-7-1987 (RA 2014)	8 kg to 20 kg
2.	**Paint R/M priming Red Oxide Zinc chrome Ammn. A/D, M/F**	Viscosity, seconds	IS 101-Part 1 sec-5-1989 (RA 2014)	20 Sec to 300 Sec
		Water content %	IS 101-Part 2 sec-1-1988 (RA 2014)	0.2% to 7%
		Flash Point ^{0}C	IS 101-Part 1-sec-6-1987 (RA 2014)	5^{0}C to 80 ^{0}C

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		Mass per 10 ltr. in kg	IS 101-Part 1-sec-7-1987 (RA 2014)	8 kg to 20 kg
III.	**PLASTIC & RESINS**			
1.	**HDPE**	Ash content %	JSG 0112:2015, Rev. No. 2 Method No. 2(A)	0.01 to 0.05
		pH	JSG 0112:2015, Rev. No. 2 Method No. 5(B)	2 to 12
		Chloride as NaCl %	JSG 0112:2015, Rev. No. 2 Method No. 7(B)	0.01% to 0.08%
		Sulphates as Na_2SO_4 %	JSG 0112:2015, Rev. No. 2 Method No. 8	0.01% to 1%
2.	**LDPE**	Ash content %	JSG 0112:2015, Rev. No. 2 Method No. 2(A)	0.01 to 0.05
		pH	JSG 0112:2015, Rev. No. 2 Method No. 5(B)	2 to 12
		Chloride as NaCl %	JSG 0112:2015, Rev. No. 2 Method No. 7(B)	0.01% to 0.08%
		Sulphates as Na_2SO_4 %	JSG 0112:2015, Rev. No. 2 Method No. 8	0.01% to 1%
3.	**LLDPE**	Ash content %	JSG 0112:2015, Rev. No. 2 Method No. 2(A)	0.01 to 0.5

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		pH	JSG 0112:2015, Rev. No. 2 Method No. 5(B)	2 to 12
		Chloride as NaCl %	JSG 0112:2015, Rev. No. 2 Method No. 7(B)	0.01% to 0.08%
		Sulphates as Na_2SO_4 %	JSG 0112:2015, Rev. No. 2 Method No. 8	0.01% to 1%
4.	**ABS**	Ash content %	JSG 0112:2015, Rev. No. 2 Method No. 2(A)	0.01% to 10%
		Chloride as NaCl %	JSG 0112:2015, Rev. No. 2 Method No. 7(B)	0.01% to 0.08%
		Sulphates as Na_2SO_4 %	JSG 0112:2015, Rev. No. 2 Method No. 8	0.01% to 1%
		Vicat softening point, ºC	ASTM-D-1525-2000	75 ºC to 250ºC
5.	**Phenolic Moulding Powder Glass filled**	Free Ammonia content %	IS 867-1963 Clause 16 (RA 2008)	0.01% to 0.05%
6.	**Moulding powder Moulded Plastic Phenolic**	pH	JSG 0112:2015, Rev. No. 2 Method No. 5(B)	2 to 12
		Chloride as NaCl %	JSG 0112:2015, Rev. No. 2 Method No. 7(B)	0.01% to 0.08%
		Sulphates as Na_2SO_4 %	JSG 0112:2015, Rev. No. 2 Method No. 8	0.01% to 1%

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7.	**Nylon-6**	Melting Point ºC	BS:2782: Method 103C	75 ºC to 290ºC
8.	**Nylon-66**	Melting Point ºC	BS:2782: Method 103C	75 ºC to 290ºC
9.	**Polycarbonate**	Melting Point ºC	ARDE/Specn/535 1997	75 ºC to 290ºC
IV.	**EXPLOSIVES & PYROTECHNICS**			
1.	**Ammunition Protective Compositions**	Total Non-volatile matter % by Mass	JSS-8010-63:2016 (Rev.No.4)/ Appendix A	5.5% to 62%
		Ash % by Mass	JSS-8010-63:2016 (Rev.No.4)/ Appendix B	0.05% to 0.6%
		Iodine Value	JSS-8010-63:2016 (Rev.No.4)/ Appendix C	0.1 to 30
		Adhesion & Finish	JSS-8010-63:2016 (Rev.No.4)/ Appendix D	Qualitative
2.	**Aluminium Powder Heavy Grade-1**	Matter soluble in ether % by Mass	JSS-1370-03-2014 (Rev.No.3)/ Appendix A	0.3% to 10%
		Volatile matter at 105 ^{0}C±2^{0}C % by Mass	JSG-0112-2015-1(a) (Rev. No.2) Method 1A	0.01% to 10%
		Gritty Matter % by Mass	JSG-0112-2015-1(a) (Rev. No.2) Method 6	0.01% to 10%
		Silicon and compounds of Silicon (other than grit) calculated as Silicon % by Mass	JSS-1370-03-2014(Rev.No.3)/ Appendix-B	0.01% to 10%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		pH of water extract	JSG-0112-2015 (Rev. No.2) Method 5(b)	2 to 12
		Copper and compounds of copper calculated as metallic copper % by Mass	JSS-1370-03-2014(Rev.3)/ Appendix-C	0.01% to 10%
		Iron & compounds of Iron calculated as Metallic Iron % by Mass	JSS-1370-03-2014(Rev.3)/ Appendix-D	0.01% to 10%
		Zinc & compounds of Zinc calculated as Metallic Zinc % by Mass	JSS-1370-03-2014(Rev.3)/ Appendix-E	0.01% to 10%
		Magnesium & compounds of Magnesium calculated as Metallic Magnesium % by Mass	JSS-1370-03-2014(Rev.3)/ Appendix-F	0.01% to 10%
		Metallic impurities other than Aluminium % by Mass	JSS-1370-03-2014(Rev.3)/ Appendix-G	0.01% to 10%
		Free Metallic Aluminium % by Mass	JSS-1370-03-2014(Rev.3)/ Appendix-H	1% to 100%
		Apparent Density g/cm^3	JSS-1370-03-03-2014 (Rev.3)/ Appendix-J	0.5 g/cm^3 to 2 g/cm^3
3.	**Single Base Propellants**	Calorimetric value	JSG-0116:1996 Method No. 401	500 Cal/g to 1500 Cal/g
		Diphenylamine	JSG-0116:1996 Method No. 208/210/211	0.1% to 3.0%
		Total V.M	JSG-0116:1996 Method No.105 /106	0.15% to 5.0%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Abels Heat test	JSG-0116:1996 Method No. 501	1 min to 30min
		Methyl violet test	JSG-0116:1996 Method No. 502	10 min to 100 min
		Bergman & Junk test	JSG-0116:1996 Method No.503	0.5 ml of NO/ 5 g to 20 ml of NO/ 5 g
		Dutch Test	JSG-0116:1996 Method No.504	0.1% to 3.5%
4.	**Double Base Propellants**	Calorimetric value	JSG-0116:1996 Method No. 401	500 Cal/g to 1500 Cal/g
		Carbamite	JSG-0116:1996 Method No. 209 / 210 / 211	0.1% to 10.0%
		Volatile matter	JSG-0116:1996 Method No. 104/105 /106	0.1% to 5.0%
		Abels Heat test	JSG-0116:1996 Method No. 501	1 min to 30min
		Methyl violet test	JSG-0116:1996 Method No.502	10 min to 100min
		Bergman & Junk test	JSG-0116:1996 Method No. 503	0.5 ml of NO / 5 gm to 20 ml of NO / 5 gm
		Dutch Test	JSG-0116:1996 Method No. 504	0.1% to 3.5%
5.	**Triple Base Propellants**	Calorimetric value	JSG-0116:1996 Method No. 401	500 Cal/g to 1500 Cal/g
		Carbamite	JSG-0116:1996 Method No. 209 / 210 / 211	0.1% to 10.0%
		Volatile matter	JSG-0116:1996 Method No. 104/105 /106	0.1% to 5.0%
		Abels Heat test	JSG-0116:1996 Method No. 501	1 min to 30min

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		Methyl violet test	JSG-0116:1996 Method No.502	10 min to 100min
		Bergman & Junk test	JSG-0116:1996 Method No. 503	0.5 ml of NO / 5 gm to 20 ml of NO / 5 gm
		Dutch Test	JSG-0116:1996 Method No. 504	0.1% to 3.5%
6.	**CE crystalline**	Volatile matter	JSS-1375-01:2016(Rev3)/ Appendix -A	0 to 0.5%
		Melting point	JSS-1375-01:2016(Rev3)/ Appendix -E	120^0C to 130 ^{0}C
		Vacuum stability test	JSS-1375-01:2016(Rev3)/ Appendix -G	1.0 to 19 ml at 120 deg C 40 hrs, ml / 5g
7.	**CE Granulated**	Vacuum stability test	JSS 1375-01: 2016(Rev.3)/ Appendix - G	1.00 to 19 ml at 120 deg.C 40 hrs, ml / 5g
8.	**TNT**	Setting Point	JSS-1376-02-2012 (Rev. 4)/ Appendix - A	76^0C to 85 ^{0}C
		Acidity as H_2SO_4	JSS-1376-02-2012 (Rev. 4)/ Appendix - B	0.01% to 0.1 %
		Moisture Content	IS 2362-63 (RA 2005)	0.01% to 0.1%
		Vacuum stability test	JSS-1376-02-2012 (Rev. 4)/ Appendix - H	1.0 to 19 ml at 120 deg.C 16 hrs, ml / 5g
9.	**RDX**	Melting Point	JSS 1376-01:2015 (Rev 7)/ Appendix -'C'	200^0C to 208^0C
10.	**Gun Powder**	Pot. Nitrate	JSS-1376-05-2014 (Rev.3)/ Appendix 'P'	60% to 80%
		Charcoal	JSS-1376-05-2014 (Rev.3)/ Appendix 'P'	10% to 20%
		Sulphur	JSS-1376-05-2014 (Rev.3)/ Appendix 'P'	5% to 15%

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		Moisture	JSS-1376-05-2014 (Rev.3)/ Appendix 'B'	0.5% to 2.0%
		Mass of residue on flashing	JSS-1376-05-2014 (Rev.3)/ Appendix 'H'	5% to 10 %

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		CHEMICAL TESTING		
Location 2				
I.	**EXPLOSIVES & PYROTECHNICS**			
1.	**A1 Composition**	Mercury Fulminate	IND/ME/348(b) Appendix - C DC NO 5142 - ME, 08.06.2013	% by mass 35.5 to 39.5
2.	**L- Mix**	Lead 2:4 di-nitro Resorcinol i.e. RD-1337	IND/ME/1019 / Appendix-B DC NO 5181 - ME, 20.01.2014	% by mass 47.5 to 52.5
		Tetrazene	IND/ME/1019/Appendix-B	4.5 to 5.5
3.	**C-ZECH**	Lead Styphnate	IND/ME/766(b)/ Appendix - C DC NO 5139 - ME,08.06.2013	% by mass 57.5 to 62.5
		Tetrazene	IND/ME/766(b)/ Appendix-C	1.5 to 2.5
4.	**FA 956**	Lead Styphnate	IND/ME/960(a)/ Appendix - C DC NO 5143 - ME, 08.06.2013	% by mass 32.0 to 42.0
		Tetrazene	IND/ME/960(a)/ Appendix - C	3.0 to 5.0
		PETN	IND/ME/960(a)/ Appendix - C	4.0 to 6.0

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5.	**VH2**	Composition RD 1303	IND/ME/874(a) Appendix-B DC NO 5385 - ME 21.12.2015 Appendix-B	% by mass 35.0 to 41.0
		Tetrazene	IND/ME/874(a) Appendix-B	1.6 to 2.4
6.	**ME 302**	Lead Styphnate	IND/ME/686(c)/ Appendix-C DC NO 5136 - ME, 08.06.2013	% by mass 48.0 to 52.0
		Tetrazene	IND/ME/686(c)/ Appendix-C	3.2 to 3.8
7.	**E1 Mix**	Mercury Fulminate	IND/ME/476(b)/ Appendix-C DC NO 5140 - ME, 08.06.2013	% by mass 18.0 to 20.0
8.	**F1 Composition**	Mercury Fulminate	IND/ME/599(a)/ Appendix-C DC NO 5137 - ME, 08.06.2013	% by mass 26.5 to 29.5
9.	**ABRIC- 50**	Tetrazene	IND/ME/1029(Prov)/ Appendix-C DC NO 5079 - ME, 08.05.2012	% by mass 4.2 to 5.0

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		MECHANICAL TESTING		
Location 2				
I.	**RUBBER AND RUBBER PRODUCTS**			
1.	**Neoprene (Vulcanised chloroprene) Rubber**	Compression Set	Appendix A of BS-903- A-6	0.1% to 30%
		Volume change	Appendix B of BS-903-A-16	30% to 110%
2.	**Acrylonitrile Butadiene rubber**	Compression Set	IS 3400 Part 10 : 1997	0.1% to 30%
		Volume change	IS 3400 Part 6 :2012	0.1% to 110%
II.	**PAINTS**			
1.	**R/M , A/D , paints for general purpose all colours**	Protection against corrosion under condensation	IS 101-Part-6, Sec-1, -1988 (RA 2015)	Qualitative
2.	**Paint R/M priming R.O.Zinc chrome Ammn.**	Protection against corrosion under condensation	IS 101-Part-VI Sec-1, -1988 (RA 2015)	Qualitative
III.	**PLASTICS AND PLASTIC PRODUCTS**			
1.	**H.D.P.E**	Melt Flow Index	ASTM-D-1238 -2013	0.2 g/10 Minutes to 30 g/10 Minutes
		Density	BS-2782 Part 6-1980-Method-620A	0.7 g/ml to 2.5 g/ml

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2.	**LDPE**	Melt Flow Index	ASTM-D-1238 -2013	0.2 g/10 Min to 30 g/10 Min
		Density	BS-2782 Part 6 -1980, Method - 620A	0.7 g/ml to 2.5 g/ml
3.	**LLDPE**	Melt Flow Index	ASTM-D-1238-2013	0.2 g/10 Minutes to 30 g/10 Minutes
		Density	BS-2782 Part 6 1980, Method-620A	0.7 g/ml to 2.5 g/ml
4.	**ABS**	Melt Flow Index	ASTM-D-1238 -2013	0.2 g/10 min to 30 g/10 min
		Specific Gravity	ASTM-D-792 -2013 Method A-1	0.7 to 2.5
5.	**Phenolic Moulding Powder Glass filled**	Density	IS 867 - 1963 (RA 2008) - Clause 6	0.7 g/ml to 2.5 g/ml
6.	**Nylon-66**	Density	BS-2782-2000, Method 509-A	0.7 g/ml to 2.5 g/ml
7.	**Polycarbonate**	Melt flow index	ASTM-D-1238-2013	0.2 g/10min to 30g/10min
		Specific Gravity	ASTM-D-792-2013	0.7 to 2.5
8.	**Teflon**	Hardness Shore - D	ASTM-D-2240-2015	5 to 90
		Density	ASTM-D-792 -2013	0.7 kg/dm^3 to 2.5 kg/dm^3
IV.	**EXPLOSIVES AND PYROTECHNICS**			
1.	**Single Base Propellants**	Length mm	JSG-0116:1996 Method 606	10 mm to 750mm
		Ext. Dia mm	JSG-0116:1996 Method 607	1 mm to 10mm

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		Int. Dia mm	JSG-0116:1996 Method 610	0.1 mm to 3mm
		Web / annulus mm	JSG-0116:1996 Method 610	0.1 mm to 5mm
		Density g/cc	JSG-0116:1996 Method 403	1.0 g/cc to 1.8g/cc
		Bulk Density kg/dm^3	JSG-0116:1996 Method 404	0.8 kg/dm^3 to 1.5 kg/dm^3
2.	**Double Base Propellants**	Length	JSG-0116:1996 Method 606	10 mm to 1000mm
		Ext. Dia mm	JSG-0116:1996 Method 607	1 mm to 15mm
		Int. Dia mm	JSG-0116:1996 Method 610	0.1 mm to 3mm
		Web / annulus mm	JSG-0116:1996 Method 610	0.1 mm to 5mm
		Density g/cc	JSG-0116:1996 Method 403	1.0 g/cc to 1.8g/cc
		Bulk Density kg/dm^3	JSG-0116:1996 Method 404	0.8 kg/dm^3 to 1.5 kg/dm^3
3.	**Triple Base Propellants**	Length mm	JSG-0116:1996 Method 606	10 mm to 750 mm
		Ext. Dia mm	JSG-0116:1996 Method 607	1 mm to 20 mm
		Int. Dia mm	JSG-0116:1996 Method 610	0.1 mm to 3 mm
		Web / annulus mm	JSG-0116:1996 Method 610	0.1 mm to 5 mm
		Density, g/cc	JSG-0116:1996 Method 403	1.0 g/cc to 1.85 g/cc

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