

Laboratory **Quality Control Laboratory, Cordite Factory, Aruvankadu, The Nilgiris, Tamil Nadu**

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

Certificate Number **TC-7133** (in lieu of T-0122, T-1716)

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Last Amended on **13.04.2018**

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|-----|----------------------------|-------------------------|---|--|

CHEMICAL TESTING

| I. EXPLOSIVES & PYROTECHNICS | | | | |
|---|--|--|--|-----------------------------------|
| 1. | Nitrocellulose Type 'B' | Mineral matter/ Ash content | JSS 1376 – 10 : 2011 Rev.2 Appendix – B | 0.05 %to 10.00 % by mass |
| | | Alkalinity as CaCO ₃ | JSS 1376 – 10 : 2011 Rev.2 Appendix – C | 0.02% to 5.00 % by mass |
| | | Nitrogen Content | JSS 1376 – 10 : 2011 Rev.2 Appendix – D | 10.00% to 14.00 % by mass |
| | | Organic matter soluble in Ether-Alcohol Mixture | JSS 1376 – 10 : 2011 Rev.2 Appendix – E | 1.0% to 99.5 % by mass |
| | | Matter Insoluble in Acetone | JSS 1376 – 10 : 2011 Rev.2 Appendix – G | 0.05% to 10.00 % by mass |
| | | Sulphate as Sulphuric Acid | JSS 1376 – 10 : 2011 Rev.2 Appendix - J | 0.03% to 10.00 % by mass |
| | | 2. | Nitrocellulose Pyro | Mineral matter on dry material |
| Nitrogen Content on dry Material (Free from mineral matter) | IND/ME 1013 (Prov.) Dec.2000 Appendix – B | | | 10.00% to 14.00 % by mass |
| 3. | Niroguanidine | Volatile Matter | JSS 1376 – 03 : 2016 Rev.3 Appendix – A | 0.05% to 10.00 % by mass |
| | | Acidity as H ₂ SO ₄ | JSS 1376 – 03 : 2016 Rev.3 Appendix – B | 0.01% to 10.00 % by mass |
| | | Water Insoluble impurities | JSS 1376 – 03 : 2016 Rev.3 Appendix – E | 0.05% to 10.00 % by mass |
| | | Sulphate as Na ₂ SO ₄ | JSS 1376 – 03 : 2016 Rev.3 Appendix – G | 0.01% to 10.00 % by mass |
| | | Ash | JSS 1376 – 03 : 2016 Rev.3 Appendix – J | 0.05% to 10.00 % by mass |
| | | Nitroguanidine content (Purity) | JSS 1376 – 03 : 2016 Rev.3 Appendix – K | 85.0% to 100 % by mass |

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| | | Specific Surface (General / Special) | JSS 1376 – 03 : 2016 Rev.3 Appendix – L | 4000 cm ² /cm ³ to 6000 cm ² /cm ³ |
| 4. | Propellant NQ/M 119 | Volatile Matter | JSS 1376 – 13 : 2014 Rev.I JSG 0116 : 1996 Method – 104 | 0.05 % to 5.00 % |
| 5. | Propellant NQ/S 400-100 | Volatile Matter | JSS 1376 – 13 : 2014 Rev.I JSG 0116 : 1996 Method – 104 | 0.05 % to 5.00 % |
| 6. | Propellant NQ/M 254 | Volatile Matter | JSS 1376 – 13 : 2014 Rev.I JSG 0116 : 1996 Method – 104 | 0.05 % to 3.00 % |
| 7. | Propellant AP/S 376 - 117 | Volatile Matter | JSS 1376 – 12 : 2013 Rev.I JSG 0116 : 1996 Method – 104 | 0.05 % to 5.00 % |
| 8. | Propellant AP 043 | Volatile Matter | JSS 1376 – 12 : 2013 Rev.I JSG 0116 : 1996 Method – 104 | 0.05 % to 5.00 % |
| 9. | Propellant NQ/M 054 | Volatile Matter | JSS 1376 – 13 : 2014 Rev.I JSG 0116 : 1996 Method – 104 | 0.05 % to 3.00 % |
| 10. | Soda Ash Technical Grade | Total Alkalinity as Na ₂ CO ₃ | IS 251 – 1998 Rev.IV Annexure – C, C-3 | 0.5 % to 100.0 % by mass |
| | | Matter Insoluble in Water | IS 251 – 1998 Rev.IV Annexure – C, C-4 | 0.01 % to 10.00 % by mass |
| | | Sulphate as Na ₂ SO ₄ | IS 251 – 1998 Rev.IV Annexure – C, C-5.1 | 0.02 % to 10.00 % by mass |
| | | Chlorides as NaCl | IS 251 – 1998 Rev.IV Annexure – C, C-6 | 0.1 % to 5.0 % by mass |
| | | Iron as Fe ₂ O ₃ | IS 251 – 1998 Rev.IV Annexure – C, C-7.1 | Qualitative |
| | | Bulk Density | IS 251 – 1998 Rev.IV Annexure – A | 400 kg/m ³ to 1500 kg/m ³ |
| | | Volatile Matter content | IS 251 – 1998 Rev.IV Annexure – B | 0.05% to 10.00 % by mass |

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| 11. | Soda Ash Commercial Grade | Total Alkalinity as Na ₂ CO ₃ | C.F.39.0 Rev.I Dt. 01-12-2016 IS 251 – 1998 Rev.IV Annexure – C, C-3 | 0.5% to 100.0 % by mass |
| | | Matter Insoluble in Water | C.F.39.0 Rev.I Dt. 01-12-2016 IS 251 – 1998 Rev.IV Annexure – C, C-4 | 0.01% to 10.00 % by mass |
| | | Sulphate as Na ₂ SO ₄ | C.F.39.0 Rev.I Dt. 01-12-2016 IS 251 – 1998 Rev.IV Annexure – C, C-5.1 | 0.02 %to 10.00 % by mass |
| | | Chlorides as NaCl | C.F.39.0 Rev.I Dt. 01-12-2016 IS 251 – 1998 Rev.IV Annexure – C, C-6 | 0.03% to 10.00 % by mass |
| | | Iron as Fe ₂ O ₃ | C.F.39.0 Rev.I Dt. 01-12-2016 IS 251 – 1998 Rev.IV Annexure – C, C-7.1 | Qualitative |
| | | Bulk Density | C.F.39.0 Rev.I Dt. 01-12-2016 IS 251 – 1998 Rev.IV Annexure – A | 400 to 1500 kg/m ³ |
| | | Volatile Matter content | C.F.39.0 Rev.I Dt. 01-12-2016 IS 251 – 1998 Rev.IV Annexure – B | 0.05% to 10.00 % by mass |
| | | 12. | Acetone | Colour |
| Relative Density at 27 / 27 ⁰ C | IS 170 : 2004 Rev.IV IS 82 : 1973 Rev.I Clause No.6.3.3 | | | 0.750 to 0.800 |

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| | | Distillation Range | IS 170 : 2004 Rev.IV IS 1448 : (Part -18) 1991 Rev.II | 40.0°C to 60.0°C |
| | | Water Content | IS 170 : 2004 Rev.IV IS 2362 : 1993 Rev.II Clause No. 7 | 0.1 %to 2.0 % by mass |
| | | Residue on Evaporation | IS 170 : 2004 Rev.IV IS 82 : 1973 Rev.I Clause No.8.1 | 1 mg./100 mL.to 50 mg./100 mL. |
| | | Acidity as CH ₃ COOH | IS 170 : 2004 Rev.IV Annexure – C | 0.001to 0.030 g./100 mL. |
| | | Alkalinity | IS 170 : 2004 Rev.IV Annexure – D | Qualitative |
| | | Permanganate Test | IS 170 : 2004 Rev.IV Annexure – E | Qualitative |
| | | Alcoholic Impurities | IS 170 : 2004 Rev.IV Annexure – F | Qualitative |
| 13. | Potassium Sulphate Grade – I | Moisture Content At 105 ⁰ C | JSS 6810 – 110 : 2016 Rev.IV JSG 0112 Method (a) : 2015 Rev.2 | 0.05% to 10.00% by mass |
| | | Chlorides Calculated as KCl. | JSS 6810 – 110 : 2016 Rev.IV Appendix – B | 0.03% ±10.00% by mass |
| | | Potassium Sulphate Content | JSS 6810 – 110 : 2016 Rev.IV Appendix – C | 70.0 %to 100.0% by mass |
| 14. | Potassium Nitrate | Hygroscopicity at 27 ⁰ C±2 ⁰ C, RH-90% | IS 301-1982 Rev.2 Appendex B-2 | 0.10%to 5.00% by mass |
| | | Alkalinity | IS 301-1982 Rev.2 Appendex B-8 | Qualitative |
| | | Nitrites as KNO ₂ | IS 301-1982 Rev.2 Appendex B-15 | Qualitative |
| | | Moisture and Volatile Content | IS 301-1982 Rev.2 Appendex A | 0.01%to 2.00% by mass |

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| | | Mettalic Radicals other than Potassium & Sodium | IS 301-1982 Rev.2 Appendex B-6 | Qualitative |
| 15. | Calcium Carbonate for Explosive and Pyrotechnic Industry- Type-II | Loss on drying | IS 7633-1982 Rev. I Appendex :A-2 | 0.1%to 10.0% by mass |
| | | Calcium Cabonate (as CaCO ₃) on dry basis | IS 7633-1982 Rev. I Appendex :A-3 Method -A | 70%to 100.0% by mass |
| | | Water Soluble Alkali as Na ₂ O | IS 7633-1982 Rev. I Appendex :A-6 | 0.02%to 2.00% by mass |
| | | Chlorides as Cl | IS 7633-1982 Rev. I Appendex :A-8 | Qualitative |
| | | Total Water Soluble Matter | IS 7633-1982 Rev. I Appendex :A-9 | 0.1%to 5.0% by mass |
| | | Iron as Fe | IS 7633-1982 Rev. I Appendex :A-11 | Qualitative |
| 16. | Acid Oleum | Free SO ₃ | IS 1089:1986 Rev II Method A-2 | 10%to 40% by mass |
| | | Residue on ignition | IS 1089:1986 Rev II Method A-3 | 0.01%to 1.00% by mass |
| | | Iron as Fe | IS 1089:1986 Rev II Method A-4 | Qualitative |
| | | Chlorides as Cl | IS 1089:1986 Rev II Method A-5 | Qualitative |
| 17. | Acid Nitric Explosive Grade | Total Acidity as HNO ₃ | IS 264:2005 Rev III Annexure -A | 50%to 100% by mass |
| | | Residue on ignition | IS 264:2005 Rev III Annexure -B | 0.01%to 1.00% by mass |
| | | Chlorides as Cl | IS 264:2005 Rev III Annexure -C Method A | Qualitative |
| | | Sulphates as H ₂ SO ₄ | IS 264:2005 Rev III Annexure -D Method A | Qualitative |

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| | | Nitrous as HNO ₂ | IS 264:2005 Rev III Annexure -F | 0.01%to 1.00% by mass |
| 18. | Sulphuric Acid | Total Acidity as H ₂ SO ₄ | IS 266:1993 Rev III Annexure -A2 | 1%to 100% by mass |
| | | Residue on ignition | IS 266:1993 Rev III Annexure -A3 | 0.001%to 5.00% by mass |
| | | Iron as Fe | IS 266:1993 Rev III Annexure -A4 Method B | Qualitative |
| 19. | Di-Buthyl Phthalate | Water Content | IS 14421:1997 Is 9591:1996 Rev I Method -9 | 0.01%to 1.00% by mass |
| | | Acidity as Phthalic Acid | IS 14421:1997 IS 9591:1996 Rev I Method -11 | 0.001%to 0.1% by mass |
| | | Ester Value | IS 14421:1997 IS 9591:1996 Rev I Method -12 | 250to 500 Mg .KOH/g |
| | | Relative Density at 27 ⁰ C/27 ⁰ C | IS 14421:1997 IS 9591:1996 Rev I Method -7 | 0.800to 1.500 |
| 20. | Carbamite | Setting Point | JSS 6810-125 :2014 Rev III Appendix A | 60to 95 °C |
| | | Volatile Matter at 60 °C for 2 hours | JSS 6810-125 :2014 Rev III Test Method-1(a) of JSG 0112:2015 Rev I | 0.01%to 1.00% by mass |
| | | Ash | JSS 6810-125 :2014 Rev III Test Method-2(a) of JSG 0112:2015 Rev I | 0.01%to 1.00% by mass |
| 21. | DI-Ethyl Phthalate | Water Content | IND /ME 873(Prov) IS2362:1993 Rev II Clause-7 | 0.01%to 0.50% by mass |

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| | | Acidity as Phthalic Acid | IND /ME 873(Prov) IS9591:1996 Rev I Method -11 | 0.001%to 0.1% by mass |
| | | Ester Content | IND /ME 873(Prov) Appendex to this specification (i.e.IND/ME 873(Prov)) | 80%to 105% |
| | | Relative Density at 27°C/27°C | IND /ME 873(Prov) IS9591:1996 Rev I Method-7 | 0.800%to 1.500 |
| 22. | Glycerin for Nitration | Glycerol Content | JSS 6810-109:2013 Rev III. IS 1796:1986 RevIII Appendex A2 | 70%to 100% by mass |
| | | Chlorides as Cl | JSS 6810-109:2013 Rev III. IS 1796:1986 RevIII Appendex 11.1 | 8to 100 mg/Kg |
| | | Fatty acid and Esters as Na ₂ O | JSS 6810-109:2013 Rev III. IS 1796:1986 RevIII Appendex A15 | 0 to 0.80% by mass |
| | | Water Content | JSS 6810-109:2013 Rev III. IS 1796:1986 RevIII Appendex C | 0.1%to 2.0% by mass |
| | | Relative Density at 30°C/30°C | JSS 6810-109:2013 Rev III. IS 1796:1986 RevIII Appendex A 3.2 | 1.0000%to 1.7000% by mass |
| II. | TEXTILE (WOVEN & NON WOVEN) | | | |
| 1. | Bleached Cotton Linter | Mineral Matter | JSS 8305-142015 Rev IV. Appendex C | 0.01%to 10.00% by mass |

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| | | Matter Soluble in 3 % boiling alkali | JSS 8305-142015 Rev IV. Appendix E | 0.1%to 5.00% by mass |
| | | Matter Soluble in 1 % boiling alkali | JSS 8305-142015 Rev IV. Appendix F | 0.1%to 4.0% by mass |
| | | Copper Number | JSS 8305-142015 Rev IV. Appendix H | 0.001to 10.0 |
| | | Alpha Cellulose Content | JSS 8305-142015 Rev IV. Appendix J | 1.0%to 100.0% by mass |
| | | Moisture Content | JSS 8305-142015 Rev IV. Appendix A | 1.0%to 15.0% by mass |
| 2. | Thread Cotton Sewing | pH of Water Extract | JSS 8310-02:2016 Rev III. JSG 0114:2015 Rev I Method 6 | 1.0to 14.0 |
| | | Water Soluble Chlorides as NaCl | JSS 8310-02:2016 Rev III. JSG 0114:2015 Rev I Method 7 | 0.01%to 10.00% by mass |
| | | Water Soluble Sulphates as Na ₂ SO ₄ | JSS 8310-02:2016 Rev III. JSG 0114:2015 Rev I Method 8 | 0.01%to 10.00% by mass |
| | | Ash on Incineration | JSS 8310-02:2016 Rev III. JSG 0114:2015 Rev I Method 10 | 0.05%to 10.00% by mass |

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| | | Moisture for 2 hours at 103-105 °C | JSS 8310-02:2016 Rev III. JSG 0114:2015 Rev I Method 4 | 0.5%to 15.0% by mass |
| III. | POLLUTION & ENVIRONMENT | | | |
| 1. | Effluent Water | pH @ 25°C | IS 3025 :(Part . 11)-1983 Rev. I (R.A.2006) | 2.0to 12.0 |
| | | Temperature | IS 3025 :(Part . 9)-1984 Rev. I (R.A.2012) | 15°C to 50 °C |
| | | Total Dissolved Solids at 103-105 °C | IS 3025 :(Part . 16)-1984 Rev. I (R.A.2012) | 50 mg/l to 3000mg/l |
| | | Total Suspended Solids at 103-105 °C | IS 3025 :(Part . 17)-1984 Rev .I (R.A.2012) | 10 mg/l to 250mg/l |
| | | Chemical Oxygen Demand | IS 3025 :(Part . 58)-2006 Rev .I (R.A.2012) | 4 mg/l to 300mg/l |
| | | Biochemical Oxygen Demand (3 days @ 27 °C) | IS 3025 :(Part . 44)-1993 Rev .I (R.A.2014) | 2.0 mg/l to 50.0mg/l |
| | | Chlorides as Cl | IS 3025 :(Part . 32)-1988 Rev. I (R.A.2014) | 10 mg/l to 1500mg/l |
| | | Sulphates as BaSO ₄ | IS 3025:(Part . 24)-1986 Rev .I (R.A.2014) (Gravimetric) | 100 mg/l to 1500mg/l |

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| <u>MECHANICAL TESTING</u> | | | | |
| I. | MECHANICAL PROPERTIES OF METALS | | | |
| 1. | Nitro-Cellulose Type B | Pulping Finess (Settling Test) | JSS 1376 – 10 : 2011 Rev.2 Appendix : H | 50 ml to 150 ml |
| | | B&J Stability Test At 132°C ± 0.5°C | JSS 1376 – 10 : 2011 Rev.2 Appendix : R | 0.10 mg to 2.50 mg. of N ₂ /g. of sample. |
| | | Heat Test at 76.7°C ± 0.3°C | JSS 1376 – 10 : 2011 Rev.2 Appendix : Q | 1.0 Minutes to 30.0 Minutes |
| 2. | Nitro-Cellulose Pyro | Heat Test at 76.7°C ± 0.3°C | IND/ME 1013 (Prov.) – Dec.2000 | 1.0 Minutes to 30.0 Minutes |
| 3. | Propellant NQ/M 119 | Heat Test at 65.5°C ± 0.5°C | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 501 | 1.0 Minutes to 30.0 Minutes |
| | | Average Length | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 606 | 1.00 mm to 25.00 mm |
| | | Average External Dia | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 607.4 | 1.00 mm to 25.00 mm |
| | | Average Hole Dia | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 610.4 | 0.20 mm to 1.00 mm |
| | | Average Web | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 610.4 | 0.20 mm to 2.00 mm |
| | | Grains with Web Exceeding + 20 % of the Achieved average Web | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 613 | 2.0% to 20.0 % |

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| | | Grains with Webs Between $\pm 10\%$ of the Achieved average Web | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 612 | 50 %to 100 % |
| | | Ratio of the External Dia to Mean Dia of Hole | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 611 | 5.0 to 15.0 |
| | | Ratio of Length to Dia | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 609 | 1.0 to 3.0 |
| | | Ballistics : Relative Force, % Relative Vivacity, % | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method - 701 | 50% to 120 % 50% to 120 % |
| 4. | Propellant NQ/S 400-100 | Heat Test at 65.5°C $\pm 0.5^\circ\text{C}$ | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 501 | 1.0 Minutes to 30.0 Minutes |
| | | Average External Dia | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 607.4 | 1.00 mm to 5.00 mm |
| | | Average Internal Dia | JSS 1376 – 13 : 2014 Rev.I SOP No.QC/LY/SOP/3 Issue No.01 Dt.18-04-2016 | 0.20 mm to 2.00 mm |
| | | Average Annulus | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 610.3.2 | 0.20 mm to 2.00 mm |
| | | Mass per 2540 mm | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 615 | 30 g to 60 g |
| | | Mean difference between 5 heaviest and 5 lightest sticks per 254 mm | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 614 | 0.40% to 2.00 % |

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| | | Sticks with Annulus Between $\pm 10\%$ of the Achieved mean Annulus | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 612 | 50% to 100 % |
| | | Ballistics : Relative Force, % | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 701 | 50% to 120 % |
| 5. | Propellant AP/S 376 - 117 | Relative Vivacity, % Heat Test at 71.1°C $\pm 0.5^\circ\text{C}$ | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 501 | 50 %to 120 % 1.0 Minutes to 30.0 Minutes |
| | | Average External Dia | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 607.4 | 1.00 mm to 5.00 mm |
| | | Average Internal Dia | JSS 1376 – 12 : 2013 Rev.I SOP No.QC/LY/SOP/3 Issue No.01 Dt.18-04-2016 | 0.20 mm to 2.00 mm |
| | | Average Annulus | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 610.3.2 | 0.20 mm to 2.00 mm |
| | | Mass per 2540 mm | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 615 | 30 g to 60 g |
| | | Mean difference between 5 heaviest and 5 lightest sticks per 254 mm | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 614 | 0.40% to 2.00 % |
| | | Sticks with Annulus Between $\pm 0.1\text{mm}$ of the Achieved average Web % | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 612 | 50% to 100 % |
| | | Ballistics : Relative Force, % | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 701 | 50% to 120 % |
| | | Relative Vivacity, % | | 50 %to 120 % |

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| 6. | Propellant NQ/M 254 | Heat Test at 65.5°C ± 0.5°C | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 501 | 1.0 Minutes to 30.0 Minutes |
| | | Average Length | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 606 | 25.00 mm to 40.00 mm |
| | | Average External Dia | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 607.4 | 12.00 mm to 16.00 mm |
| | | Average Hole Dia | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 610.4 | 0.50 mm to 3.00 mm |
| | | Average Web | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 610.4 | 1.00 mm to 4.00 mm |
| | | Ballistics : Relative Force, % Relative Vivacity, % | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 701 | 50 to 120 % 50 to 120 % |
| 7. | Propellant NQ/M 054 | Heat Test at 65.5°C ± 0.5°C | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 501 | 1.0 Minutes to 30.0 Minutes |
| | | Average Length | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 606 | 10.00 mm to 25.00 mm |
| | | Average External Dia | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 607.4 | 5.00 mm to 10.00 mm |
| | | Average Hole Dia | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 610.4 | 0.20 mm to 2.00 mm |
| | | Average Web | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 610.4 | 1.00 mm to 4.00 mm |

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Laboratory **Quality Control Laboratory, Cordite Factory, Aruvankadu, The Nilgiris, Tamil Nadu**

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

Certificate Number **TC-7133 (in lieu of T-0122, T-1716)**

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Validity **05.04.2018 to 04.04.2020**

Last Amended on 13.04.2018

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|-----|----------------------------|--|---|--|
| | | Ballistics : Relative Force, % | JSS 1376 – 13 : 2014 Rev.I JSG 0116 – 1996 Method – 701 | 50% to 120 % |
| | | Relative Vivacity, % | | 50% to 120 % |
| 8. | Propellant AP/S 043 | Heat Test at 71.1°C ± 0.5°C | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 501 | 1.0 Minutes to 30.0 Minutes |
| | | Average External Dia | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 607 | 0.10 mm to 2.00 mm |
| | | Mass per 2540 mm length | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 615 | 0.100 mm to 2.000 mm |
| | | Mean difference between 5 heaviest and 5 lightest strands per 254 mm | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 614 | 0.002 mm to 1.000 mm |
| | | Grains with External Diameter Between ± 0.05 mm of the the Achieved average diameter | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 Method – 612 | 50 g to 100 g |
| | | Ballistics : Relative Force, % | JSS 1376 – 12 : 2013 Rev.I JSG 0116 – 1996 | 50 %to 120 % |
| | | Relative Vivacity, % | Method – 701 | 50% to 120 % |