

# CHEMICAL QUALITY EVALUATION LABORATORY

| S.No.                         | Nature of Test                     | Test Method  | Testing Charges (Rs.) | Instruments                          |
|-------------------------------|------------------------------------|--|-----------------------|--------------------------------------|
| <b>(A) Colour Fastness to</b> |                                    |  |                       |                                      |
| 1A.                           | Light (Xenon Arc)<br>- Upto 20 AFU | IS: 2454<br>ISO 105-B02,<br>DIN 54004<br>BS-1006,<br>AATCC-16H     | 1000.00               | Xenon Tester (ATLAS)                 |
| 1B.                           | Light (Xenon Arc)                  | ISO 105-B04,   | 2500.00               | Xenon Tester (ATLAS)                 |
| 2A.                           | Laundering (Washing)               | IS: 687, 3361, 764, 765 & 3417<br>ISO 105 : CO1/CO2/CO3<br>CO4/CO5 | 300.00                | Launder-o-meter                      |
| 2B.                           | Laundering (Washing)               | IS : 764 ( After 04 washing)                                       | 600.00                | Launder-o-meter                      |
| 2C.                           | Laundering (Washing)               | ISO 105 CO6,<br>AATCC-61   | 450.00                | Launder-o-meter                      |
| 3.                            | Crocking/ Rubbing<br>( Dry & Wet)  | IS : 766<br>ISO 105 -X12<br>AATCC-8                                | 300.00                | Motorised Crock<br>Meter             |
| 4.                            | Water                              | IS : 767,<br>ISO 105-E01,<br>AATCC-107                             | 300.00                | Perspirometer<br>(James H. Heal)     |
| 5.                            | Perspiration                       | IS : 971<br>ISO105 E04,<br>AATCC-15,<br>DIN 54020                  | 300.00                | Perspirometer<br>(James H. Heal)     |
| 6.                            | Dry Cleaning                       | IS : 4802<br>ISO 105 D01,<br>AATCC-132                             | 300.00                | Launder-o-meter                      |
| 7.                            | Hot Pressing/Sublimation           | IS : 689, IS : 975<br>AATCC-133,                                   | 300.00                | Sublimation Tester/<br>Scotch Tester |
| 8.                            | Sea Water                          | IS: 690<br>AATCC-106<br>ISO105 E02,                                | 300.00                | Perspirometer<br>(James H. Heal)     |

|                                 |  |  |        |  |
|---------------------------------|--|--|--------|--|
| 9.                              | Organic Solvent/ Water Spotting                                | IS : 688<br>AATCC104, JISLO853,<br>ISO-105 E07, AATCC-157    | 300.00 | -  |
| 10.                             | Wet Scrubbing  | IS : 11908   | 300.00 | Wet Scrub Abrasion Tester  |
| 11.                             | Shampooing   | IS : 11969   | 300.00 | -  |
| 12.                             | Chlorinated Water/ Hypochlorite Bleach                         | IS : 762, IS : 4803<br>ISO 105-E03,<br>DIN 4019<br>AATCC-162 | 300.00 | -  |
| 13.                             | Non-chlorine Bleaching/ Hydrogen Peroxide bleach               | IS : 763<br>ISO 105 NO.1&2, AATCC-3,<br>AATCC-101            | 300.00 | -  |
| <b>B. Dimensional Change to</b> |  |  |        |  |
| 1.                              | Hand Washing   | ISO 6330   | 300.00 | -  |
| 2.                              | Domestic Washing ( Horizontal drum & Agitator type machine )   | ISO 6330   | 600.00 | Automatic Washing Machine & Drying procedure - Tumble dry, Line dry etc. |
| 3.                              | Automatic Home Laundering (Machine wash)                       | IS : 1299<br>AATCC-135,<br>AATCC-150,<br>ISO 5077            | 600.00 | Shrinkage Tester & Drying procedure - Tumble dry, Line dry etc.          |
| 4.                              | Relaxation Shrinkage / Shrinkage or Elongation                 | IS 2977, IS : 665  | 350.00 | Water Tray   |
| 5.                              | Shrinkage when Heated/ Shrinkage or Elongation (Hot Condition) | IS : 11248- Annexure C<br>IS : 11815 -Appendix B             | 350.00 | Hot Air Oven   |
| 6.                              | Appearance After Laundering/Hand Wash                          | AATCC-124, AATCC-88,<br>AATCC-143                            | 600.00 | Shrinkage Tester   |
| 7.                              | Dry & Wet Shrinkage for Polyester sewing thread                | IS : 9543  | 600.00 | Hot Air Oven   |
| 8.                              | Skewness   | AATCC-179,<br>ASTM-D3882                                     | 600.00 | Shrinkage Tester   |
| 9.                              | Fabric Wrinkle Recovery  | AATCC-128  | 400.00 | Wrinkle Recovery Tester  |

**(C) Fibre Composition**

|    |   |   |                  |                  |
|----|---|---|------------------|------------------|
| 1. | Qualitative Analysis  | IS :667<br>AATCC-20   | 300.00           | Microscop        |
| 2. | Quantitative Analysis<br>- Binary Mixture.<br>- Extra Each component<br>(Fibre) | IS :3416, IS:2006, IS:2005,<br>IS :3421, IS:9889,<br>AATCC-20A,<br>BS: 4407 | 400.00<br>150.00 | ---              |
| 3. | Flax, Jute etc.   | Internal method<br>(Moisture Regain Basis)                                  | 800.00           | Humidity Chamber |

**(D) Colour Matching System**

|    |  |                                       |        |                                    |
|----|--|---------------------------------------|--------|------------------------------------|
| 1. | Assessment of Total<br>Colour difference (dE)                      | Macbeth-3100 manual                   | 300.00 | Spectrophotometer<br>Macbeth-3100  |
| 2. | Whiteness/Yellowness/<br>Brightness Index<br>Evaluation Comparison | Macbeth-3100 manual                   | 300.00 | Spectrophotometer<br>Macbeth-3100  |
| 3. | Comparison of strength of<br>Dyestuff Powder Strength              | Solvent soluble & CCM<br>Macbeth-3100 | 600.00 | Spectrophotometer<br>Macbeth-3100  |
| 4. | Reflectance Value & Curve  | Macbeth-3100 manual                   | 300.00 | Spectrophotometer<br>Macbeth-3100  |
| 5. | Presence of optical Brightener                                     | U.V. Light Source                     | 200.00 | Colour Matching Cabinet            |
| 6. | Optical Brightener-Active<br>Content                               | UV-Vis. Spectrophotometer             | 600.00 | UV- Spectrophotometer<br>(Simadzu) |

**(E) Dyes**

|    |  |  |        |                        |
|----|--|--|--------|------------------------|
| 1. | Identification of Dyes on<br>textile material                                | IS : 4472  | 1000.0 | ---                    |
| 2. | Comparison of Dyestuff<br>Strength Test (By Dyeing)<br>and Evaluation by CCM | Dyeing Technique manual                                  | 1000.0 | IR Dyeing machine      |
| 3. | Comparison of Dyestuff<br>Strength   | By UV-Visible<br>Spectrophotometer                       | 600.00 | Colour Matching System |
| 4. | Purity of Indigo Dyestuff  | Titration  | 1000.0 | ---                    |
| 5. | Dyestuff Performance<br>(Levelling, Migration, Strike<br>And Compatibility)  | Evaluation of textile<br>chemicals ( Prof. V.A.Shenai)   | 1000.0 | ---                    |
| 6. | Disperse Dye Performance   | Evaluation of textile<br>chemicals<br>(Prof. V.A.Shenai) | 1000.0 | ---                    |

**(F) Taber Abrasion**

|                             |  |  |                   |  |
|-----------------------------|--|--|-------------------|--|
| 1.                          | Abrader Wheel (Available with CS-10, H-18, H-22 & H-38)  | ASTM D: 3884 & 3389<br>ISO : 5470                        |                   | Taber Abrasion Tester (USA)                                  |
|                             | Upto 1000 Cycles   |  | 900.00            |  |
|                             | Upto 1500 Cycles   |  | 1650.00           |  |
|                             | Upto 2000 Cycles   |  | 2400.00           |  |
| <b>(G) Flame Resistance</b> |  |  |                   |  |
| 1.                          | Inclined Plane   | IS : 11871<br>ASTM D1230,<br>AATCC-33                    | 750.00            | Inclined Flammability Tester                                 |
| 2.                          | Vertical   | IS: 11871 IS : 15061<br>BS: 5438, BS: 5867,<br>BS : 3119 | 750.00            | -  |
| 3.                          | Horizontal   | IS : 15061   | 750.00            | -  |
| 4.                          | Limiting Oxygen Index (L.O.I)<br>i) Fabric<br>ii) Other than fabric (Plastic, Rubber, Decorative sheet etc.)   | ASTM D2863<br>NCD 14510<br>IS : 13501                    | 800.00<br>1600.00 | L.O.I. Tester (ATLAS, USA)                                   |
| 5.                          | Ignition by Hot Nut metal  | BS : 4790  | 500.00            | Hot Nut metal method   |
| 6.                          | Carpet/Rugs Ignition Area  | BS : 6307  | 1000.00           | Methenamine Tablet   |
| 7.                          | Cigarette Test on Mattresses   | ASTM D 4723  | 300.00            | 16 CFR 1632- (FF4-72)  |
| 8.                          | Other Textile Heat & Flammability Test method as per ASTM D 4723 and other methods can also be performed depending upon the availability of test material. |  |                   |  |
| <b>(H) Water Resistance</b> |  |  |                   |  |
| 1.                          | Bundesmann / Shower  | IS : 392   | 500.00            | Bundesmann/ Shower Tester                                    |
| 2.                          | Cone Test  | IS : 7941  | 300.00            | -  |
| 3.                          | Spray Test   | IS : 390<br>AATCC-22,<br>ISO-4920                        | 150.00            | Spray Tester   |
| 4.                          | Hydrostatic Pressure Head Test   | IS: 7016 (PART-VII)<br>AATCC-79,<br>ASTM D4772           | 500.00            | Hydrostatic Pressure Head Tester (Water column height 100cm) |

|                               |  |                                    |                  |   |
|-------------------------------|--|------------------------------------|------------------|---|
| 5.                            | Water Vapour Transmission Test   | ASTM E-96,<br>CAN-4.2-49           | 700.00           | Water Vapour Permeability Tester                  |
| 6.                            | Wettability/Absorbency   | IS : 2349<br>AATCC-79              | 200.00           | --  |
| <b>(I) General Parameters</b> |  |                                    |                  |   |
| 1.                            | pH Value of Aqueous Extract  | IS : 1390<br>ISO-3071,<br>AATCC-81 | 200.00           | pH Meter  |
| 2.                            | Water Soluble Matter   | IS : 3456                          | 400.00           | --  |
| 3.                            | Scouring Loss<br>(i) Mild & Sever method<br>(ii) Solvent method                    | IS : 1383<br>IS : 2360             | 400.00<br>500.00 | Soxhlet Apparatus                                 |
| 4.                            | Ether Soluble/ Solvent soluble Matter  | IS : 4390                          | 500.00           | Soxhlet Apparatus                                 |
| 5.                            | Barium Activity Number (Mercerised with Unmercerised)                              | IS : 1689                          | 600.00           | --  |
| 6.                            | Desizing of Fabric   | IS :1383                           | 300.00           | --  |
| 7.                            | Scouring, Bleaching & Dyeing   | As per fibre property              | 1000.00          |   |
| 8.                            | Residual starch on bleached fabric   | IS : 1967                          | 1000.00          | --  |
| 9.                            | Ash Content  | IS : 199                           | 400.00           | Muffle Furnace                                    |
| 10.                           | Moisture Content   | IS : 199, ASTM D2654               | 300.00           | Hot Air Oven                                      |
| 11.                           | Solid Content  | IS : 199                           | 300.00           | Hot Air Oven                                      |
| 12.                           | Ionic Nature   | Solvent                            | 400.00           | --  |
| 13.                           | Active Content   | Solvent                            | 500.00           | --  |
| 14.                           | Oligomer Content   | Solvent Extraction                 | 500.00           | Soxhlet Apparatus                                 |
| 15.                           | Oil Content/Wax Content/ Spin Finish   | Solvent Extraction                 | 500.00           | Soxhlet Apparatus                                 |
| 16.                           | Oil Repellency ( Hydrocarbon)  | AATCC-118                          | 2000.00          | --  |
| 17.                           | Buoyancy Test  | IS : 3040                          | 1500.00          | --  |
| 18.                           | Raw Wool Fibres (Scouring Loss, Oil & Fat Content, Vegetable Matter , Ash Content) | IS :1349                           | 2500.00          | Hot Air Oven, Soxhlate Apparatus & Muffle Furnace |

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|--|--|--|------------------|--|
| 19.                                    | Desizing efficiency/<br>Relative Efficiency of<br>desizers   | Evaluation of textile<br>chemicals<br>(Prof. V.A.Shenai)                     | 1500.00          | ---  |
| 20.                                    | Chloride content of textile<br>material  | IS : 4202  | 600.00           | ---  |
| 21.                                    | Sulphate content of textile<br>material  | IS : 4203  | 600.00           | ---  |
| 22.                                    | Titanium Oxide (TiO <sub>2</sub> )   | ---  | 1000.00          | ---  |
|  |  |  |                  | ---  |
|  |  |  |                  | ---  |
| <b>(J) Chemicals (Purity/Strength)</b> |  |  |                  |  |
| 1.                                     | Ordinary Chemicals   | Profiles in Analysis of<br>Chemicals -<br>Prof. N.F. Desai<br>reference book | 400.00           | ---  |
| 2.                                     | Sodium Hypochlorite<br>(i) Available Chlorine<br>(ii) Available Chlorine &<br>Sodium Hydroxide     |  | 400.00<br>500.00 | ---  |
| 3.                                     | Acetic Acid  |  | 400.00           | ---  |
| 4.                                     | Sodium Chloride  |  | 400.00           | ---  |
| 5.                                     | Sodium Hydrosulphite   |  | 500.00           | ---  |
| 6.                                     | Hydrogen Peroxide  |  | 400.00           | ---  |
| 7.                                     | Hydrochloric Acid  |  | 400.00           | ---  |
| 8.                                     | Sulphuric Acid   |  | 400.00           | ---  |
|  |  |  |                  | ---  |
| 10.                                    | Silicon ( Oil Content)   |  |                  | 600.00   |
| <b>(K) Sizing Chemicals</b>            |  |  |                  |  |
| 1.                                     | Starch (Moisture Content ,<br>Ash Content, pH, Water<br>soluble matter, Acidity,<br>Ether extract) | IS : 1605  | 1200.00          | Hot Air Oven, Muffle Hot<br>Air Oven, Muffle furnace |
| 2.                                     | Tallow ( Total fatty matter,<br>Total Ash , Water insoluble<br>matter, Unsaponifiable<br>matter)   | IS: 1780   | 1200.00          | Hot Air Oven,<br>Muffle furnace                      |

|  |  |   |         |                              |
|--|--|---|---------|------------------------------|
| 3.                                       | CMC (Moisture Content, pH, Active CMC Content)                                       | IS : 3520   | 1200.00 | Hot Air Oven, pH meter       |
| 4.                                       | PVA (Volatile matter, Residual acetate, Ash content)                                 | Sizing material, Methods, Machines<br>D. B. Aajgaonkar et al,     | 1200.00 | Hot Air Oven, Muffle furnace |
| 5.                                       | China Clay /French Chalk (Moisture content, Loss on ignition, grit & total iron),    | Profiles in Analysis of Chemicals - Prof. N.F. Desai              | 1200.00 | Hot Air Oven                 |
| 6.                                       | Gum (Moisture Content, Ash Content, pH, Watersoluble matter, Acidity, Ether extract) | IS : 3988   | 1200.00 | Hot Air Oven, Muffle furnace |
| <b>(L) Dye &amp; Printing Assistance</b> |  |   |         |                              |
| 1.                                       | Dye Fixing Agent   | IS : 11660  | 600.00  | ---                          |
|  |  |   |         |                              |
| 3.                                       | Pigment Binder ( Solid Content, Active content, pH)                                  | IS : 14742<br>Evaluation of textile chemicals (Prof. V.A. Shenai) | 1200.00 | Hot air Oven, pH meter       |
| 4.                                       | Comparative Strength of Levelling Agent  | Evaluation of textile chemicals (Prof. V.A. Shenai)               | 1200.00 | IR Dyeing machine            |
| 5.                                       | Dispersing Agent   | Evaluation of textile chemicals (Prof. V.A. Shenai)               | 750.00  | ---                          |
| 6.                                       | Defoamer   | Evaluation of textile chemicals (Prof. V.A. Shenai)               | 750.00  | ---                          |
|  |  |   |         | ---                          |
| 8.                                       | Wetting Agent  | Wetting Efficiency Comparison by DRAVE'S method                   | 600.00  | ---                          |
| 9.                                       | Resist Salt (Purity)   | Evaluation of textile chemicals (Prof. V.A. Shenai)               | 600.00  | ---                          |
| 10.                                      | Desizing Agent (Purity)  | Evaluation of textile chemicals (Prof. V.A. Shenai)               | 1000.00 | ---                          |
|  |  |   |         |                              |
|  |  |   |         |                              |

**(M) Finishing Chemicals**

|    |  |  |         |  |
|----|--|--|---------|--|
| 1. | Polyethylene Emulsion<br>(Solid Content, Active Content, pH, Ionic Nature)             | Evaluation of Textile Chemicals<br>( Prof. V.A Shenai) | 1000.00 | Hot air Oven, pH meter                       |
| 2. | Silicones (Solid Content, Oil Content, pH, Ionic Nature)                               |  | 1200.00 | Hot air Oven, pH meter                       |
| 3. | Softner (Solid Content, Active Content, pH, Ionic Nature)                              |  | 1200.00 | Hot air Oven, pH meter                       |
| 4. | Resin (Solid Content, Formaldehyde Content (HCHO) Content, pH, HCHO To Nitrogen Ratio) |  | 1200.00 | UV-Spectrophotometer, Hot air Oven, pH meter |
| 5. | Polyvinyl Acetate (Moisture Content, pH, Non Volatile Matter)                          |  | 1000.00 | Hot air Oven, pH meter                       |

**(N) Fabric Defect Analysis**

|    |  |   |                                  |  |
|----|--|---|----------------------------------|--|
| 1. | Processing Related Faults  | - | 6000.00                          |  |
| 2. | Opinion and Technical Problem on textile processing, product and related aspects |   | Depending upon nature of problem |  |

**(O) Automotive Fabric**

Ford Specification, Suzuki Engineering Standard, General Motors, Hyundai Specification, Toyota Engineering, Nissan, Maruti

|    |  |   |   |                                   |
|----|--|---|---|-----------------------------------|
| 1. | COLOR FASTNESS TO Light Xenon Arc<br>- For One sample<br>- For two samples<br>- Three or more samples                                  | GME 60292<br>SAE J 1885<br>TSL 3600 G<br>TSL 0601 G<br>MS -300-35<br>AATCC 16 H<br>JASO M 403<br>HES D 6601<br>JASO M 346<br>EDS-T-7415<br>GM 9538P<br>NESM0135, NESM0161 | 80 per hour<br>50 per hour<br>35 per hour | Xenon Tester (ATLAS)              |
| 2. | Colour definition/difference (XYZ & Lab Value) ( $\Delta E$ )  | CCM<br>Macbeth-3100   | 300.00                                    | Spectrophotometer<br>Macbeth-3100 |
| 3. | Abrasion Resistance (Taber Type) Abrader Wheel<br>CS-10, H-18, H-22 & H-38<br>Upto 1000 Cycles<br>Upto 1500 Cycles<br>Upto 2000 Cycles | SAE J1530 - A<br>SES N 3246,<br>JASO 403<br>SAE J948<br>MS 300-32<br>SES N 3298<br>NESM7100   | 900.00<br>1650.00<br>2400.00              | Taber Abrasion Tester (USA)       |



|     |   |  |         |                                |
|-----|---|--|---------|--------------------------------|
| 4.  | Flammability  | SAE J 369<br>FMV SS 302<br>SES N 3245<br>HES D-6003<br>JASO M 313<br>GM 9070P<br>MS 300-8<br>NESM009 4 | 750.00  | Flammability Tester            |
| 5.  | Smell (Dry & Wet Condition)                           | TSL 3505G<br>TSM 0505 G  | 1200.00 | Hot air Oven                   |
| 6.  | Smell (40C- 95% RH X 400 HRS)                         | TSL 3505G  | 8500.00 | Humidity Chamber               |
| 7.  | Odor property   | HES D6507,<br>MS 300-32FMLT 131-01<br>FLTM BO 131-01<br>NESM016 0                                      | 600.00  | Hot Air Oven                   |
| 8.  | Glass Fogging   | TSL 3608G<br>MS : 300-54<br>EDS-T-7694-B<br>TSM 0503G (Method A)<br>NESM0161                           | 600.00  | U.V. Visible Spectrophotometer |
| 9.  | Colour Fastness to Crocking /Rubbing                  | FLTM BN 107-01<br>JASO M 313<br>EDS-T-7643<br>MS 300-35  | 600.00  | Motorised Crock Meter          |
| 10. | Colour fastness to Rubbing after fade Resistance      | MS-300-35<br>& Fade Resistance condition   | 600.00  | Xenon Tester and Crock Meter   |
| 11. | Dimensional change by Moisturing/ Immersion shrinkage | HES D 6506<br>JASO M 313-83<br>MS 300-32<br>FLTM BN 105-01   | 600.00  | Water bath                     |
| 12. | Dimensional Stability against Humidity                | MS 300-32  | 600.00  | Humidity Chamber               |
| 13. | Dimensional Change by Heating                         | HES D 6506<br>FLTM-BN-105-01<br>NESM013 1  | 600.00  | Hot Air Oven                   |
| 14. | Water Inclusion                                       | 5SFTS-0303-0   | 450.00  | ---                            |
| 15. | Water Resistance/ Repellency                          | HES D 6506<br>Ms 300-32  | 150.00  | Spray Tester                   |
| 16. | Soil and Cleanability                                 | MS 300-32<br>FLTM BN 112-08  | 1000.00 | Launder-o-meter                |
| 17. | Resistance to Bleeding                                | AN 101 -01   | 300.00  | Perspirometer (JamesH. Heal)   |
| 18. | Resistance to Perspiration                            | AN 101 -01   | 300.00  | Perspirometer (JamesH. Heal)   |

|     |                        |   |          |                  |
|-----|------------------------|---|----------|------------------|
| 19. | Resistance to Heat     | (100 <sup>0</sup> c for 8 Hrs.)           | 100.00   | Hot Air Oven     |
| 20. | Resistance to Humidity | (40 <sup>0</sup> C- 95% RH for<br>8 hrs.) | 150.00   | Humidity Chamber |
| 21. | Steaming in Auto-Clave | (100 <sup>0</sup> C for 1 hr.)            | 200.00   | Auto-Clave       |
| 22  | Thermal Cycle          | NESM0132                                  | 11500.00 |                  |
| 23  | Chemical<br>Resistance | NESM0133                                  | 6000.00  |                  |
| 24  | Scrach Test            | NES Clause -38                            | 2000.00  |                  |
|     |                        |   |          |                  |

**Note :**

Sample size will be decided on number and nature of tests.