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| Laboratory | Mechanical Testing Laboratory, Technical Services Department, BHEL, Bhopal, Madhya Pradesh | | |
| Accreditation Standard | ISO/IEC 17025: 2005 | | |
| Discipline | Mechanical Testing | Issue Date | 03.02.2015 |
| Certificate Number | T-0133 | Valid Until | 02.02.2017 |
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| S.No. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|--|---|---|--|---|
| I. MECHANICAL PROPERTIES OF MATERIALS | | | | |
| 1. | Ferrous/ Nonferrous materials | Tensile test, 0.2% Proof stress, Yield strength, % Reduction in area, % Elongation, | IS 1608: 2005 (RA 2011) | 100 N/mm ² to 1600 N/mm ² 90 N/mm ² to 1200 N/mm ² 90 N/mm ² to 1300 N/mm ² 20% to 80 % 2 % to 90 % |
| 2. | Ferrous/ Nonferrous material and components | Vickers Hardness Test | IS 1501(Part1): 2013 | (13.17-2289) HV5, (24-2289) HV10, HV30 |
| | | Hardness Test Brinell | IS 1500 (Part1): 2013 | HBW5/250, 10/3000 (31.8-315) HBW 5/750, 10/1000 (95.5-94.5) |
| | | Hardness test, Rockwell (HRC and HRB scale) | IS 1586: 2000 (Part1): 2012 | 20 HRC to 70 HRC 20 HRC to 100 HRB |
| 3. | Ferrous Materials | Izod Impact Test | IS 1598: 2009 | 0 to 30 kgm (-)80°C to 10°C |
| | | Charpy Impact Test, U&V notch | IS 1499: 1977 IS 1757: 1988 (RA 2009) | 0 to 30 kgm (-)80°C to 10°C |
| 4. | Ferrous Non Ferrous Materials: Rods, Bars, Sheet and Strips. | Bend test | IS 1599: 2012 | Upto 32 thick Range upto 450 kN |

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| 5. | Ferrous Materials: Tubes | Bend test | IS 2329: 2011 | Upto 60 mm OD |
| 6. | Ferrous and Nonferrous: Tubes | Flattening Test (tubes-Steel, Al and copper) | IS 2328: 2005 (RA 2011) | Dia. 250 mm max. |
| | | Drift test | IS 2335: 2005 (RA 2011) | Dia. 50 mm max |
| 7. | Non Metals | 1) UTS 2) Cross breaking Strength 3) Shear strength 4) Compression Strength | IS 1998: 1962 (RA 2003) | 80 N/mm ² to 250 N/mm ² 80 N/mm ² to 450 N/mm ² 100 N/mm ² to 250 N/mm ² 100 N/mm ² to 450 N/mm ² |
| 8. | Non Metal: Carbon Brush | Pig tail Pull out load test | IS 13466: 1992 (RA 2008) | 100 N/mm ² |
| 09. | Ferrous/ Non ferrous materials | Macro Etch test | IS 11371: 1985 (RA 2012) ASTM E340/00 Reappd.2007 | Qualitative |
| 10. | Ferrous/ Non ferrous material and components | Micro structural analysis | ASM Handbook, vol. 9, Metallography & Microstructure (IS-7739/1975 RA 2012) | Upto 500 X Magnification |
| | | Estimation of Grain size, Qualitative, comparison with standard charts. | ASTM E-112/2013 | ASTM No.1 to 10 Magnification 100 X |
| 11. | Case hardened components | Measurement of case depth- 1. Microscopic method. 2. Hardness survey method | IS 6416: 1988 (RA 2012) | Upto 4 mm |
| 12. | Ferrous materials | Determination of Inclusion content of steel. Qualitative comparison with standard charts | ASTM E – 45/2013, Method - A | Upto 100 X |

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| 13. | Copper and Copper Alloys | Mercurous nitrate test for determination of stress corrosion cracking | IS 2305: 1988 (RA 2009) | Qualitative |
| 14. | Ferrous materials (Ferritic/Austenitic stainless steel) | Inter granular corrosion test | ASTM-A262: 2013 Practice A | Qualitative 250 X to 500 X |

II. NOISE & VIBRATION

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|----|------------------------------|--|---|---|
| 1. | Rotating Machines | Vibration measurement on rotating electrical machines | IS 12075: 2008 IEC-60034 (Part 14) (Ed.3.0.b) (RA 2013) Amd.1 | 0 to 3000 microns 0 to 100 mm/sec 0 to 50 mm/sec ² |
| | | Noise level measurements on rotating electrical machines | IS 12065: 1987 (RA 2014) IEC 60034 (Part 01) (Ed.4.0 b) Amd.1 | 40 dB (A) to 130 dB (A) |
| 2. | Transformers/ Shunt reactors | Noise level measurement on transformers and reactors | NEMA-1993-TR-1 IEC-60076-10-2001-05 | 40 dB (A) to 130 dB (A) |

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