

Laboratory Institute of Sonic & Engineering Co., 21, Charu Chandra Place (East), Kolkata, West Bengal

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7693 (in lieu of T-0439)

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Validity 18.08.2018 to 17.08.2020

Last Amended on --

| Sl. | Product / Material of Test | Specific Test Performed | Test Method Specification against which tests are performed | Range of Testing / Limits of Detection |
|---------------------------------------|---|---|--|---|
| <u>NON-DESTRUCTIVE TESTING</u> | | | | |
| I | METALS & ALLOYS | | | |
| 1. | Welding Of Ferrous, Nonferrous Metal and Metallic Pipe | Radiography Testing with Isotope [RT] -Ir-192 -X- rays | ASME-Sec-V, Article-1 & 2 - 2017 ASTM-E-1416-2016 ASTM-E-1032-2015 IS 2825-1969 (RA-2017) IS 1182-1983 (RA-2014) API Standard 1104 - 2016 AWS D1.1/D1.1M-2015 DIN EN 1435:1997+A1:2002 BS EN 444, 1994 | 10 mm to 65mm Steel Thickness or equivalent 4 mm to 35mm Steel Thickness or equivalent |
| | Metallic Casting | | ASTM-E-1030/E1030M-2017 | |
| 2. | Forging -Ferrous -Non-Ferrous | Ultrasonic Testing [UT] | ASTM-E-Sec-V, Article 5 ASTM-A-388 / A388M – 2017 ASTM-SA-745-2017 IS 8791-1978 (RA-2013) BS 4124-1991 BS EN-10228-3:1998 IS 3664 -1981 (RA-2014) | 25 mm to 2000 mm 10 mm to 200 mm |
| | Steel Castings | | ASTM-E-SEC-V, Article 5 ASTM-A-609/A-609M-2017 IS 7666-1988 (RA-2014) IS 9565-1995 (RA-2017) | 20 mm to 1500 mm |
| | Steel Plates | | ASTM-E-SEC-V, Article 5 ASTM-A-435/SA-435M-2017 ASTM-A-578 / 578M - 2017 IS 11630-2005 (RA-2014) | 10 mm to 250 mm |

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| | Metal Pipe And Tubing | | ASTM-E-SEC-V, Article 5 ASTM-A-435/SA-435M-2017 ASTM-A-578 / 578M - 2017 IS 11630-2005 (RA-2014) | Min. OD 12.7mm OD more than 12mm |
| | Bond Evaluation (White Metal To Steel/Bronze) | | ASTM-E-SEC-V, Article 5 ASTM-E-213 – 2017 | Minimum Lack of Bond Dia 5 mm |
| | Welds | | ASTM-E-SEC-V, Article 4 AWS D1.1/D1.1M-2015 | 8 mm to 100 mm |
| 3. | Ferrous And Nonferrous Metal | Ultrasonic Thickness Testing | ASTM-E-797 / E797 M - 2017 IS 15435-2003 (RA-2013) | 3 mm to 15 mm steel thickness |
| | | | | 16 mm to 50 mm steel thickness |
| | | | | 51 mm to 100 mm steel thickness |
| 4. | Ferromagnetic Material | Magnetic Particle Testing (MPT) (Yoke Method) [Fluorescent & Non Fluorescent] | ASME-SEC-V-2017, Article – 7 IS 3703-2004 (RA-2014) IS 10724-1990 (RA-2017) ASTM-E-709-2017 AWS D1.1, 2015 EN 10228-1, 1999 | Qualitative (Surface defects and sub-surface defects Upto 3 mm depth) |
| 5. | Ferrous And Nonferrous Metals | Liquid Penetrant Testing (LPT) [visible dye only] | ASME-SEC-V-2017, Article-6 ASTM-E-1417/E1417M-2013 ISO 4386/3-1992 IS 3658-1999 (RA-2014) AWS D1.1, 2015 EN 10228-2, 1998 | Qualitative (Defects open to surface) |