



National Accreditation Board for  
Testing and Calibration Laboratories

**CERTIFICATE OF ACCREDITATION**

**TCR ENGINEERING SERVICES PRIVATE LIMITED**

has been assessed and accredited in accordance with the standard

**ISO/IEC 17025:2017**

**"General Requirements for the Competence of Testing &  
Calibration Laboratories"**

for its facilities at

PLOT NO. 125/2094, VISHNU VIHAR, JAYAPUR PAHALA, BHUBANESWAR, KHORDHA, ODISHA, INDIA

in the field of

**TESTING**

Certificate Number: TC-15993

Issue Date: 30/04/2025

Valid Until: 29/04/2029

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website [www.nabl-india.org](http://www.nabl-india.org))

Name of Legal Entity: TCR ENGINEERING SERVICES PRIVATE LIMITED

Signed for and on behalf of NABL



  
Anita Rani  
Director

  
N. Venkateswaran  
Chief Executive Officer



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TCR ENGINEERING SERVICES PRIVATE LIMITED, PLOT NO. 125/2094, VISHNU VIHAR, JAYAPUR  
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| Permanent Testing |                           |                              |                                                                                                            |                                                                                                      |
| 1                 | CHEMICAL- METALS & ALLOYS | Aluminium & its alloys       | Copper                                                                                                     | ASTM E1251                                                                                           |
| 2                 | CHEMICAL- METALS & ALLOYS | Aluminium & its alloys       | Iron                                                                                                       | ASTM E1251                                                                                           |
| 3                 | CHEMICAL- METALS & ALLOYS | Aluminium & its alloys       | Manganese                                                                                                  | ASTM E1251                                                                                           |
| 4                 | CHEMICAL- METALS & ALLOYS | Aluminium & its alloys       | Zinc                                                                                                       | ASTM E1251                                                                                           |
| 5                 | CHEMICAL- METALS & ALLOYS | Aluminium & its alloys       | Lead                                                                                                       | ASTM E1251                                                                                           |
| 6                 | CHEMICAL- METALS & ALLOYS | Aluminum and its alloys      | Chromium                                                                                                   | ASTM E1251                                                                                           |
| 7                 | CHEMICAL- METALS & ALLOYS | Aluminum and its alloys      | Magnesium                                                                                                  | ASTM E1251                                                                                           |
| 8                 | CHEMICAL- METALS & ALLOYS | Aluminum and its alloys      | Nickel                                                                                                     | ASTM E1251                                                                                           |
| 9                 | CHEMICAL- METALS & ALLOYS | Aluminum and its alloys      | Silicon                                                                                                    | ASTM E1251                                                                                           |
| 10                | CHEMICAL- METALS & ALLOYS | Aluminum and its alloys      | Titanium                                                                                                   | ASTM E1251                                                                                           |
| 11                | CHEMICAL- METALS & ALLOYS | Aluminum and its alloys      | Vanadium                                                                                                   | ASTM E1251                                                                                           |
| 12                | CHEMICAL- METALS & ALLOYS | Aluminum and its alloys      | Zirconium                                                                                                  | ASTM E1251                                                                                           |
| 13                | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Aluminium                                                                                                  | ASTM E415                                                                                            |
| 14                | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Aluminium                                                                                                  | IS 8811                                                                                              |
| 15                | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Arsenic                                                                                                    | ASTM E415                                                                                            |
| 16                | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Arsenic                                                                                                    | IS 8811                                                                                              |



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| 17   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Boron                                                                                                      | ASTM E415                                                                                            |
| 18   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Boron                                                                                                      | IS 8811                                                                                              |
| 19   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Carbon                                                                                                     | ASTM E415                                                                                            |
| 20   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Carbon                                                                                                     | IS 8811                                                                                              |
| 21   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Chromium                                                                                                   | ASTM E415                                                                                            |
| 22   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Chromium                                                                                                   | IS 8811                                                                                              |
| 23   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Cobalt                                                                                                     | ASTM E415                                                                                            |
| 24   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Cobalt                                                                                                     | IS 8811                                                                                              |
| 25   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Copper                                                                                                     | ASTM E415                                                                                            |
| 26   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Copper                                                                                                     | IS 8811                                                                                              |
| 27   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Manganese                                                                                                  | ASTM E415                                                                                            |
| 28   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Manganese                                                                                                  | IS 8811                                                                                              |
| 29   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Molybdenum                                                                                                 | ASTM E415                                                                                            |
| 30   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Molybdenum                                                                                                 | IS 8811                                                                                              |
| 31   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Nickel                                                                                                     | ASTM E415                                                                                            |
| 32   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Nickel                                                                                                     | IS 8811                                                                                              |





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| 33   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Niobium                                                                                                    | IS 8811                                                                                              |
| 34   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Phosphorus                                                                                                 | ASTM E415                                                                                            |
| 35   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Phosphorus                                                                                                 | IS 8811                                                                                              |
| 36   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Silicon                                                                                                    | ASTM E415                                                                                            |
| 37   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Silicon                                                                                                    | IS 8811                                                                                              |
| 38   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Sulfur                                                                                                     | ASTM E415                                                                                            |
| 39   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Sulfur                                                                                                     | IS 8811                                                                                              |
| 40   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Tin                                                                                                        | ASTM E415                                                                                            |
| 41   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Tin                                                                                                        | IS 8811                                                                                              |
| 42   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Titanium                                                                                                   | ASTM E415                                                                                            |
| 43   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Titanium                                                                                                   | IS 8811                                                                                              |
| 44   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Vanadium                                                                                                   | ASTM E415                                                                                            |
| 45   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Vanadium                                                                                                   | IS 8811                                                                                              |
| 46   | CHEMICAL- METALS & ALLOYS | Carbon Steel & Alloy Steel   | Zirconium                                                                                                  | IS 8811                                                                                              |
| 47   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Carbon                                                                                                     | ASTM E1999                                                                                           |
| 48   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Chromium                                                                                                   | ASTM E1999                                                                                           |



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| 49   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Copper                                                                                                     | ASTM E1999                                                                                           |
| 50   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Manganese                                                                                                  | ASTM E1999                                                                                           |
| 51   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Molybdenum                                                                                                 | ASTM E1999                                                                                           |
| 52   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Nickel                                                                                                     | ASTM E1999                                                                                           |
| 53   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Phosphorus                                                                                                 | ASTM E1999                                                                                           |
| 54   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Silicon                                                                                                    | ASTM E1999                                                                                           |
| 55   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Sulfur                                                                                                     | ASTM E1999                                                                                           |
| 56   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Tin                                                                                                        | ASTM E1999                                                                                           |
| 57   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Titanium                                                                                                   | ASTM E1999                                                                                           |
| 58   | CHEMICAL- METALS & ALLOYS | Cast Iron                    | Vanadium                                                                                                   | ASTM E1999                                                                                           |
| 59   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Antimony                                                                                                   | BS EN 15079                                                                                          |
| 60   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Arsenic                                                                                                    | BS EN 15079                                                                                          |
| 61   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Beryllium                                                                                                  | BS EN 15079                                                                                          |
| 62   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Cadmium                                                                                                    | BS EN 15079                                                                                          |
| 63   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Chromium                                                                                                   | BS EN 15079                                                                                          |
| 64   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Cobalt                                                                                                     | BS EN 15079                                                                                          |



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| 65   | CHEMICAL- METALS & ALLOYS | Copper & Its Alloys          | Lead                                                                                                       | BS EN 15079                                                                                          |
| 66   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Manganese                                                                                                  | BS EN 15079                                                                                          |
| 67   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Nickel                                                                                                     | BS EN 15079                                                                                          |
| 68   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Phosphorus                                                                                                 | BS EN 15079                                                                                          |
| 69   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Silicon                                                                                                    | BS EN 15079                                                                                          |
| 70   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Silver                                                                                                     | BS EN 15079                                                                                          |
| 71   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Sulfur                                                                                                     | BS EN 15079                                                                                          |
| 72   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Tin                                                                                                        | BS EN 15079                                                                                          |
| 73   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Zinc                                                                                                       | BS EN 15079                                                                                          |
| 74   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Aluminium                                                                                                  | BS EN 15079                                                                                          |
| 75   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Bismuth                                                                                                    | BS EN 15079                                                                                          |
| 76   | CHEMICAL- METALS & ALLOYS | Copper & its alloys          | Iron                                                                                                       | BS EN 15079                                                                                          |
| 77   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Aluminum                                                                                                   | ASTM E3047                                                                                           |
| 78   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Boron                                                                                                      | ASTM E3047                                                                                           |
| 79   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Carbon                                                                                                     | ASTM E3047                                                                                           |
| 80   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Chromium                                                                                                   | ASTM E3047                                                                                           |





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| 81   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Cobalt                                                                                                     | ASTM E3047                                                                                           |
| 82   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Copper                                                                                                     | ASTM E3047                                                                                           |
| 83   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Iron                                                                                                       | ASTM E3047                                                                                           |
| 84   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Magnesium                                                                                                  | ASTM E3047                                                                                           |
| 85   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Manganese                                                                                                  | ASTM E3047                                                                                           |
| 86   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Molybdenum                                                                                                 | ASTM E3047                                                                                           |
| 87   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Niobium                                                                                                    | ASTM E3047                                                                                           |
| 88   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Phosphorus                                                                                                 | ASTM E3047                                                                                           |
| 89   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Silicon                                                                                                    | ASTM E3047                                                                                           |
| 90   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Sulfur                                                                                                     | ASTM E3047                                                                                           |
| 91   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Tantalum                                                                                                   | ASTM E3047                                                                                           |
| 92   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Titanium                                                                                                   | ASTM E3047                                                                                           |
| 93   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Tungsten                                                                                                   | ASTM E3047                                                                                           |
| 94   | CHEMICAL- METALS & ALLOYS | Nickel & its alloys          | Vanadium                                                                                                   | ASTM E3047                                                                                           |
| 95   | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Carbon                                                                                                     | ASTM E1086                                                                                           |
| 96   | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Chromium                                                                                                   | ASTM E1086                                                                                           |



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| 97   | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Copper                                                                                                     | ASTM E1086                                                                                           |
| 98   | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Copper                                                                                                     | IS 9879                                                                                              |
| 99   | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Manganese                                                                                                  | ASTM E1086                                                                                           |
| 100  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Molybdenum                                                                                                 | ASTM E1086                                                                                           |
| 101  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Molybdenum                                                                                                 | IS 9879                                                                                              |
| 102  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Nickel                                                                                                     | ASTM E1086                                                                                           |
| 103  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Nickel                                                                                                     | IS 9879                                                                                              |
| 104  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Phosphorus                                                                                                 | ASTM E1086                                                                                           |
| 105  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Silicon                                                                                                    | ASTM E1086                                                                                           |
| 106  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Sulfur                                                                                                     | ASTM E1086                                                                                           |
| 107  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Sulfur                                                                                                     | IS 9879                                                                                              |
| 108  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Carbon                                                                                                     | IS 9879                                                                                              |
| 109  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Chromium                                                                                                   | IS 9879                                                                                              |
| 110  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Manganese                                                                                                  | IS 9879                                                                                              |
| 111  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Phosphorus                                                                                                 | IS 9879                                                                                              |
| 112  | CHEMICAL- METALS & ALLOYS | Stainless Steel              | Silicon                                                                                                    | IS 9879                                                                                              |





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| 113  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Carbon Steel (Bolts, Screws and Studs)                             | Proof Load Test                                                                                            | IS 1367 (Part 3)                                                                                     |
| 114  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Carbon Steel and Alloy Steel (Bolts, Screws and Studs)             | % Elongation                                                                                               | ISO 898-1                                                                                            |
| 115  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Carbon Steel and Alloy Steel (Bolts, Screws and Studs)             | Ultimate Tensile Strength                                                                                  | ISO 898-1                                                                                            |
| 116  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Carbon Steel and Alloy Steel (Nuts)                                | Proof Load Test                                                                                            | IS 1367 (Part 6)                                                                                     |
| 117  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Fasteners - Carbon Steel and Alloy Steel (Bolts, Screws and Studs) | Proof Load Test                                                                                            | ISO 898-1                                                                                            |
| 118  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)                                        | % Elongation                                                                                               | ASTM E8/E8M                                                                                          |
| 119  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)                                        | % Elongation                                                                                               | IS 1608 (Part 1)                                                                                     |
| 120  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)                                        | % Elongation                                                                                               | ISO 6892-1                                                                                           |
| 121  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)                                        | % Reduction in Area                                                                                        | ASTM E8/E8M                                                                                          |



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| 122  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 0.2 % Yield Stress                                                                                         | IS 1608 (Part 1)                                                                                     |
| 123  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 0.2 % Yield Stress                                                                                         | ASTM E8/E8M                                                                                          |
| 124  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 0.2 % Yield Stress                                                                                         | ISO 6892-1                                                                                           |
| 125  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 0.5 % Extension Under Load                                                                                 | IS 1608 (Part 1)                                                                                     |
| 126  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 0.5 % Extension Under Load (EUL)                                                                           | ASTM E8/E8M                                                                                          |
| 127  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 0.5 % Extension Under Load (EUL)                                                                           | ISO 6892-1                                                                                           |
| 128  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 1.0 % Proof Stress                                                                                         | IS 1608 (Part 1)                                                                                     |
| 129  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 1.0 % Proof Stress                                                                                         | ASTM E8/E8M                                                                                          |
| 130  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | 1.0 % Proof Stress                                                                                         | ISO 6892-1                                                                                           |



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| 131  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Brinell Hardness (HBW 2.5/187.5)                                                                           | ASTM E10                                                                                             |
| 132  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Brinell Hardness (HBW 2.5/187.5)                                                                           | ISO 6506-1                                                                                           |
| 133  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Brinell Hardness (HBW 2.5/31.25)                                                                           | ASTM E10                                                                                             |
| 134  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Brinell Hardness (HBW 2.5/31.25)                                                                           | ISO 6506-1                                                                                           |
| 135  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Brinell Hardness (HBW 2.5/62.5)                                                                            | ASTM E10                                                                                             |
| 136  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Brinell Hardness (HBW 2.5/62.5)                                                                            | ISO 6506-1                                                                                           |
| 137  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Charpy Impact Test (+80 °C to -101 °C & -196 °C)                                                           | ASTM E23                                                                                             |
| 138  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Rockwell Hardness (HRB)                                                                                    | ISO 6508-1                                                                                           |
| 139  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Rockwell Hardness (HRC)                                                                                    | ASTM E18                                                                                             |





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| 140  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Rockwell Hardness (HRC)                                                                                    | ISO 6508-1                                                                                           |
| 141  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Ultimate Tensile Strength                                                                                  | ASTM E8/E8M                                                                                          |
| 142  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Ultimate Tensile Strength                                                                                  | IS 1608 (Part 1)                                                                                     |
| 143  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Ultimate Tensile Strength                                                                                  | ISO 6892-1                                                                                           |
| 144  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Macro Indentation, HV 10)                                                                | ASTM E92                                                                                             |
| 145  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Macro Indentation, HV 5)                                                                 | ASTM E92                                                                                             |
| 146  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Macro Indentation, HV 5)                                                                 | IS 1501 (Part 1)                                                                                     |
| 147  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.3)                                                               | ASTM E384                                                                                            |
| 148  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.3)                                                               | ISO 6507-1                                                                                           |



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| 149  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)        | Vickers Hardness (Micro Indentation, HV 0.5)                                                               | ASTM E384                                                                                            |
| 150  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)        | Vickers Hardness (Micro Indentation, HV 1)                                                                 | ASTM E384                                                                                            |
| 151  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)        | Yield Stress                                                                                               | API 1104                                                                                             |
| 152  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper) - Tube | Flaring Test                                                                                               | IS 2335                                                                                              |
| 153  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)- Tube  | Flattening Test                                                                                            | IS 2328                                                                                              |
| 154  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)       | % Elongation                                                                                               | ASTM E8/E8M                                                                                          |
| 155  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)       | % Elongation                                                                                               | IS 1608 (Part 1)                                                                                     |
| 156  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)       | % Elongation                                                                                               | ISO 6892-1                                                                                           |
| 157  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)       | % Reduction in Area                                                                                        | ASTM E8/E8M                                                                                          |



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| 158  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 0.2 % Yield Stress                                                                                         | IS 1608 (Part 1)                                                                                     |
| 159  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 0.2 % Yield Stress                                                                                         | ISO 6892-1                                                                                           |
| 160  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 0.5 % Extension Under Load (EUL)                                                                           | ASTM E8/E8M                                                                                          |
| 161  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 0.5 % Extension Under Load (EUL)                                                                           | ISO 898-1                                                                                            |
| 162  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 0.5 % Extension Under Load (EUL)                                                                           | IS 1608 (Part 1)                                                                                     |
| 163  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 0.5% Extension Under Load (EUL)                                                                            | ISO 6892-1                                                                                           |
| 164  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 1.0 % Proof Stress                                                                                         | ASTM E8/E8M                                                                                          |
| 165  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 1.0 % Proof Stress                                                                                         | IS 1608 (Part 1)                                                                                     |
| 166  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 1.0 % Proof Stress                                                                                         | ISO 6892-1                                                                                           |





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| 167  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | 1.0 % Proof Stress                                                                                         | ISO 898-1                                                                                            |
| 168  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Bend Test                                                                                                  | IS 1599                                                                                              |
| 169  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (2.5/62.5)                                                                                | ISO 6506-1                                                                                           |
| 170  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (HBW 2.5/187.5)                                                                           | ASTM E10                                                                                             |
| 171  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (HBW 2.5/187.5)                                                                           | IS 1500 (Part 1)                                                                                     |
| 172  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (HBW 2.5/187.5)                                                                           | ISO 6506-1                                                                                           |
| 173  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (HBW 2.5/31.25)                                                                           | ASTM E10                                                                                             |
| 174  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (HBW 2.5/31.25)                                                                           | IS 1500 (Part 1)                                                                                     |
| 175  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (HBW 2.5/31.25)                                                                           | ISO 6506-1                                                                                           |



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| 176  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (HBW 2.5/62.5)                                                                            | ASTM E10                                                                                             |
| 177  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Brinell Hardness (HBW 2.5/62.5)                                                                            | IS 1500 (Part 1)                                                                                     |
| 178  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Charpy Impact Test (+80 °C to -101 °C & -196 °C)                                                           | ASTM E23                                                                                             |
| 179  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Charpy Impact Test (+80 °C to -101 °C & -196 °C)                                                           | ISO 148-1                                                                                            |
| 180  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Rockwell Hardness (HRB)                                                                                    | ASTM E18                                                                                             |
| 181  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Rockwell Hardness (HRB)                                                                                    | ISO 6508-1                                                                                           |
| 182  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Rockwell Hardness (HRC)                                                                                    | ASTM E18                                                                                             |
| 183  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Rockwell Hardness (HRC)                                                                                    | IS 1586 (Part 1)                                                                                     |
| 184  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Rockwell Hardness (HRC)                                                                                    | ISO 6508-1                                                                                           |



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| 185  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Ultimate Tensile Strength                                                                                  | ASTM E8/E8M                                                                                          |
| 186  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Ultimate Tensile Strength                                                                                  | ISO 6892-1                                                                                           |
| 187  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Ultimate Tensile Strength                                                                                  | IS 1608 (Part 1)                                                                                     |
| 188  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Macro Indentation, HV 10)                                                                | ASTM E92                                                                                             |
| 189  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Macro Indentation, HV 10)                                                                | IS 1501 (Part 1)                                                                                     |
| 190  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Macro Indentation, HV 10)                                                                | ISO 6507-1                                                                                           |
| 191  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Macro Indentation, HV 5)                                                                 | IS 1501 (Part 1)                                                                                     |
| 192  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Macro Indentation, HV 5)                                                                 | ISO 6507-1                                                                                           |
| 193  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Macro Indentation, HV5)                                                                  | ASTM E92                                                                                             |





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| 194  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | ASTM E384                                                                                            |
| 195  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | IS 1501 (Part 1)                                                                                     |
| 196  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | ISO 6507 (Part 1)                                                                                    |
| 197  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 0.2)                                                               | IS 1501 (Part 1)                                                                                     |
| 198  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 0.2)                                                               | ISO 6507-1                                                                                           |
| 199  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 0.3)                                                               | IS 1501 (Part 1)                                                                                     |
| 200  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 0.5)                                                               | ISO 6507-1                                                                                           |
| 201  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 0.5)                                                               | IS 1501 (Part 1)                                                                                     |
| 202  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) | Vickers Hardness (Micro Indentation, HV 1)                                                                 | ASTM E384                                                                                            |



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| 203  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)        | Vickers Hardness (Micro Indentation, HV 1)                                                                 | IS 1501 (Part 1)                                                                                     |
| 204  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)        | Vickers Hardness (Micro Indentation, HV 1)                                                                 | ISO 6507-1                                                                                           |
| 205  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) - Tube | Flaring Test                                                                                               | IS 2335                                                                                              |
| 206  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous) - Tube | Flattening Test                                                                                            | IS 2328                                                                                              |
| 207  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)    | % Elongation                                                                                               | IS 1608 (Part 1)                                                                                     |
| 208  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)    | % Elongation                                                                                               | ISO 6892-1                                                                                           |
| 209  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)    | % Elongation                                                                                               | ASTM E8/E8M                                                                                          |
| 210  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)    | % Elongation                                                                                               | ISO 898-1                                                                                            |
| 211  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)    | % Reduction in Area                                                                                        | ASTM E8/E8M                                                                                          |



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| 212  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | % Reduction in Area                                                                                        | IS 1608 (Part 1)                                                                                     |
| 213  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 0.2 % Yield Stress                                                                                         | ASTM E8/E8M                                                                                          |
| 214  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 0.2 % Yield Stress                                                                                         | ISO 6892-1                                                                                           |
| 215  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 0.2% Yield Stress                                                                                          | IS 1608 (Part 1)                                                                                     |
| 216  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 0.5 % Extension Under Load (EUL)                                                                           | ASTM E8/E8M                                                                                          |
| 217  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 0.5 % Extension Under Load (EUL)                                                                           | IS 1608 (Part 1)                                                                                     |
| 218  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 0.5 % Extension Under Load (EUL)                                                                           | ISO 6892-1                                                                                           |
| 219  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 1.0 % Proof Stress                                                                                         | IS 1608 (Part 1)                                                                                     |
| 220  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 1.0 % Proof Stress                                                                                         | ASTM E8/E8M                                                                                          |





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| 221  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | 1.0% Proof Stress                                                                                          | ISO 6892-1                                                                                           |
| 222  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Bend Test                                                                                                  | IS 1599                                                                                              |
| 223  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/187.5)                                                                           | ASTM E10                                                                                             |
| 224  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/187.5)                                                                           | IS 1500 (Part 1)                                                                                     |
| 225  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/187.5)                                                                           | ISO 6506-1                                                                                           |
| 226  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/31.25)                                                                           | IS 1500 (Part 1)                                                                                     |
| 227  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/31.25)                                                                           | ISO 6506-1                                                                                           |
| 228  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/31.25)                                                                           | ASTM E10                                                                                             |
| 229  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/62.5)                                                                            | ASTM E10                                                                                             |



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| 230  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/62.5)                                                                            | IS 1500 (Part 1)                                                                                     |
| 231  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Brinell Hardness (HBW 2.5/62.5)                                                                            | ISO 6506-1                                                                                           |
| 232  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Charpy Impact Test (+80 °C to -101 °C & -196 °C)                                                           | ASTM E23                                                                                             |
| 233  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Charpy Impact Test (+80 °C to -101 °C & -196 °C)                                                           | ISO 148-1                                                                                            |
| 234  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Rockwell Hardness (HRB)                                                                                    | IS 1586 (Part 1)                                                                                     |
| 235  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Rockwell Hardness (HRB)                                                                                    | ISO 6508-1                                                                                           |
| 236  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Rockwell Hardness (HRC)                                                                                    | ASTM E18                                                                                             |
| 237  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Rockwell Hardness (HRC)                                                                                    | IS 1586 (Part 1)                                                                                     |
| 238  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Rockwell Hardness (HRC)                                                                                    | ISO 6508-1                                                                                           |



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| 239  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Ultimate Tensile Strength                                                                                  | ASTM E8/E8M                                                                                          |
| 240  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Ultimate Tensile Strength                                                                                  | IS 1608 (Part 1)                                                                                     |
| 241  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Ultimate Tensile Strength                                                                                  | ISO 6892-1                                                                                           |
| 242  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Ultimate Tensile Strength                                                                                  | ISO 898-1                                                                                            |
| 243  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Macro Indentation, HV 10)                                                                | ASTM E92                                                                                             |
| 244  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Macro Indentation, HV 10)                                                                | IS 1501 (Part 1)                                                                                     |
| 245  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Macro Indentation, HV 10)                                                                | ISO 6507-1                                                                                           |
| 246  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Macro Indentation, HV 5)                                                                 | ASTM E92                                                                                             |
| 247  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Macro Indentation, HV 5)                                                                 | IS 1501 (Part 1)                                                                                     |





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| 248  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Macro Indentation, HV 5)                                                                 | ISO 6507-1                                                                                           |
| 249  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | ASTM E384                                                                                            |
| 250  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | IS 1501 (Part 1)                                                                                     |
| 251  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | ISO 6507-1                                                                                           |
| 252  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Micro Indentation, HV 0.2)                                                               | ASTM E384                                                                                            |
| 253  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Micro Indentation, HV 0.2)                                                               | IS 1501 (Part 1)                                                                                     |
| 254  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Micro Indentation, HV 0.2)                                                               | ISO 6507-1                                                                                           |
| 255  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Micro Indentation, HV 0.3)                                                               | ASTM E384                                                                                            |
| 256  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) | Vickers Hardness (Micro Indentation, HV 0.3)                                                               | IS 1501 (Part 1)                                                                                     |



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| 257  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)        | Vickers Hardness (Micro Indentation, HV 0.3)                                                               | ISO 6507-1                                                                                           |
| 258  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)        | Vickers Hardness (Micro Indentation, HV 0.5)                                                               | ASTM E384                                                                                            |
| 259  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)        | Vickers Hardness (Micro Indentation, HV 0.5)                                                               | IS 1501 (Part 1)                                                                                     |
| 260  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)        | Vickers Hardness (Micro Indentation, HV 0.5)                                                               | ISO 6507-1                                                                                           |
| 261  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)        | Vickers Hardness (Micro Indentation, HV 1)                                                                 | ASTM E384                                                                                            |
| 262  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)        | Vickers Hardness (Micro Indentation, HV 1)                                                                 | IS 1501 (Part 1)                                                                                     |
| 263  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)        | Vickers Hardness (Micro Indentation, HV 1)                                                                 | ISO 6507-1                                                                                           |
| 264  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous) - Tube | Flaring Test                                                                                               | IS 2335                                                                                              |
| 265  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Non-Ferrous)- Tube  | Flattening Test                                                                                            | IS 2328                                                                                              |



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| 266  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Solid Drawn Copper Tubes | Flattening Test                                                                                            | IS 2501                                                                                              |
| 267  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Tubular Product    | Flaring Test                                                                                               | ASTM A370                                                                                            |
| 268  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Tubular Product    | Flattening Test                                                                                            | ASTM A370                                                                                            |
| 269  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | % Elongation                                                                                               | API 1104 (Clause 10.3.6.2)                                                                           |
| 270  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | % Elongation                                                                                               | ASME BPVC Section IX (Clause QW-152)                                                                 |
| 271  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | Bend Test                                                                                                  | API 1104 (Clause 10.3.6.2)                                                                           |
| 272  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | Bend Test                                                                                                  | ASME BPVC Section IX (Clause QW-160)                                                                 |
| 273  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | Fracture Test                                                                                              | ASME BPVC Section IX (Clause QW-182)                                                                 |
| 274  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | Macro Etch Test                                                                                            | ASME BPVC Section IX (Clause QW-183)                                                                 |





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| 275  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Macro Examination Test - Metal Expansion                                                                   | ASME BPVC Section IX (Clause QW-183)                                                                 |
| 276  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Macro-Examination - Leak Path                                                                              | ASME BPVC Section IX (Clause QW-183)                                                                 |
| 277  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Macro-Examination - Leg Lengths                                                                            | API 1104 (Clause B.2.5.4)                                                                            |
| 278  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Macro-Examination - Leg Lengths                                                                            | ASME BPVC Section IX (Clause QW-183)                                                                 |
| 279  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Macro-Examination - Throat Length                                                                          | ASME BPVC Section IX (Clause QW-183)                                                                 |
| 280  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Nick Break Test                                                                                            | API 1104 (Clause 5.6.3)                                                                              |
| 281  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Peel Test                                                                                                  | ASME BPVC Section IX (Clause QB-170)                                                                 |
| 282  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Peel Test                                                                                                  | ASME Section VIII (Figure 17-16)                                                                     |
| 283  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens | Shear Load (Pull-out) Test                                                                                 | ASME BPVC Section IX (Clause QW-196.2.1)                                                             |



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| 284  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | Shear Test                                                                                                 | ASME BPVC Section IX (Clause QW-196.2.1)                                                             |
| 285  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | Ultimate Tensile Strength                                                                                  | API 1104 (Clause 10.3.6.2)                                                                           |
| 286  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | Ultimate Tensile Strength                                                                                  | ASME BPVC Section IX (Clause QW-152)                                                                 |
| 287  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welded Specimens         | Yield Stress                                                                                               | ASME BPVC Section IX (Clause QW-152)                                                                 |
| 288  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens | Fracture Test                                                                                              | ASME Section VIII                                                                                    |
| 289  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)                   | Charpy Impact Test (+80 °C to -101 °C & -196 °C)                                                           | ISO 148-1                                                                                            |
| 290  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)                   | Rockwell Hardness (HRB)                                                                                    | ASTM E18                                                                                             |
| 291  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)                   | Vickers Hardness (Macro Indentation, HV 10)                                                                | IS 1501 (Part 1)                                                                                     |
| 292  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)                   | Vickers Hardness (Macro Indentation, HV 10)                                                                | ISO 6507-1                                                                                           |



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| 293  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Macro Indentation, HV 5)                                                                 | ISO 6507-1                                                                                           |
| 294  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | ASTM E384                                                                                            |
| 295  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | IS 1501 (Part 1)                                                                                     |
| 296  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | ISO 6507-1                                                                                           |
| 297  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | ISO 6507-1                                                                                           |
| 298  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.2)                                                               | ASTM E384                                                                                            |
| 299  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.2)                                                               | IS 1501 (Part 1)                                                                                     |
| 300  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.2)                                                               | ISO 6507-1                                                                                           |
| 301  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)  | Vickers Hardness (Micro Indentation, HV 0.3)                                                               | IS 1501 (Part 1)                                                                                     |





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| 302  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)         | Vickers Hardness (Micro Indentation, HV 0.5)                                                               | IS 1501 (Part 1)                                                                                     |
| 303  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)         | Vickers Hardness (Micro Indentation, HV 0.5)                                                               | ISO 6507-1                                                                                           |
| 304  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Copper)         | Vickers Hardness (Micro Indentation, HV 1)                                                                 | IS 1501 (Part 1)                                                                                     |
| 305  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)        | 0.2% Yield Stress                                                                                          | ASTM E8/E8M                                                                                          |
| 306  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)        | 0.2% Yield Stress                                                                                          | ISO 898-1                                                                                            |
| 307  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)        | Vickers Hardness (Micro Indentation, HV0.2)                                                                | ASTM E384                                                                                            |
| 308  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)        | Vickers Hardness (Micro Indentation, HV0.3)                                                                | ASTM E384                                                                                            |
| 309  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials (Ferrous)        | Vickers Hardness (Micro Indentation, HV0.5)                                                                | ASTM E384                                                                                            |
| 310  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | % Elongation                                                                                               | ASTM A370                                                                                            |



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| 311  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | % Reduction in Area                                                                                        | ASTM A370                                                                                            |
| 312  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | 0.2% Yield Stress                                                                                          | ASTM A370                                                                                            |
| 313  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | 0.5% Extension Under Load (EUL)                                                                            | ASTM A370                                                                                            |
| 314  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | 1.0% Proof Stress                                                                                          | ASTM A370                                                                                            |
| 315  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | Bend Test                                                                                                  | ASTM A370                                                                                            |
| 316  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | Brinell Hardness (HBW 2.5/187.5)                                                                           | ASTM A370                                                                                            |
| 317  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | Brinell Hardness (HBW 2.5/31.25)                                                                           | ASTM A370                                                                                            |
| 318  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | Brinell Hardness (HBW 2.5/62.5)                                                                            | ASTM A370                                                                                            |
| 319  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products | Charpy Impact Test (+80 °C to -101 °C & -196 °C)                                                           | ASTM A370                                                                                            |



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| 320  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products                         | Rockwell Hardness (HRB)                                                                                    | ASTM A370                                                                                            |
| 321  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products                         | Rockwell Hardness (HRC)                                                                                    | ASTM A370                                                                                            |
| 322  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products                         | Ultimate Tensile Strength                                                                                  | ASTM A370                                                                                            |
| 323  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products (Bolts, Studs & Screws) | Proof Load Test                                                                                            | ASTM A370                                                                                            |
| 324  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Steel Products (Nuts)                  | Proof Load Test                                                                                            | ASTM A370                                                                                            |
| 325  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens               | Bend Test                                                                                                  | ASTM E190                                                                                            |
| 326  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens               | Charpy Impact Test (+80 °C to -101 °C & -196 °C)                                                           | ISO 9016                                                                                             |
| 327  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens               | Macro Etch Test                                                                                            | ISO 17639                                                                                            |
| 328  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens               | Macro-Examination - Leak Path                                                                              | ASME Section VIII                                                                                    |





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| 329  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens | Macro-Examination - Leg Lengths                                                                            | ASME Section VIII                                                                                    |
| 330  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens | Macro-Examination - Metal Expansion                                                                        | ASME Section VIII                                                                                    |
| 331  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens | Macro-Examination - Throat Length                                                                          | ASME Section VIII                                                                                    |
| 332  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens | Shear Load (Pull-out) Test                                                                                 | ASME Section VIII                                                                                    |
| 333  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens | Shear Test                                                                                                 | ASME Section VIII                                                                                    |
| 334  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens | Vickers Hardness (Micro Indentation, HV 0.1)                                                               | IS 1501 (Part 1)                                                                                     |
| 335  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Metallic Materials - Welds & Welded Specimens | Vickers Hardness (Micro Indentation, HV 1)                                                                 | ASTM E384                                                                                            |
| 336  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Reinforcement Bar/Mechanical Splices          | Slip Test                                                                                                  | IS 16172                                                                                             |
| 337  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Reinforcement Bar/Mechanical Splices          | Static Tensile Test - % Extension Under Load (EUL) at Max. Force                                           | IS 16172                                                                                             |



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| 338  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Reinforcement Bar/Mechanical Splices                  | Static Tensile Test - Ultimate Tensile Strength (UTS)                                                      | IS 16172                                                                                             |
| 339  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Reinforcement Couplers for Mechanical Splices of Bars | % Elongation                                                                                               | ISO 15835-2                                                                                          |
| 340  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Reinforcement Couplers for Mechanical Splices of Bars | % Reduction in Area                                                                                        | ISO 15835-2                                                                                          |
| 341  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Reinforcement Couplers for Mechanical Splices of Bars | 0.2 % Yield Stress                                                                                         | ISO 15835-2                                                                                          |
| 342  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Reinforcement Couplers for Mechanical Splices of Bars | Slip Test                                                                                                  | ISO 15835-2                                                                                          |
| 343  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Reinforcement Couplers for Mechanical Splices of Bars | Ultimate Tensile Strength                                                                                  | ISO 15835-2                                                                                          |
| 344  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Steel Plates                                          | Through Thickness Tensile Test                                                                             | ASTM A770/A770M                                                                                      |
| 345  | MECHANICAL-MECHANICAL PROPERTIES OF METALS | Welded Carbon Steel Pipes                             | Bend Test                                                                                                  | IS 3589                                                                                              |
| 346  | MECHANICAL-METALLOGRAPHY TEST              | Aluminium Alloys Products                             | Stress Corrosion Cracking Test                                                                             | ASTM G47                                                                                             |



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| 347  | MECHANICAL-METALLOGRAPHY TEST | Aluminum Alloys Products                                    | EXCO Test                                                                                                  | ASTM G34                                                                                             |
| 348  | MECHANICAL-METALLOGRAPHY TEST | Aluminum Alloys Products                                    | Intergranular Corrosion Nitric Acid (NAMLT Test)                                                           | ASTM G67                                                                                             |
| 349  | MECHANICAL-METALLOGRAPHY TEST | Austenitic and Ferritic-austenitic (Duplex) Stainless Steel | Intergranular Corrosion (IGC) - Method A                                                                   | DIN EN ISO 3651 (Part 2)                                                                             |
| 350  | MECHANICAL-METALLOGRAPHY TEST | Austenitic and Ferritic-austenitic (Duplex) Stainless Steel | Intergranular Corrosion (IGC) - Method B                                                                   | DIN EN ISO 3651 (Part 2)                                                                             |
| 351  | MECHANICAL-METALLOGRAPHY TEST | Austenitic and Ferritic-austenitic (Duplex) Stainless Steel | Intergranular Corrosion (IGC) - Method C                                                                   | DIN EN ISO 3651 (Part 2)                                                                             |
| 352  | MECHANICAL-METALLOGRAPHY TEST | Austenitic Stainless Steel                                  | Intergranular Corrosion (IGC) - Practice A                                                                 | ASTM A262                                                                                            |
| 353  | MECHANICAL-METALLOGRAPHY TEST | Austenitic Stainless Steel                                  | Intergranular Corrosion (IGC) - Practice B                                                                 | ASTM A262                                                                                            |
| 354  | MECHANICAL-METALLOGRAPHY TEST | Austenitic Stainless Steel                                  | Intergranular Corrosion (IGC) - Practice C                                                                 | ASTM A262                                                                                            |
| 355  | MECHANICAL-METALLOGRAPHY TEST | Austenitic Stainless Steel                                  | Intergranular Corrosion (IGC) - Practice E                                                                 | ASTM A262                                                                                            |
| 356  | MECHANICAL-METALLOGRAPHY TEST | Austenitic Stainless Steel                                  | Intergranular Corrosion (IGC) - Practice F                                                                 | ASTM A262                                                                                            |
| 357  | MECHANICAL-METALLOGRAPHY TEST | Austenitic Stainless Steel                                  | Intergranular Corrosion (Strauss Test)                                                                     | IS 10461-2                                                                                           |
| 358  | MECHANICAL-METALLOGRAPHY TEST | Austenitic Stainless Steel                                  | Intergranular Corrosion (Huey Test)                                                                        | IS 10461-1                                                                                           |





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| 359  | MECHANICAL-METALLOGRAPHY TEST | Copper Materials, Alloys & Products        | Ammonia Vapor Test (Susceptibility to Stress Corrosion Cracking)                                           | ASTM B858                                                                                            |
| 360  | MECHANICAL-METALLOGRAPHY TEST | Duplex Austenitic/Ferritic Stainless Steel | Detection of Detrimental Intermetallic Phases (Method A)                                                   | ASTM A923                                                                                            |
| 361  | MECHANICAL-METALLOGRAPHY TEST | Duplex Austenitic/Ferritic Stainless Steel | Determination of Detrimental Intermetallic Phases (Method C)                                               | ASTM A923                                                                                            |
| 362  | MECHANICAL-METALLOGRAPHY TEST | Metallic Material (SG Iron)                | Nodularity                                                                                                 | IS 7754                                                                                              |
| 363  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Aluminium)             | Alternate Immersion Stress Corrosion Test                                                                  | ASTM G44                                                                                             |
| 364  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Copper)                | Micro Examination (Grain Size)                                                                             | ASTM E112 (by Comparison Method)                                                                     |
| 365  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous)               | Bent-Beam Stress-Corrosion                                                                                 | ASTM G39                                                                                             |
| 366  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous)               | Case Depth                                                                                                 | IS 6416 (by Microscopic Method)                                                                      |
| 367  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous)               | Case Depth (Hardness Method)                                                                               | IS 6416                                                                                              |
| 368  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous)               | Chloride Stress Corrosion Cracking (CSCC & MgCl <sub>2</sub> ) Test                                        | ASTM G36                                                                                             |
| 369  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous)               | Decarburization Test                                                                                       | ASTM E1077 (by Microscopic Method)                                                                   |
| 370  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous)               | Decarburization Test                                                                                       | IS 6396 (by Microscopic Method)                                                                      |



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| 371  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Ferrite Content                                                                                            | ASTM E562 (by Microscopic Method)                                                                    |
| 372  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Hydrogen Induced Cracking Test (HIC)                                                                       | NACE TM0284                                                                                          |
| 373  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Inclusion Rating (Method A, D)                                                                             | ASTM E45                                                                                             |
| 374  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Micro Examination (General Structure)                                                                      | ASM Volume 9                                                                                         |
| 375  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Micro Examination (Grain Size)                                                                             | ASTM E112 (by Comparison Method)                                                                     |
| 376  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Stress Oriented Hydrogen Induced Cracking Test                                                             | NACE MR0175/NACE TM0177                                                                              |
| 377  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Stress Oriented Hydrogen Induced Cracking Test                                                             | NACE TM0103                                                                                          |
| 378  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Sulfide Stress Cracking (SSC) Test                                                                         | EFC 16, Third Edition                                                                                |
| 379  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Sulfide Stress Cracking (SSC) Test                                                                         | EFC 17, Second Edition                                                                               |
| 380  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Sulfide Stress Cracking (SSC) Test                                                                         | ISO 11439 (Annex A, Clause A.3)                                                                      |
| 381  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Sulfide Stress Cracking (SSC) Test                                                                         | NACE TM0316                                                                                          |
| 382  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous) | Sulfide Stress Cracking and Stress Corrosion Cracking                                                      | NACE TM0177                                                                                          |



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| 383  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous)     | Thickness of Coating                                                                                       | ASTM B499 (by Magnetic Method)                                                                       |
| 384  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Bent-Beam Stress-Corrosion                                                                                 | ASTM G39                                                                                             |
| 385  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Chloride Stress Corrosion Cracking (MgCl <sub>2</sub> ) Test                                               | ASTM G36                                                                                             |
| 386  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Hydrogen Induced Cracking Test                                                                             | NACE TM0284                                                                                          |
| 387  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Micro Examination (General Structure)                                                                      | ASM Volume 9                                                                                         |
| 388  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Micro Examination (Grain Size)                                                                             | ASTM E112 (by Comparison Method)                                                                     |
| 389  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Stress Oriented Hydrogen Induced Cracking Test                                                             | NACE TM0103                                                                                          |
| 390  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Stress Oriented Hydrogen Induced Cracking Test                                                             | EFC 16, Third Edition                                                                                |
| 391  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Sulfide Stress Cracking (SSC)                                                                              | ASTM G39                                                                                             |
| 392  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Sulfide Stress Cracking (SSC)                                                                              | IS 15490                                                                                             |
| 393  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Non-Ferrous) | Sulfide Stress Cracking and Stress Corrosion Cracking                                                      | NACE TM0177                                                                                          |
| 394  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (SG Iron)     | Nodularity                                                                                                 | ASTM A247                                                                                            |





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| 395  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Welded Specimen)     | Macro-Examination - Metal Expansion                                                                        | ASME Section IX                                                                                      |
| 396  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Welded Specimen)     | Micro Examination                                                                                          | ISO 17639                                                                                            |
| 397  | MECHANICAL-METALLOGRAPHY TEST | Metallic Materials (Ferrous)             | Sulfide Stress Cracking (SSC) Test                                                                         | IS 15490 (Annex B, Clause 8.3.4)                                                                     |
| 398  | MECHANICAL-METALLOGRAPHY TEST | Nickel Based and Chromium Bearing Alloys | Critical Crevice Temperature Test                                                                          | ASTM G48 (Method D)                                                                                  |
| 399  | MECHANICAL-METALLOGRAPHY TEST | Nickel Based and Chromium Bearing Alloys | Critical Pitting Temperature Test                                                                          | ASTM G48 (Method C)                                                                                  |
| 400  | MECHANICAL-METALLOGRAPHY TEST | Nickel-Rich Chromium Bearing Alloys      | Ferric Sulfate-Sulfuric Acid Test (Method A)                                                               | ASTM G28                                                                                             |
| 401  | MECHANICAL-METALLOGRAPHY TEST | Nickel-Rich Chromium Bearing Alloys      | Mixed Acid - Oxidating Salt (Method B) Test                                                                | ASTM G28                                                                                             |
| 402  | MECHANICAL-METALLOGRAPHY TEST | Stainless Steel                          | Determination of Detrimental Intermetallic Phases (Method B)                                               | ASTM A923                                                                                            |
| 403  | MECHANICAL-METALLOGRAPHY TEST | Stainless Steels and Related Alloys      | Ferric Chloride Crevice Corrosion Test (Method B)                                                          | ASTM G48                                                                                             |
| 404  | MECHANICAL-METALLOGRAPHY TEST | Stainless Steels and Related Alloys      | Critical Crevice Temperature Test (Method F)                                                               | ASTM G48                                                                                             |
| 405  | MECHANICAL-METALLOGRAPHY TEST | Stainless Steels and Related Alloys      | Critical Pitting Temperature Test (Method E)                                                               | ASTM G48                                                                                             |
| 406  | MECHANICAL-METALLOGRAPHY TEST | Stainless Steels and Related Alloys      | Ferric Chloride Pitting Test (Method A)                                                                    | ASTM G48                                                                                             |



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| 407  | MECHANICAL-METALLOGRAPHY TEST | Steel                        | Micro Examination (Grain Size)                                                                             | IS 4748 (by Comparison Method)                                                                       |
| 408  | MECHANICAL-METALLOGRAPHY TEST | Steel                        | Micro Examination (Grain Size)                                                                             | ISO 643 (by Comparison Method)                                                                       |
| 409  | MECHANICAL-METALLOGRAPHY TEST | Steel                        | Inclusion Content (Method A, D)                                                                            | ASTM E45                                                                                             |