

DETAILS OF TEST FACILITIES AVAILABLE AT NTH (SR), CHENNAI

NAME OF LABORATORY	PRODUCT / MATERIAL OF TEST	TEST/CALIBRATION FACILITIES AVAILABLE	SPECIFICATION
CHEMICAL LABORATORY	Dissolved Acetylene	1) Qualitative Test 2) Total Impurities insoluble in acetone 3) Sulphur compounds (as H ₂ S) 4) Phosphorous compounds (as	IS: 308-1988 IS: 308-1988 IS: 308-1988 IS: 308-1988
	Compressed Oxygen	Purity test	IS: 309-1992
	Nitrogen (Technical Grade)	Oxygen	IS: 1747-1977
BUILDING MATERIALS			
	Cement-all types & Fly ash	1) Loss on ignition 2) Silica 3) Combined Ferric Oxide & Alumina 4) Ferric Oxide 5) Alumina 6) Calcium Oxide 7) Magnesia 8) Sulphuric Anhydride 9) Insoluble Residue 10) Sodium Oxide & Potassium Oxide 11) Water Soluble Alkali 12) Sulphur as Sulphide	
2	Cement Concrete	Proportional Ratio of Sand, Cement & Stone	ASTM-C-85-1966
3.	Lime Stone	1) Loss on Ignition 2) Silica 3) Iron Oxide 4) Calcium Oxide 5) Magnesium 6) Manganese 7) Carbon dioxide 8) Sulphur 9) Phosphorus	IS: 1706(1)-91 IS: 1760(2)-91 IS: 1760(3)-92 IS: 1760(3)-92 IS: 1760(3)-92 IS: 3204-78 IS: 1760(4)-91 IS: 3204-78 IS: 3204-78

		10) Alumina	IS: 1760(3)-92
4.	Building Limes	1) Calcium Oxide & Magnesium Oxide 2) Silica, alumina & Iron oxide 3) Insoluble residue in dilute acid and alkali 4) Carbon dioxide 5) Free Moisture	IS: 6932(1)-73 IS: 6932(1)-73 IS: 6932(1)-73 IS: 6932(2)-73 IS: 6932(2)-73 IS: 1514-90
5.	Water Proofing Compounds	Chloride	IS: 6925-73
III INDUSTRIAL AND FINE CHEMICALS			
1	Nitric Acid	1) Total acidity (as HNO ₃) 2) Residue on ignition 3) Chlorides (as Cl) 4) Sulphates (as H ₂ SO ₄) 5) Heavy Metals (as Pb) 6) Nitrous acid (as HNO ₂) 7) Arsenic (as As) 8) Iodine 9) Iron (as Fe) 10) Manganese(as Mn) 11) Phosphate (as PO ₄) 12) Silicate (as SiO ₂) 13) Ammonium Salt (as NH ₃)	IS:264-76 IS:264-76 IS:264-76 IS:264-76 IS:264-76 IS:264-76 IS:2088-83 IS:264-76 IS:264-76 IS:264-76 IS:264-76 IS:264-76 IS:264-76
2.	Hydrochloric Acid	1) Total acidity (as HCl) 2) Residue on Ignition 3) Sulphates (as H ₂ SO ₄) 4) Iron (as Fe) 5) Free Chlorine & Bromine (as Cl) 6) Sulphites (as SO ₂) 7) Heavy Metals (as Pb) 8) Arsenic (as As) 9) Ammonium Compounds (as NH ₄) 10) Mercury (as Hg)	IS:265-93 IS:265-93 IS:265-93 IS:265-93 IS:265-93 IS:265-93 IS:2088-83 IS:265-93 IS:265-93 IS:265-93
3.	Sulphuric Acid	1) Total acidity (as H ₂ SO ₄) 2) Residue on Ignition 3) Iron (as Fe) 4) Chlorides (as Cl) 5) Lead (as Pb) 6) Arsenic (as As) 7) Oxidisable impurities (as SO ₂) 8) Organic Matter 9) Nitrates (as NO ₃)	IS:266-93 IS:266-93 IS:266-93 IS:266-93 IS:266-93 IS:2088-83 IS:266-93 IS:266-93 IS:266-93 IS:266-93

		10) Ammonia 11)Selenium (as Se) 12)Manganese (as Mn) 13)Copper (as Cu) 14)Zinc (as Zn)	IS:266-93 IS:266-93 IS:266-93 IS:266-93
4.	Caustic Soda	1) Sodium Carbonate (as NA_2CO_3) 2) Sodium Hydroxide (as NaOH) 3) Chlorides (as NaCl) 4) Sulphates (as NA_2SO_4) 5) Silicates (as SiO_2) 6) Iron (as Fe) 7) Copper (as Cu) 8) Manganese (as Mn) 9) Chlorate & Perchlorate 10)Matter insoluble in water	IS:252-91 IS:252-91 IS:252-91 IS:252-91 IS:252-91 IS:252-91 IS:252-91 IS:252-91 IS:252-91
5.	Soda Ash	1) Volatile matter 2) Total Alkalinity (As NA_2CO_3) 3) Matter insoluble in water 4) Sulphate (as NA_2SO_4) 5) Chloride (as NaCl) 6) Iron (as Fe)	IS:251-98 IS:251-98 IS:251-98 IS:251-98 IS:251-98\
IV	METALS		
1	Cast iron Pig iron, Plain Carbon Steel and Low Alloy Steel	1) Carbon 2) Sulphur 3) Phosphorus 4) Silicon 5) Manganese 6) Chromium 7) Nickel 8) Copper 9) Molybdenum	ASTM E 1019-94 ASTM E 1019-94 ASTM E 350-95 ASTM E 350-95 ASTM E 350-95 ASTM E 350-95 ASTM E 350-95 ASTM E 350-95 ASTM E 350-95
2	Ferro Silicon	1) Silicon 2) Carbon 3) Sulphur 4) Phosphorus 5) Aluminium	1559(1)-88 ASTM E 1019-94 ASTM E 1019-94 ASTM E31-85 IS:1559(5)-82
3	Stainless Steel	1) Carbon 2) Sulphur 3) Phosphorus 4) Manganese	ASTM E 1019-94 ASTM E 1019-94 ASTM E 353-93 ASTM E 350-95

		5) Silicon 6) Chromium 7) Nickel 8) Molybdenum	ASTM E 352-92 ASTM E 353-93 ASTM E 350-95 ASTM E 30-89
4	Tool Steel	1) Carbon 2) Sulphur 3) Phosphorus 4) Manganese 5) Silicon 6) Chromium 7) Nickel 8) Tungsten 9) Molybdenum 10) Vanadium	ASTM E 1019-94 ASTM E 1019-94 ASTM E 352-93 ASTM E 350-95 ASTM E 352-92 ASTM E 352-92 ASTM E 352-92 ASTM E 30-89 ASTM E 30-89 ASTM E 30-89
5	Gold lace	1) Ash 2) Silver 3) Gold 4) Copper	IS:8769-78 IS:9925-81 IS:9925-81 ASTM E 53-98
6	Zinc Coatings	1) Mass 2) Uniformity	IS:6745-72 IS:2633-86
7	Brass	1) Copper 2) Lead 3) Tin 4) Phosphorus 5) Nickel 6) Iron 7) Silicon 8) Zinc	IS:3685-66 IS:3685-66 IS:3685-66 IS:3685-66 ASTM E 53-86/IS:3685-66 ASTM E 53-86/IS:3685-66 IS:3685-66 ASTM E 53-86/IS:3685-66
8	Bronze	1) Copper 2) Lead 3) Tin 4) Silicon 5) Phosphorus 6) Nickel 7) Iron 8) Manganese 9) Antimony 10) Zinc	IS:4027(1)-87 IS:4027(1)-87 IS:4027(5)-87 IS:4027(10)-87 IS:4027(3)-87 IS:4027(1)-87 ASTM E 53-86/ IS:4027(8)-91 ASTM E 53-86 IS:4027-67 ASTM E 53-86/ IS:4027(6)-87
9	Copper	1) Copper 2) Residual Copper 3) Lead	ASTM E 53-98 ASTM E 53-98 ASTM E 53-86

		4) Iron 5) Nickel 6) Phosphorus	ASTM E 53-98 ASTM E 53-98 ASTM E 54-80
10	Aluminium and its alloys	1) Silicon 2) Lead 3) Iron 4) Manganese 5) Magnesium 6) Nickel 7) Chromium 8) Tin 9) Copper 10) Bismuth 11) Zinc	ASTM E 34-94 ASTM E 34-94 ASTM E 34-94 ASTM E 34-94 ASTM E 34-94 ASTM E 34-94 ASTM E 34-68 ASTM E 34-94 ASTM E 34-94 ASTM E 34-94 ASTM E 34-94
11	Antirifaction bearing alloys	1) Tin 2) Lead 3) Copper 4) Iron 5) Antimony 6) Bismuth	ASTM E 57-60/IS:1409-59 ASTM E 57-60/IS:1409-59 IS:1409-59/AAS IS:1409-59/AAS ASTM E 57-60 ASTM E-37-
12	Soft Solder	1) Lead 2) Tin 3) Antimony 4) Copper 5) Iron 6) Zinc	IS: 998-59 ASTM E 46-87 ASTM E 46-87 ASTM E-37-95/AAS ASTM E-46-87/AAS ASTM E-37-95/AAS
13	Zinc and its alloys	1) Lead 2) Tin 3) Iron 4) Magnesium 5) Cadmium 6) Copper	ASTM E 536-98/ IS:2600(2)-88 IS:2600-64 ASTM E 536-98/ IS: 2600(2)-88 ASTM E 536-98 ASTM E 536-98/ IS: 2600(2)-88
V	PAINTS & SURFACE COATINGS		

1.	Paints/ Primers/ Pigments	1) Consistency/Flow cup	IS:101(P-1,S-5) 1988
		2) Flash Point	IS:101(P-1,S-5)
		3) Mass in kg. per 10 lts.	IS:101(P-1,S-5) 1987
		4) water content/Moisture	IS:101(P-2 ,S-5) 1988
		5) Volatile matter by mass	IS:101(P-1,S-5) 1986
		6) Drying time	IS:101(P-3,S-1) 1986
		7) Finish	IS:101(P-3,S-4) 1987
		8) Fineness of frind	IS:101(P-3, S-5) 1987
		9) Wet Opacity, Chequer board	Cl.10 of IS:101-1964
		10) Colour Visual comparison	IS:101(P-4, S- 2)1988
		11)Light Fastness test	IS:101(P-4, S- 2)1988
		12) Gloss at 45° & 60°	IS:101(P-4, S- 4)1988
		13) Flexibility & Adhesion Rend Test	Cl.2 of IS:101(P-5,S- 2)
		14) Scratch Hardness	Cl.3 of IS:101(P-5, S-2)
		15) Resistance to humidity	Cl.2 of IS:101(P-6, S-1)
		16) Artificial sea water Spray Tests	Cl.4 of IS:101(P-6, S-1)
		17) Resistance to water	Cl.23 of IS:101 – 1964
		18) Pigment	IS:101(P-8, S-2) 1990
		19) Non-volatile matter	IS:101(P-8, S-2) 1990
		20) Volume solids	IS:101(P-8, S-6) 1993
		21) Phthalic anhydride content	IS:101(P-8, S-4) 1993
		22) Lead Restriction test	IS:101(P-8, S-5) 1990
		23) Determination of CrO ₃	IS:104-1979 (Appn- A)
		24) Determination of ZnO	IS:104 -1979 (Appn- A)
		25) Resistance to Acid	IS:9862-1981(Appn B)
		26) Resistance to alkali	IS:9862 – 1981 (Annn C)
		27) Stripping test	Cl.17 of IS:101- 1964
		28) Resistance to chlorine	IS:9862 – 1981(Annn D)

		29) Freedom from Rosin	Cl.23 of IS:74 – 1979
		30) Freedom from yellowing	IS: 133 – 1993 (Ann B)
		31) Accelerated storage stability test	IS: 133 – 1993 (Appn D) IS: 2932 – 1993 (Ann C)
		32) Red Oxide of Iron	IS: 6947 (P-2) 1975
VI	BITUMEN		
1	Paving and Industrial	1) Specific gravity	IS:1202-1978(Method B)
		2) Water content	IS: 1211 – 1978
		3) Flash Point Pensky Martens Closed type	IS:1209 – 1978 (Method A)
		4) Softening point	IS: 1205 – 1978
		5) Penetration	IS: 1203 – 1978
		6) Ductility	IS: 1208 – 1978
		7) Loss of heating	IS: 1212 – 1978
		8) Matter soluble in Carbon tetrachloride or	IS: 1216 – 1978
		9) Mineral matter	IS:7084-1973 (Appendix D)
		10) Flash point Cleveland open cup	IS:7084-1973 (Appendix C)
		11) Freedom from Sulphur	IS:7084-1973 (Appendix E)
VII	MISCELLANEOUS		
1	Textiles	pH	IS: 1390 – 1983

NTH, Chennai

Civil Testing facilities

Sl. No.	Product/Material of test	Specific tests performed	Test method Specification against which tests are performed
1.	Building Materials - CEMENT	Setting time	IS: 4031 (5) - 1988
		Fitness by specific surface	IS: 4031 (2) – 1999 Reaffirmed 2000
		Soundness by LeChatlier's expansion method	IS: 4031 (3) – 1988
		Soundness by Autoclave expansion method	IS: 4031 (3) – 1988 Reaffirmed 2000
		Specific Gravity	IS: 4031 (11) – 1988 Reaffirmed 2000
2.	Building Materials TILES	Transverse Strength	

Mechanical Measurements CALIBRATION FACILITIES

INSTRUMENTS/Gauges

I Parameter: LENGTH & ANGLE

- | | | |
|-----|------------------------------------------|---------------|
| 1. | Slip Gauge Set ---- Grade I and Grade 2 | IS: 2984 |
| 2. | Vernier Cliper | IS: 3651 |
| 3. | External Micrometer | IS: 2967 |
| 4. | Micrometer setting rods | IS: 2967 |
| 5. | Diam gauge 0 – 10 mm | IS: 2092 |
| | 0 – 25 mm | |
| | 0 – 50 mm | |
| 6. | Internal Micrometer | IS:2966 |
| 7. | Bore Gauge | IS: 2966 |
| 8. | Depth gauge | IS: 4213 |
| 9. | Height gauge | IS: 2921 |
| 10. | Dial Thickness gauge | IS: 2092 |
| 11. | Feeler gauge set (15 pieces) | IS: 3179 |
| 12. | Lever type Dial gauge | IS: 11498 |
| 13. | Plain plug gauge | IS: 3484 |
| 14. | Bevel Protractor | IS: 4239 |
| 15. | Combination angle set | IS: 4239 |
| 16. | Steel scale | IS: 1481 |
| 17. | Measuring tape | IS: 1269/1270 |
| 18. | Test Sieve | IS: 460 |
| 19. | Ford cup (including orifice measurement) | IS: 101 |
| 20. | Vicat's Apparatus | IS: 5516 |

II. Parameter : Pressure:

- | | | |
|----|---------------------------------------------------------------------------------|----------|
| 1. | Dial Pressure gauges & Digital Indicators
Range: 1 – 4000 kg/cm ² | IS: 3264 |
|----|---------------------------------------------------------------------------------|----------|

Vacuum: Vacuum gauges
Range 0 – 760 mm Hg.

INSTRUMENTS/EQUIPMENT

III. Parameter – Force

- | | |
|------------------|---------------------------|
| 1. Proving Rings | IS: 4169 |
| 2. Load cells | upto 600kN in Tension |
| 3. Dynamometers | and 2000kN in Compression |

CALIBRATION AT SITE

Universal Testing
Machines/Tensile Testing
Machines (upto 600kN/
Compression Testing
(upto 2000kN) IS: 1828/ISO:7500

V. Parameter – Torque

Click type and dial type IS: 7145
Torque wrenches
Capacities upto 200kgm/2000Nm

VI. Parameter – Hardness

Rockwell/Rockwell Indirect Verification as per
Superficial Hardness Testing IS: 3804

Vickers Hardness Indirect Verification as per
Testing machines IS: 1754

Brinell Hardness Indirect Verification as per
Testing machines IS: 1500

VII. Parameter – MASS

Electronic Balances
Range 10g – 50kg
Weights upto 5kg. Calibration as per OIML R-76
Calibration as per OIML R-

NTH (SR) CHENNAI ELECTRICAL LABORATORY

CALIBRATION FACILITIES

Voltage	
DC	0 to 1000V
AC	0 to 1000V (10Hz to 500 KHz)
HV (AC&DC)	Upto 100kV
Current	
DC	0 to 20A
AC	0 to 50A (10Hz to 30 KHz)
• Clamp meter (AC&DC)	0 to 1000A(10Hz to 30KHz)
• Resistance	0 to 1100Megohms
• Capacitance	0.19nfto 110mf
• Temperature	-250deg C to 2316deg C
• Thermocouple/RTD (Source/Sense)	
• Frequency	0.01Hz to 2.0MHz
• Power	Up to 20.5 kW
• Phase	Up to 180 deg(10Hz to 30KHz)
• Power factor	0 to 1 (Lead & Lag)

LIST OF INSTRUMENT FOR WHICH CALIBRATION FACILITIES AVAILABLE

- Digital Multimeter (Up to 6Y2 digit)
- Multi function/Multiproduct Calibrator
- Ammeter Voltmeter (Analog/Digital)
- Watt meter (Single Phase)
- Capacitance meter
- Stop watch
- Frequency meter
- Temperature indicator & Controller
- Power factor meter (Single Phase)
- Tong tester
- High Voltage measuring devices

PARAMETER

RANGE