

List of Testing and Process Facilities at HAL Divisions in Uttar Pradesh

SI No	Test Facilities / Process / Areas	Location / Specifications
1	Chemical Testing of Petroleum & its Products	Kanpur Petroleum (Aviation Fuel) contamination check of Hydraulic Fluid & ATF. Standard : NAS 1638 (Class 0 TO 12)
2	Mechanical Properties of Metals	Kanpur & Lucknow 1. Hardness : Vickers, Brinell, Rockwell 2. Elongation 3. Proof Stress 4. Ultimate Tensile Strength Standard: ASTM E8, E10, E18, E92
3	Non Destructive Testing	Kanpur & Lucknow NDT facilities for: 1. Ultrasonice Testing 2. Radiography 3. Eddy Current 4. Dye Penetrant 5. Magnetic Particle Standard: ASTM B594, 1742M, 1417,1444, Section V - Art 8, NDTs 004, 001, 006, 015, 005
4	Hot and Cold Chambers	Korwa Useful Volume: 110 L Temperature range: -70°C to +180°C Maximum internal thermal load: 500 W Useful internal dimension (LxDxH): 548x447x447 Max Speed of temperature variation (heating & cooling): >5 °C/min Lucknow (5 Chambers) Capacity: 1000 ltr. (approx.) Temp. Range: -70°C to +125°C ± 1°C Temp. Change Rate: 5K/min during heating and cooling between 40°C to +80°C Humidity: 20 to 95% R.H. without Thermal Load Pressure Range: Atmospheric pressure to 10 mbar abs. Fall Rate: 7.5 minutes from Atmospheric Pressure to 3,000 ft. Temperature Range: -70°C to +180°C. Humidity Range: 10% RH to 95% RH for 15°C to 85°C Working Space: 1.0x1.0x1.5 m3 (1500 ltr.) Cooling rate (average) & Heating rate (average) : 12°C/min (As per MIL 810-D, JSS-55555, BS3G-100 & RTCA- DO 160C) Temperature Range: -40°C to +120°C Humidity Range : 98±2 % RH Working Space : 1.0x1.0x1.0 m3 Cooling & Heating rate (average) : 1°C/min (As per MIL 810-D, JSS-55555, BS3G-100 & RTCA- DO 160C) Temperature Range:-65°C to +120°C. Working Space : 600ltr Cooling & Heating rate (max.) : 1°C/min (As per MIL 810-D, JSS-55555, BS3G-100 & RTCA- DO 160C) Test Area: 0.7x0.7x0.7 m3 Max. Load Capacity: 100 Kg distributed load Temp. Range: -65°C to +180°C ± 2°C Heating and Cooling Rate: 2°C / min Port Hole: 50 mm
5	Acceleration Test	Korwa Max rotation Speed : 220 RPM Max weight : 25 Kg Armature length : 1.2 mtrs.
6	Rain Test Chamber	Lucknow Test Area: 0.8x0.8x0.8 m3 Temp. Range: +23°C to +50°C ± 2°C Rain Fall Rate: 280 l/m2/hr
7	Sand and Dust Chamber	Lucknow (2 Chambers) Test Area : 1.0x1.0x1.0 m3 Temperature Range: +23°C to +100°C Working Space: 1.0x1.0x1.0 m3 Viewing Window: 0.3x0.4 m2 Temperature Range: Ambient to +70°C. Humidity Range : 25% to 40% RH (during test) Average Dust Sprayed: 25±5 grams in 5 min (As per JSS-55555)
8	Thermal Shock Chamber	Lucknow Test Area: 0.5x0.5x0.5 m3 Max. Load Capacity: 50 Kg Temp. Range: Hot Zone: +50°C to +200°C ±2°C, Rate: 12°C/min Cold Zone: -70°C to +70°C ±2°C, Rate: 6°C/min (cooling) & 2°C/min (heating)
9	Salt Fog (Salt Spray)/ Corrosion Test Chamber	Lucknow Tank Volume: 1000 ltr. (1600Lx700Bx800H) Op. Temp.: Ambient to +55°C (As per MIL 810D)

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10	Vibration / Shock Test System	Lucknow Rated Force Sine Vector : ± 1500 KgF Frequency range : 2 Hz to 5 KHz Max Displacement : 51.0 mm (25.4 mm half sine peak) Acceleration :50 g (Sine & Random) 20 g (Shock) Max Velocity : 1.8 m/s Max static load capacity : 120 Kg Vibrator Platform Dia. : 240 mm Shaker rotation : ± 90° Slip Table Size: 600 mm x 600 mm (As per MIL 810-D, JSS-55555, BS3G-100 & RTCA- DO 160C)
11	Pneumatic Shock Test Machine	Lucknow Max payload: 200 Kg Max Acceleration: 200 g (±10%) Pulse: 3 to 30 ms Platform: 600mm x 600mm Pulse Type: Half Sine / Terminal Peak Saw Tooth (As per MIL 810-D)
12	Centrifugal Acceleration Machine	Lucknow Acceleration: 0.1 to 50 g Effective speed: 30 to 300 rpm Object Mass (max.): 100 Kg Rotating Platform: 300 to 1,000 mm (As per MIL 810-D, JSS-55555, BS3G-100 & RTCA- DO 160C)
13	Chemical Testing of Metals & its Alloys	Kanpur & Lucknow Aluminium & its alloys (Cr, Cu, Fe, Pb, Mg, Mn, Ni, Si, Ti, V & Zn). Lucknow Copper Base Alloy (Al, Fe, Pb, Mn, Ni, P, Si, Sn, Zn) Ferrous Alloy (C, S) High Speed Steel (C, Cr, Cu, Mn, Mo, Ni, W) Low Alloy Steel (Al, C, Cr, Mn, Mo, Ni, P, Si, S) Stainless Steel (C, Cr, Mn, Mo, P, Si, S) Standard: ASTM E1251 (Spark-Atomic Emission Spectrometry (Spark-AES), LTP 106B, ASTM E1019, LTP 106A, ASTM E415, ASTM E1086, ASTM E384
14	Chromic Acid Anodizing	Kanpur 6550 mm (L) x 750 (W) mm x 1800 (D) mm Nadcap accredited facility for anodizing of aluminium alloys parts of sheet metal and machined parts. Standard: HAN-STD-0032
15	Nitriding	Lucknow Temp: 510° C Gas Nitriding of low-Alloy Steel parts. Standard: DS318 and AMS2759/6
16	Stress Relieving	Lucknow Temp: 510° C Stress Relief of Steel parts. Standard: DS318 and AMS2759/11