

ROSEN TESTING FACILITY

SCHEDULE OF TESTING AND STANDARDS

	Type of test/properties measured/ range of measurement	Standard specifications/ equipment/techniques used
Chemical Tests		
Carbon and low alloy steels	C, Si, Mn, P, S, Cr, Mo, Ni, Al, Cu, Nb, Ti, V, Sn, Ca, B, W	ASTM A751 Spark-OES
High alloy steel, nickel alloys	C, Si, Mn, P, S, Cr, Mo, Ni, Al, Co, Cu, Nb, Ti, Fe, B, V, W, N	
Copper alloys, aluminium	Cu, Al	
Cast iron	C, Si	
Carbon and low alloy steels	C, Si, Mn, P, S, Cr, Mo, Ni, Al, Cu, Nb, Ti, V, Sn, Ca, B, W	Documented in-house method using ICP-OES
High alloy steel, nickel alloys	C, Si, Mn, P, S, Cr, Mo, Ni, Al, Co, Cu, Nb, Ti, Fe, B, V, W, N	
Copper alloys, aluminium	Cu, Al	
Cast iron	C, Si	
Metals, alloys and metal product	Phase identification	Documented in-house procedures using X-ray diffraction (XRD)
Carbon and low alloy steels, high alloy steel, cast irons	C, S	Documented in-house procedures using infrared absorption
Corrosion Tests		
Stainless steels	Susceptibility to intergranular attack	ASTM A262 Practice E & C
	Susceptibility to intergranular Corrosion	ASTM G28 Method A
	Pitting corrosion resistance	ASTM G48 Method A
Metals, alloys and metal products	Salt spray corrosion tests	ASTM B117 ISO 9227
	Electrochemical tests	By agreement
	Heat treatment and high temperature oxidation tests	By agreement, up to 1150°C
Mechanical Tests		
Metals, alloys and metal products	Hardness:	
	Vickers or Knoop – Micro (HV 0.3 to HV 1)	ASTM E384 ASTM E92 BS EN ISO 6507-1
	Vickers or Knoop – Macro (HK 0.3 to HK 1)	ASTM E384 ASTM E92 BS EN ISO 6507-1
	Tensile:	
	Forces from 2kN to 150 kN	ASTM C633 BS EN ISO 6892-1 ASTM A370 ASTM E8/E8M ASTM B557M-15

ROSEN TESTING FACILITY

SCHEDULE OF TESTING AND STANDARDS

	Type of test/properties measured/ range of measurement	Standard specifications/ equipment/techniques used
Metallurgical Tests		
Steels	Metallographic sample preparation	ASTM E3
	Average grain size	ASTM E112 BS EN ISO 643 ASTM E1181 ASTM E930
	Assessing the degree of banding or orientation in microstructures	ASTM E1268
	Volume fraction	ASTM E562
	Determining area percentage of porosity in thermal sprayed coatings	ASTM E2109
	Inclusion Rating	ASTM E45 Methods A & D ASTM E2283
	Examination of decarburised layer	ASTM E1077
	Examination of surface treatments	ISO 18203
	Dry Sand Rubber Wheel abrasion test	ASTM G65
Weldments	Hardness test on arc welded joints	BS EN ISO 9015-1
	Macroscopic and microscopic examination of welds	BS EN ISO 17639
Mechanical and Physical Tests		
Coatings and paints	Taber abrasion test	ASTM D4060
	Cohesive bond strength testing	ASTM C633
	Exposure of coatings to accelerated weathering	ASTM G154 BS EN ISO 16474-3
	Coating Thickness	ASTM D7091
	Holiday Detection	ASTM D5162 BS EN 10289 T/SP/CW/6
	Determination of the level of adhesion	ASTM D3359
	Water resistance and humidity	ASTM D2247 ASTM D870
	Pull-off testing (Set of 3)	ASTM D4541 BS EN ISO 4624
	Salt spray testing	ASTM B117 BS EN ISO 9227
	Durometer hardness (Shore D)	ASTM D2240
	Porosity, interface and cross-sectional	CSA-Z245.20-06