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Registration No. CNAS L15597

Accreditation Criteria: ISO/IEC 17025:2017 and relevant requirements of CNAS

Effective Date: 2021-11-24 Expiry Date: 2027-11-23

SCHEDULE 3 ACCREDITED TESTING SCOPE

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
Metallic Materials and Products						
1	Steel and alloys	1	C, Si, Mn, P, S, Cr, Ni, Mo, V, Al, Ti, Cu, Nb, Co, B, Zr, As, Sn, W	Carbon and low-alloy steel - Determination of multi-element contents - Spark discharge atomic emission spectrometric method (routine method) GB/T 4336-2016+XG1-2017	Accredited only for C: (0.1~1.1) %, Si: (0.15~1.2) %, Mn: (0.20~1.50) %, P: (0.006~0.040) %, S: (0.002~0.0	2021-11-24

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№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					30) % , Cr: (0.04~3.0) % , Ni: (0.01~3.3) % , Mo: (0.007~1.1) % , V: (0.003~0.6) % , Al: (0.01~0.07) % , Ti: (0.001~0.20) % , Cu: (0.01~0.25) % , Nb: (0.003~0.030) % , Co: (0.006~0.070) % , B: (0.0001~0.0007) % ,	

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					Zr: (0.001~0.02) % , As: (0.003~0.010) % , Sn: (0.005~0.020) % , W: (0.06~0.7) %	
		2	C, Si, Mn, P, S, Cr, Ni, Mo, V, Al, Ti, Cu, Nb, Co, B, Zr, As, Sn	Standard Test Method for Analysis of Carbon and Low-Alloy Steel by Spark Atomic Emission Spectrometry ASTM E415-17	Accredited only for C: (0.1~1.1) % , Si: (0.15~1.54) % , Mn: (0.20~1.50) % , P: (0.006~0.040) % , S: (0.001~0.030) % , Cr: (0.04~4.50)	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					% , Ni: (0.01~3.3) % , Mo: (0.007~1.1) % , V: (0.003~0.3) % , Al: (0.01~0.07) % , Ti: (0.001~0.20) % , Cu: (0.01~0.25) % , Nb: (0.003~0.030) % , Co: (0.006~0.070) % , B: (0.0001~0.0007) % , Zr: (0.001~0.020) % ,	

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					As: (0.003~0.010) % , Sn: (0.005~0.020) %	
		3	C, Si, Mn, P, S, Cr, Ni, Mo, Cu, Al, W, Nb, Ti, V, B, Co, As, Sn	Statinless steel - Determination of multi-element contents - Spark discharge atomic emission spectrometric method(Routine method) GB/T 11170-2008	Accredited only for C: (0.01~0.30) % , Si: (0.10~1.00) % , Mn: (0.10~9.00) % , P: (0.004~0.040) % , S: (0.005~0.024) % , Cr: (10.00~24.50) % , Ni: (0.10~24.00) % , Mo: (0.06~3.50)	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					% , Cu: (0.04~3.50) % , Al: (0.02~1.00) % , W: (0.05~0.070) % , Nb: (0.03~0.60) % , Ti: (0.03~1.10) % , V: (0.04~0.30) % , B: (0.002~0.005) % , Co: (0.01~0.30) % , As: (0.002~0.010) % , Sn: (0.005~0.010) %	

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
		4	C, Si, Mn, P, S, Cr, Ni, Mo, Cu	Standard Test Method for Analysis of Austenitic Stainless Steel by Spark Atomic Emission Spectrometry ASTM E1086-14	Accredited only for C: (0.005~0.25) % , Si: (0.01~0.90) % , Mn: (0.01~2.0) % , P: (0.003~0.04) % , S: (0.003~0.024) % , Cr: (17.0~23.0) % , Ni: (7.5~13.0) % , Mo: (0.01~3.0) % , Cu: (0.01~0.30) %	2021-11-24
		5	C, S, O, N	Standard Test Methods for Determination of Carbon, Sulfur, Nitrogen, and Oxygen in Steel, Iron, Nickel, and Cobalt Alloys		2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
				by Various Combustion and Inert Gas Fusion Techniques ASTM E1019-18		
		6	H	Steel and iron Determination of hydrogen content -Thermal conductivity/infrared method after fusion under inert gas GB/T 223.82-2018	Accredited only for H: (0.8~7.0) μg/g	2021-11-24
2	Aluminum and aluminum alloys	1	Si, Fe, Cu, Mn, Mg, Cr, Ni, Zn, Ti, Zr	Optical emission spectrometric analysis method of aluminum and aluminum alloys GB/T 7999-2015	Accredited only for Si: (0.07~11.5) % , Fe: (0.2~0.5) % , Cu: (0.001~4.70) % , Mn: (0.01~1.2) % , Mg: (0.03~4.50) % , Cr: (0.001~0.23) % , Ni: (0.01~1.1) % , Zn:	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					(0.01~6.5) % , Ti: (0.01~0.12) % , Zr: (0.001~0.12) %	
		2	Si, Fe, Cu, Mn, Mg, Cr, Ni, Zn, Ti, Zr	Standard Test Method for Analysis of Aluminum and Aluminum Alloys by Spark Atomic Emission Spectrometry ASTM E1251-17a	Accredited only for Si: (0.07~11.5) % , Fe: (0.2~0.5) % , Cu: (0.001~4.70) % , Mn: (0.01~1.2) % , Mg: (0.03~4.50) % , Cr: (0.001~0.23) % , Ni: (0.01~1.1) % ,	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					Zn: (0.01~6.5) % , Ti: (0.01~0.12) % , Zr: (0.001~0.12) %	
3	Nickel and nickel alloys	1	Al, B, C, Co, Cr, Cu, Fe, Mn, Mo, Nb, P, Si, Ti, V, W, Zr	Standard Test Method for Analysis of Nickel Alloys by Spark Atomic Emission Spectrometry ASTM E3047-16	Accredited only for Al: (0.01~1.50) % , B: (0.001~0.006) % , C: (0.005~0.13) % , Co: (0.01~13.0) % , Cr: (0.01~23.50) % , Cu: (0.01~33.00) % , Fe: (0.05~41.0)	2021-11-24

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№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					% , Mn: (0.01~1.00) % , Mo: (0.01~15.5) % , Nb: (0.01~5.3) % , P: (0.001~0.018) % , Si: (0.01~0.60) % , Ti: (0.001~3.0) % , V: (0.01~0.09) % , W: (0.01~3.30) % , Zr: (0.01~0.05) %	
		2	C, S, O, N	Standard Test Methods for Determination of Carbon, Sulfur, Nitrogen, and Oxygen in Steel, Iron, Nickel, and Cobalt Alloys by Various Combustion and Inert Gas Fusion Techniques ASTM		2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
				E1019-18		
4	Titanium and titanium alloys	1	C	Standard Test Method for Determination of Carbon in Refractory and Reactive Metals and Their Alloys by Combustion Analysis ASTM E1941-10(2016)	Accredited only for C: (0.005~0.050) %	2021-11-24
		2	O, N	Standard Test Method for Determination of Oxygen and Nitrogen in Titanium and Titanium Alloys by Inert Gas Fusion ASTM E1409-13	Accredited only for O: (0.08~0.36) % , N: (0.005~0.031) %	2021-11-24
		3	H	Standard Test Method for Determination of Hydrogen in Titanium and Titanium Alloys by Inert Gas Fusion Thermal Conductivity/Infrared Detection Method ASTM E1447-09(2016)	Accredited only for H: (0.0013~0.0260) %	2021-11-24
5	Metal materials and metallic products （Mechanical）	1	Tensile Test	Metallic materials--Tensile testing--Part 1:Method of test at room temperature GB/T 228.1-2010	Accredited only for <250kN, R_m, R_{eL}, R_{eH}, $R_{p0.2}$, A, Z	2021-11-24
				Metallic materials -- Tensile testing -- Part 1: Method of test at room temperature ISO 6892-1:2019	Accredited only for <250kN, R_m, R_{eL}, R_{eH}, $R_{p0.2}$,	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					A, *Z*	
				Metallic Materials-Test Methods-Part1: Tensile Testing at Ambient Temperature I.S. EN 2002-001:2006	Accredited only for <250kN, R_m, R_{eL}, R_{eH}, $R_{p0.2}$, *A*, *Z*	2021-11-24
				Standard Test Methods for Tension Testing of Metallic Materials ASTM E8/E8M-21	Accredited only for <250kN, Tensile Strength, Yield strength, Elongation, Reduction of area	2021-11-24
				Standard Test Methods for Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products ASTM B557-15	Accredited only for <250kN, Tensile Strength, Yield strength, Elongation, Reduction of area	2021-11-24
				Standard Test Methods for Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products (Metric) ASTM B557M-15	Accredited only for <250kN,	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					Tensile Strength, Yield strength, Elongation, Reduction of area	
				Standard Test Methods and Definitions for Mechanical Testing of Steel Products ASTM A370-20 7-14	Accredited only for <250kN	2021-11-24
		2	Elevated Tensile Test	Metallic materials -Tensile testing - Part 2:Method of test at elevated temperature GB/T 228.2-2015	Accredited only for <90kN, 100~1100 ℃, R_m, $R_{p0.2}$, A, Z	2021-11-24
				Metallic materials - Tensile testing - Part 2: Method of test at elevated temperature ISO 6892-2:2018	Accredited only for <90kN, 100~1100 ℃, R_m, $R_{p0.2}$, A, Z	2021-11-24
				Standard Test Methods for Elevated Temperature Tension Tests of Metallic Materials ASTM E21-20	Accredited only for <90kN, 100~1100 ℃, Tensile Strength, Yield strength(Y	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					S(0.2% offset)), Elongation, Reduction of area	
				Metallic Materials - Test Method - Part2: Tensile Testing at Elevated Temperature I.S. EN 2002-002:2006	Accredited only for <90kN, 100~1100 ℃, R_m, $R_{p0.2}$, A, Z	2021-11-24
		3	Impact Test	Metallic materials -Charpy pendulum impact test method GB/T 229-2020	Accredited only for <450J, -60℃-room temperature, KV_2, KV_8,KU_2, KU_8	2021-11-24
				Metallic materials - Charpy pendulum impact test - Part 1: Test method ISO 148-1:2016	Accredited only for <450J, -60℃-room temperature KV_2, KV_8,KU_2, KU_8	2021-11-24
		4	Brinell Hardness	Metallic materials -Brinell hardness test - Part 1:Test method GB/T 231.1-2018	Accredited only for HBW2.5/1	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					87.5（＞125），HBW10/500（≤125），HBW10/1000（≤125），HBW10/3000（＞125）	
				Metallic materials - Brinell hardness test - Part 1:Test method ISO 6506-1:2014	Accredited only for HBW2.5/187.5（＞125），HBW10/500（≤125），HBW10/1000（≤125），HBW10/3000（＞125）	2021-11-24
				Standard Test Method for Brinell Hardness of Metallic Materials ASTM E10-18	Accredited only for HBW2.5/187.5（＞125），HBW10/50	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					0（≤125），HBW10/1000（≤125），HBW10/3000（＞125）	
				Standard Test Methods and Definitions for Mechanical Testing of Steel Products ASTM A370-20 16-17	Accredited only for HBW2.5/187.5（＞125），HBW10/500（≤125），HBW10/1000（≤125），HBW10/3000（＞125）	2021-11-24
		5	Rockwell Hardness	Metallic materials - Rockwell hardness test - Part 1: Test method GB/T 230.1-2018	Accredited only for HRBW（≥60），HRC	2021-11-24
				Metallic materials - Rockwell hardness test - Part 1: Test method ISO 6508-1:2016	Accredited only for HRBW（≥60），HRC	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					HRC	
				Standard Test Methods for Rockwell Hardness of Metallic Materials ASTM E18-20	Accredited only for HRBW（≥60）, HRC	2021-11-24
				Standard Test Methods and Definitions for Mechanical Testing of Steel Products ASTM A370-20 16,18	Accredited only for HRBW（≥60）, HRC	2021-11-24
		6	Vickers Hardness	Metallic materials - Vickers hardness test - Part 1:Test method GB/T 4340.1-2009	Accredited only for HV0.1（≤225）, HV0.2(≤225), HV0.3（≥700）, HV0.5（400-695）, HV1（≥700）	2021-11-24
				Standard Test Method for Microindentation Hardness of Materials ASTM E384-17	Accredited only for HV0.1（＜240）,	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					HV0.2(＜240)，HV0.3（＞600），HV0.5（≥240），HV1（＞600），HK0.1（250-650），HK0.2（≤650），HK0.3（≥250），HK0.5（≥250），HK1（≥250）	
		7	Creep and stress repture	Metal materials - Uniaxial creep testing method in tenison GB/T 2039-2012	Accredited only for <44.5kN，260~1090℃	2021-11-24
				Standard Test Methods for Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials ASTM E139-11 (2018)	Accredited only for <44.5kN，260~1090	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					℃	
				Standard Test Methods for Conducting Time-for-Rupture Notch Tension Tests of Materials ASTM E292-18	Accredited only for <44.5kN , 260~1090 ℃	2021-11-24
		8	Hydrogen Embrittlement	Standard Test Method for Mechanical Hydrogen Embrittlement Evaluation of Plating/Coating Processes and Service Environments ASTM F519-18	Accredited only for <44.5kN	2021-11-24
		9	Fatigue	Metallic materials - Fatigue testing - Axial-force-controlled method GB/T 3075-2008	Accredited only for <250kN	2021-11-24
				The test method for axial loading constant-amplitude low-cycle fatigue of metallic materials GB/T 15248-2008	Accredited only for <250kN	2021-11-24
				Standard Practice for Conducting Force Controlled Constant Amplitude Axial Fatigue Tests of Metallic Materials ASTM E466-21	Accredited only for <250kN	2021-11-24
				Standard Test Method for Strain - Controlled Fatigue Testing ASTM E606/E606M-21	Accredited only for <250kN	2021-11-24
		10	Fracture Toughness	Metallic materials - Determination of plane -strain fracture toughness GB/T 4161-2007	Accredited only for <250kN	2021-11-24
				Standard Test Method for Linear -Elastic Plane - Strain Fracture Toughness of Metallic Materials ASTM E399-20a	Accredited only for <250kN	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
		11	Crack Growth	Metallic materials - Fatigue testing - Fatigue crack growth method GB/T 6398-2017	Accredited only for <250kN	2021-11-24
				Standard Test Method for measurement of Fatigue Crack Growth Rates ASTM E647-15e1	Accredited only for <250kN	2021-11-24
6	Metal materials and metallic products（Metallographic structure）	1	Grain Size	Determination of estimating the average grain size of metal GB/T 6394-2017		2021-11-24
				Standard Test Methods for Determining Average Grain Size ASTM E112-13		2021-11-24
		2	Nonmetallic Inclusion	Steel - Determination of content of nonmetallic inclusion - Micrographic method using standard diagrams GB/T 10561-2005		2021-11-24
				Standard Test Methods for Determining the Inclusion Content of Steel ASTM E45-18a	Only for method A & D	2021-11-24
		3	Macrostructure	Test method for macrostructure and defect of steel by etching GB/T 226-2015	Except for electrolytic etching method	2021-11-24
				Standard Practice for Macroetching Metals and Alloys ASTM E340-15	Except for Beryllium, Lead and Lead Alloys, Magnesium, Noble Metals, Refractory Metals, Tin	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					and Tin Alloys, Zirconium, Hafnium and Their Alloys, Zinc and Zinc Alloys	
				Standard Method of Macroetch Testing Steel Bars, Billets, Blooms, and Forgings ASTM E381-20		2021-11-24
				Standard Practice for Macroetch Testing of Consumable Electrode Remelted Steel Bars and Billets ASTM A604/A604M-07 (2017)		2021-11-24
		4	Microstructure	Steel - Determination of microstructure GB/T 13299-1991		2021-11-24
				Inspection methods of microstructure for metals GB/T 13298-2015		2021-11-24
				Implants for surgery - Metallic materials - Classification of microstructures for alpha + beta titanium alloy bars ISO 20160-2006		2021-11-24
				Microstructure and macrostructure examination for titanium and titanium alloys GB/T 5168-2020		2021-11-24
		5	Case depth	Determination of total or effective thickness of thin surface hardened layers of steel parts GB/T 9451-2005		2021-11-24
				Methods of Measuring Case Depth SAE J423-1998	Accredited only for Microscopic Method, hardness traverse	2021-11-24

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
					procedure	
		6	Depth of Decarburization	Determination of depth of decarburization of steels GB/T 224-2019	Accredited only for metallographic and microhardness	2021-11-24
				Standard Test Methods for Estimating the Depth of Decarburization of Steel Specimens ASTM E1077-14 (2021)	Accredited only for microscopical methods and microindentation hardness method	2021-11-24
		7	Cover Thickness	Test method of titanium and titanium alloy surface contamination layer GB/T 23603-2009		2021-11-24
				Metallic and oxide coatings -Measurement of coating thickness - Microscopical method GB/T 6462-2005		2021-11-24
				Standard Test Method for Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of Cross Section ASTM B487-20		2021-11-24
		8	Intergranular Corrosion	Corrosion of metals and alloys--Test mthods for intergranular corrosion of - Austenitic and ferritic - austenitic (duplex) stainless steels GB/T 4334-2020	Accredited only for Method E	2021-11-24
				Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels ASTM A262-15	Accredited only for Method E	2021-11-24