



INTERNATIONAL
ACCREDITATION
SERVICE®

CERTIFICATE OF ACCREDITATION

This is to attest that

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD, BUILDING. 143
SAN ANTONIO, TEXAS 78238-5166

Testing Laboratory TL-214

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2005, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation maintained on the IAS website (www.iasonline.org).

This certificate is valid up to September 1, 2019.



This accreditation certificate supersedes any IAS accreditation bearing an earlier effective date. The certificate becomes invalid upon suspension, cancellation or revocation of accreditation. See www.iasonline.org for current accreditation information, or contact IAS at 562-364-8201.



C.P. Ramani

C.P. Ramani, P.E., C.B.O
President



INTERNATIONAL
ACCREDITATION
SERVICE®



SCOPE OF ACCREDITATION

IAS Accreditation Number	TL-214
Company Name	Southwest Research Institute Chemistry and Chemical Engineering Division Fire Technology Department; Analytical and Environmental Chemistry Department
Address	6220 Culebra Rd, Bldg. 143 San Antonio, TX 78238-5166
Contact Name	Matthew S. Blais, Ph.D., Director
Telephone	(210) 522-3524
Effective Date of Scope	TBD
Accreditation Standard	ISO/IEC 17025:2005

Chemical

ASTM C787	Standard specification for uranium hexafluoride for enrichment
ASTM C761	Standard test methods for chemical, mass spectrometric, spectrochemical, nuclear, and radiochemical analysis of uranium hexafluoride
ASTM C1474	Standard test method for analysis of isotopic composition of uranium in nuclear-grade fuel material by quadrupole inductively coupled plasma-mass spectrometry
ASTM C1287	Standard test method for determination of impurities in nuclear grade uranium compounds by inductively coupled plasma mass spectrometry
EPA 150.1	pH in water by electrometric method
EPA 160.1	Residue, filterable (gravimetric, dried at 180°C)
EPA 160.2	Residue, non-filterable (gravimetric, dried at 103-105°C)
EPA 200.7	Determination of metals and trace elements in water and wastes by inductively coupled plasma-atomic emission spectrometry
EPA 200.8	Determination of trace elements in waters and wastes by inductively coupled plasma-mass spectrometry



SCOPE OF ACCREDITATION

EPA 200.9	Determination of trace elements by stabilized temperature graphite furnace atomic absorption
EPA 218.6	Determination of dissolved hexavalent chromium in drinking water, groundwater, and industrial wastewater effluents by ion chromatography
EPA 300	Determination of inorganic anions by ion chromatography
EPA 310.1	Alkalinity (titrimetric, pH 4.5)
EPA 335.4	Determination of total cyanide by semi-automated colorimetry
EPA 340.2	Fluoride (potentiometric, ion selective electrode)
EPA 350.1	Nitrogen, ammonia (colorimetric, automated phenate)
EPA 351.2	Determination of total Kjeldahl nitrogen by semi-automated colorimetry
EPA 365.3	Phosphorus, all forms (colorimetric, ascorbic acid, two reagent)
EPA 376.1	Sulfide (titrimetric, iodine)
EPA 405.1	Biochemical oxygen demand (5 days, 20°C)
EPA 410.4	The determination of chemical oxygen demand by semi-automated colorimetry
EPA 1010A	Test methods for flash point by Pensky-Martens closed cup tester
EPA 1311	Toxicity characteristic leaching procedure
EPA 1613	Tetra- through octa-chlorinated dioxins and furans by dilution HRGC/HRMS
EPA 3038A	
EPA 5342	
EPA 6010C	Inductively coupled plasma-atomic emission spectrometry
EPA 6020A	Inductively coupled plasma-mass spectrometry
EPA 7062	Antimony and arsenic (atomic absorption, borohydride reduction)
EPA 7196A	Chromium, hexavalent (colorimetric)



SCOPE OF ACCREDITATION

EPA 7199	Determination of hexavalent chromium in drinking water, groundwater and industrial wastewater effluents by ion chromatography
EPA 7470A	Mercury in liquid waste (manual cold-vapor technique)
EPA 7471B	Mercury in solid or semisolid waste (manual cold-vapor technique)
EPA 7742	Selenium (atomic absorption, borohydride reduction)
EPA 8151A	Chlorinated herbicides by GC using methylation or pentafluorobenzoylation derivatization
EPA 8260B	Volatile organic compounds by gas chromatography/mass spectrometry (GC/MS)
EPA 8270D	Organic compounds by GC
EPA 8280B	Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) by high-resolution gas chromatography/ low-resolution mass spectrometry (HRGC/LRMS)
EPA 8290A	Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) by high-resolution gas chromatography/highresolution mass spectrometry (HRGC/HRMS)
EPA 8330A	Nitroaromatics and nitramines by high performance liquid chromatography (HPLC)
EPA 9012B	Total and amenable cyanide (automated colorimetric, with off-line distillation)
EPA 9014	Titrimetric and manual spectrophotometric determinative methods for cyanide
EPA 9030B	Acid-soluble and acid-insoluble sulfides: distillation
EPA 9040C	pH electrometric measurement
EPA 9045D	Soil and waste pH
EPA 9056A	Determination of inorganic anions by ion chromatography
EPA 9060A	Total organic carbon
TAP-01-0406-166	Analysis and specification for uranium hexafluoride for enrichment
TAP-01-0406-166A	Hydrolysis of UF ₆ samples



SCOPE OF ACCREDITATION

TAP-01-0406-166B	Determination of uranium in UF ₆
TAP-01-0406-166C	Analysis of isotropic composition of uranium in UF ₆ by ICP-MS
TAP-01-0406-166D	Determination of metallic impurities in UF ₆ by ICP-AES
TAP-01-0406-166E	Determination of technetium -99 in UF ₆ by ICP-MS
TAP-01-0406-166H	Determination of silicon in UF ₆
TAP-01-0406-166G	Determination of bromide and chloride in UF ₆
TAP-01-0406-166I	Determination of phosphorous in UF ₆
TAP-01-0406-166J	Preparation of UF ₆ Hydrolysates for metal
TAP-01-0411-007	Gross alpha and gross beta determinations
TAP-01-0411-013	Analysis of tritium in water
TAP-01-0411-015	Germanium gamma spectrum analysis of environmental matrices
TAP-01-0411-019	Analysis of iodine-129
TAP-01-0411-022	Strontium 89/90 in various environmental matrices
TAP-01-0411-043	Thorium and neptunium separation in environmental matrix
TAP-01-0411-044	Uranium, americium, curium and plutonium separation in environmental matrices
TAP-01-0411-045	Neodymium fluoride precipitation
TAP-01-0411-049	Analysis of technetium – 99
TAP-01-0411-052	Analysis for total activity by liquid scintillation counting
TAP-01-0411-053	Analysis of plutonium – 241
TAP-01-0411-054	Tritium and carbon - 14 preparation using sample oxidizer
TAP-01-0411-055	Analysis of iron – 55 and nickel – 59/63 by liquid scintillation counting
TAP-01-0411-056	Analysis of iron -55 and nickel – 69 by extended – range gamma analysis
TAP-01-0411-057	Analysis of nickel – 59/63 and iron – 55 by anion exchange resins



SCOPE OF ACCREDITATION

TAP-01-0411-058	Separation of iron – 55 and nickel - 59/63 with eichrom resins
TAP-01-0605-063	Method 8330 nitroaromatics and nitroamines (ordnance) analysis by high performance liquid chromatography (HPLC)
TAP-01-0605-075	Analysis of solid and wipe samples for GB, VX, and HD
TAP-01-0605-089	Chemical agent decontamination testing using sorbent powder
TAP-01-0605-091	LCMS Analysis of soil, concrete, liquid (Rinsate), and wipe samples for VX
TAP-01-0605-094	LCMS analysis of wipe, soil/solid and liquid (Rinsate) samples for MPA, EMPA, DIMP, DMMP, TDG, IMPA and EA-2192

Electronic

ANSI T1.319-2002	Equipment assemblies – fire propagation risk assessment criteria
Telcordia GR-63-CORE	Seismic rated enclosures (Issue 4, Sections 5.2 and 5.5.2)

Fire

16 CFR 1633	Commercial practices – standard for the flammability (open flame) of mattress sets
16 CFR 1634	Commercial practices – standard test to upholstered furniture
ABD 0031	Fire test to aircraft material- Airbus standard
AITM 2.0007	
AITM 3.0005	
API 607	Fire test for soft-seated quarter turn valves
ASTM C1166	Standard test method for flame propagation of dense and cellular elastomeric gaskets and accessories
ASTM D635	Standard test method for rate of burning and/or extent and time of burning of plastics in a horizontal position
ASTM D1929	Standard test method for determining ignition temperature of plastics
ASTM D2859	Standard test method for ignition characteristics of finished textile floor covering materials



SCOPE OF ACCREDITATION

ASTM D2863	Standard test method for measuring the minimum oxygen concentration to support candle-like combustion of plastics (oxygen index)
ASTM D3675	Standard test method for measuring the minimum oxygen concentration to support candle-like combustion of plastics (oxygen index)
ASTM D3801	Standard test method for measuring the comparative burning characteristics of solid plastics in a vertical position
ASTM D5865	Standard test method for gross calorific value of coal and coke
ASTM D7309	Standard test method for determining flammability characteristics of plastics and other solid materials using microscale combustion calorimetry
ASTM E84	Standard test method for surface burning characteristics of building materials
ASTM E108	Standard test methods for fire tests of roof coverings
ASTM E119	Standard test methods for fire tests of building construction and materials
ASTM E136	Standard test method for behavior of materials in a vertical tube furnace at 750°C
ASTM E162	Standard test method for surface flammability of materials using a radiant heat energy source
ASTM E648	Standard test method for critical radiant flux of floor-covering systems using a radiant heat energy source
ASTM E662	Standard test method for specific optical density of smoke generated by solid materials
ASTM E800	Standard guide for measurement of gases present or generated during fires
ASTM E814	Standard test method for fire tests of penetration firestop systems
ASTM E970	Standard test method for critical radiant flux of exposed attic floor insulation using a radiant heat energy source
ASTM E1317	Standard test method for flammability of marine surface finishes
ASTM E1321	Standard test method for determining material ignition and flame spread properties



SCOPE OF ACCREDITATION

ASTM E1354	Standard test method for heat and visible smoke release rates for materials and products using an oxygen consumption calorimeter
ASTM E1474	Standard test method for determining the heat release rate of upholstered furniture and mattress components or composites using a bench scale oxygen consumption calorimeter
ASTM E1529	Standard test methods for determining effects of large hydrocarbon pool fires on structural members and assemblies
ASTM E1537	Standard test method for fire testing of upholstered furniture
ASTM E1590	Standard test method for fire testing of mattresses
ASTM E1725	Standard test methods for fire tests of fire-resistive barrier systems for electrical system components
ASTM E1740	Standard test method for determining the heat release rate and other fire-test-response characteristics of wall coverings or ceiling covering composites using a cone calorimeter
ASTM E1822	Standard test method for fire testing of stacked chairs
ASTM E2231	Standard practice for specimen preparation and mounting of pipe and duct insulation materials to assess surface burning characteristics
ASTM E2257	Standard test method for room fire test of wall and ceiling materials and assemblies
ASTM E2307	Standard test method for determining fire resistance of perimeter fire barriers using intermediate-scale, multi-story test apparatus
ASTM E2404	Standard practice for specimen preparation and mounting of textile, paper or polymeric (including vinyl) and wood wall or ceiling coverings, facings and veneers, to assess surface burning characteristics
ASTM E2573	Standard practice for specimen preparation and mounting of site-fabricated stretch systems to assess surface burning characteristics
ASTM E2579	Standard practice for specimen preparation and mounting of wood products to assess surface burning characteristics



SCOPE OF ACCREDITATION

ASTM E2599	Standard practice for specimen preparation and mounting of reflective insulation, radiant barrier and vinyl stretch ceiling materials for building applications to assess surface burning characteristics
ASTM E2816	Standard test methods for fire resistive metallic HVAC duct systems
ASTM F1387	Standard specification for performance of piping and tubing mechanically attached fittings: Section 7 – Fire Test
ASTM F3059	Standard specification for fiber-reinforced polymer (FRP) gratings used in marine construction and shipbuilding: Section 17 – Structural Fire Integrity
BS 476-20	Fire tests on building materials and structures - part 20: method for determination of the fire resistance of elements of construction (general principles)
BS 476-21	Fire tests on building materials and structures – part 21: methods for determination of the fire resistance of loadbearing elements of construction
BS 476-22	Fire tests on building materials and structures – part 22: method for determination of the fire resistance of non-loadbearing elements of construction
BS 476-23	Fire tests on building materials and structures – part 23: methods for determination of the contribution of components to the fire resistance of a structure
BS 476-24	Fire tests on building materials and structures – part 24: method for determination of the fire resistance of ventilation ducts
BSS 7238	Fire test to aircraft material – smoke density
BSS 7239	Fire test to aircraft material – toxicity
CAL TB 116	Flame retardance of upholstered furniture
CAL TB 117	Flame retardance of resilient filling materials used in upholstered furniture
CAL TB 121	Flammability test procedure for mattresses for use in high risk occupancies
CAL TB 129	Flammability test procedure for mattresses for use in public buildings
CAL TB 133	Flammability testing of public seating



SCOPE OF ACCREDITATION

CAN/ULC-S102.2	Standard method of test for surface burning characteristics of building materials and assemblies
DOC FF-1-70	Standard for the surface flammability of small carpets and rugs
EB 4013	Compliant insulation products
ECE R 34.01	
EN 13823	Single burning item test for building materials and products
EN ISO 1182	Reaction to fire tests for products -- non-combustibility test
EN ISO 1716	Reaction to fire tests for products -- determination of the gross heat of combustion (calorific value)
EN ISO 9239-1	Reaction to fire tests for floorings -- part 1: determination of the burning behaviour using a radiant heat source
EN ISO 11925-2	Reaction to fire tests -- ignitability of products subjected to direct impingement of flame -- part 2: single-flame source test
EPA TO-15	Determination of volatile organic compounds (VOCs) in air
FAR 23.853	Airworthiness standards: normal, utility, acrobatic, and commuter category airplanes – design and construction – fire protection - passenger and crew compartment interiors
FAR 25.853	Airworthiness standards: transport category airplanes – design and construction – compartment interiors
FM 2000	Automatic control mode sprinklers for fire protection (sections 4.7, 4.36 to 4.40 and 4.42)
FM 2008	Automatic control mode sprinklers for fire protection (sections 4.8, 4.9 and 4.33 to 4.37)
FM 4996	Classification of pallets and other material handling products as equivalent to wood pallets (appendix C)
FM 5560	Water mist systems
IMO FTP Code Annex 1 Part 1	Non-combustibility test (NC Test?)
IMO FTP Code Annex 1 Part 2	Smoke and toxicity test (FTIR?)



SCOPE OF ACCREDITATION

IMO FTP Code Annex 1 Part 3	Test for "A", "B" and "F" class divisions
IMO FTP Code Annex 1 Part 5	Test for surface flammability (test for surface materials and primary deck coverings) (Lift)
IMO FTP Code Annex 1 Part 6	Test for primary deck coverings
IMO FTP Code Annex 1 Part 7	Test for vertically supported textiles and films (BB test)
IMO FTP Code Annex 1 Part 8	Test for upholstered furniture
IMO FTP Code Annex 1 Part 9	Test for bedding components
IMO MSC 265	Guidelines for the approval of sprinkler systems equivalent to that referred to in solas regulation II-2/12
IMO MSC 848	Guidelines for the approval of equivalent fixed gas fire-extinguishing systems, as referred to in solas 74, for machinery spaces and cargo pump-rooms
IMO MSC 913	Guidelines for the approval of fixed water-based local application fire-fighting systems for use in category A machinery spaces
IMO MSC 1165	Guidelines for the approval of equivalent water-based fire-extinguishing systems for machinery spaces and cargo pump-rooms
IMO MSC 1268	Guidelines for the approval of fixed pressure water-spraying and water-based fire-extinguishing systems for cabin balconies
IMO MSC 1272	Guidelines for the approval of fixed water-based fire-fighting systems for ro-ro spaces and special category spaces equivalent to that referred to in resolution A.123(V)
IMO Resolutions A.753(18)	Guidelines for the application of plastic pipe on ships
IMO Resolutions A.754(18)	Recommendation on fire resistance tests for A, B, F class divisions
ISO 834-1	Fire-resistance tests -- elements of building construction -- part 1: general requirements
ISO 834-4	Fire-resistance tests -- elements of building construction -- part 4: specific requirements for loadbearing vertical separating elements
ISO 834-5	Fire-resistance tests -- Elements of building construction -- Part 5: Specific requirements for loadbearing horizontal separating elements



SCOPE OF ACCREDITATION

ISO 834-6	Fire-resistance tests -- elements of building construction -- part 6: specific requirements for beams
ISO 834-7	Fire-resistance tests -- elements of building construction -- part 7: specific requirements for columns
ISO 834-8	Fire-resistance tests -- elements of building construction -- part 8: specific requirements for non-loadbearing vertical separating elements
ISO 834-9	Fire-resistance tests -- elements of building construction -- part 9: specific requirements for non-loadbearing ceiling elements
ISO 871	Plastics -- determination of ignition temperature using a hot-air furnace
ISO 5659-2	Plastics -- smoke generation -- part 2: determination of optical density by a single-chamber test
ISO 5660-1	Reaction-to-fire tests -- heat release, smoke production and mass loss rate -- part 1: heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement)
ISO 5660-2	Reaction-to-fire tests -- heat release, smoke production and mass loss rate -- part 2: smoke production rate (dynamic measurement)
ISO 9705	Fire tests -- full-scale room test for surface products
ISO 15371	Ships and marine technology -- fire-extinguishing systems for protection of galley cooking equipment
MIL-DTL-24640B	Detail specification: cables – lightweight – electric - for shipboard use - general specification
MIL-F-24385F	Military specification: fire extinguishing agent - aqueous film forming foam (AFFF) liquid concentrate - for fresh and seawater
MIL-PRF-32161	Performance specification: insulation - high temperature fire protection - thermal and acoustic
NES 711	Determination of the smoke index of the products of combustion from small specimens of materials
NES 713 Issue 3	Determination of the toxicity index of the products of combustion from small specimens of materials
NFPA 10	Standard for portable fire extinguishers (annex G)



SCOPE OF ACCREDITATION

NFPA 11	Standard for low-, medium-, and high-expansion foam (annex D, G, and H)
NFPA 18	Standard on wetting agents (sections 5.3.4 and 5.3.5)
NFPA 130	Standard for fixed guideway transit and passenger rail systems, chapter 8.4, flammability and smoke emission; and chapter 8.5, fire performance (ASTM C1166, D3675, E119, E162, E648, and E662)
NFPA 251	Standard methods of tests of fire resistance of building construction and materials
NFPA 252	Standard methods of fire tests of door assemblies
NFPA 253	Standard method of test for critical radiant flux of floor covering systems using a radiant heat energy source
NFPA 255	Standard method of test of surface burning characteristics of building materials
NFPA 256	Standard methods of fire tests of roof coverings
NFPA 257	Standard on fire test for window and glass block assemblies
NFPA 258	Recommended practice for determining smoke generation of solid materials
NFPA 259	Standard test method for potential heat of building materials
NFPA 265	Standard methods of fire tests for evaluating room fire growth contribution of textile or expanded vinyl wall coverings on full height panels and walls
NFPA 268	Standard test method for determining ignitability of exterior wall assemblies using a radiant heat energy source
NFPA 271	Standard method of test for heat and visible smoke release rates for materials and products using an oxygen consumption calorimeter
NFPA 285	Standard fire test method for evaluation of fire propagation characteristics of exterior non-load-bearing wall assemblies containing combustible components
NFPA 286	Standard methods of fire tests for evaluating contribution of wall and ceiling interior finish to room fire growth
NFPA 415	Standard on airport terminal buildings, fueling ramp drainage, and loading walkways



SCOPE OF ACCREDITATION

NFPA 701	Standard methods of fire tests for flame propagation of textiles and films
SMP-800-C	Toxic gas generation
UBC 7-1	Fire test of building construction and materials
UBC 7-2	Fire tests of door assemblies
UBC 7-4	Fire test of window assemblies
UBC 7-5	Fire test of through-penetration
UBC 7-6	Thickness, density determination and cohesion/adhesion for spray-applied fire-resistive material
UBC 8-1	Test method for surface-burning characteristics of building materials
UBC 8-2	Standard test method for evaluating room fire growth contribution of textile wall covering
UBC 15-2	Test standard for determining the fire retardancy of roof assemblies
UBC 26-1	Test method to determine potential heat of building materials
UBC 26-3	Room fire test standard for interior of foam plastic systems
UBC 26-6	Ignition properties of plastics
UBC 26-7	Method of test for determining classification of approved light-transmitting plastics
UBC 31-1	Flame-retardant membranes
UL 9	Standard for fire tests of window assemblies
UL 10B	Standard for fire tests of door assemblies
UL 10C	Standard for positive pressure fire tests of door assemblies
UL 94	Standard for tests for flammability of plastic materials for parts in devices and appliances
UL 162	Standard for foam equipment and liquid concentrates (sections 8 to 14)
UL 199	Standard for automatic sprinklers for fire-protection service (sections 30, 31.2 and 57 to 62)



SCOPE OF ACCREDITATION

UL 263	Standard for fire tests of building construction and materials
UL 555	Standard for fire dampers
UL 555C	Standard for ceiling dampers
UL 711	Rating and fire testing of fire extinguishers
UL 723	Standard for test for surface burning characteristics of building materials
UL 790	Standard for standard test methods for fire tests of roof covering
UL 1479	Standard for fire tests of penetration firestops
UL 1685	Standard for vertical-tray fire-propagation and smoke-release test for electrical and optical-fiber cables
UL 1709	Standard for rapid rise fire tests of protection materials for structural steel
UL 1715	Standard for fire test of interior finish material
UL 1887	Standard for fire test of plastic sprinkler pipe for visible flame and smoke characteristics
UL 1975	Standard for fire tests for foamed plastics used for decorative purposes
UL 2085	Standard for protected aboveground tanks for flammable and combustible liquids
UL 2335	Standard for fire tests of storage pallets
Thermal	
ASTM C518	Standard test method for steady-state thermal transmission properties by means of the heat flow meter apparatus
NFPA 275	Standard method of fire tests for the evaluation of thermal barriers
UBC 26-2	Test method for the evaluation of thermal barriers



SCOPE OF ACCREDITATION

ABD: Airbus Directive

AITM: American Institute of Timber Construction

API: American Petroleum Institute

BSS: British Standards Society

CA TB: California Technical Bulletin

EB: Electric Boat Corporation

ECE: Economic Commission for Europe

FAR: Federal Aviation Regulations

FM: Factory Mutual

IMO: International Maritime Organization

MIL-DTL: Military Detail

MIL-PFR: Military Performance

NES: Naval Engineering Standard

NFPA: National Fire Protection Association

UBC: Uniform Building Code

UL: Underwriters Laboratories

ULC: Underwriters Laboratories Canada