

CERTIFICATE OF ACCREDITATION

This is to attest that

SOUTHWEST RESEARCH INSTITUTE CHEMISTRY AND CHEMICAL ENGINEERING DIVISION FIRE TECHNOLOGY DEPARTMENT ANALYTICAL AND ENVIRONMENTAL CHEMISTRY DEPARTMENT

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

Testing Laboratory TL-214

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date November 4, 2022

IAS ACCREDITED LA

President

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International Accreditation Service, Inc.

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SOUTHWEST RESEARCH INSTITUTE CHEMISTRY AND CHEMICAL ENGINEERING DIVISION FIRE TECHNOLOGY DEPARTMENT ANALYTICAL AND ENVIRONMENTAL CHEMISTRY DEPARTMENT

www.swri.org

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Accredited to ISO/IEC 17025:2017

Effective Date November 4, 2022

Chemistry Environmental - Inorganic	
Non-potable water,	Soil, Solid Hazardous Waste (Aqueous and Solid)
ASTM D93	Ignitability - flash point by Pensky-Martens closed cup tester
ASTM D5057	Density
EPA 120.1	Conductivity – Non-potable water only
EPA 150.1	pH / Corrosivity
EPA 160.1	Residue-filterable (TDS) - gravimetric, dried at 180°C Non-potable water only
EPA 160.2	Residue-nonfilterable (TSS) - gravimetric, dried at 103-105°C Non-potable water only
EPA 200.7	Determination of metals and trace elements by inductively coupled plasma- atomic emission spectrometry Parameters:
	Antimony (Sb), Arsenic (As), Barium(Ba), Boron (B), Beryllium (Be), Cadmium (Cd), Calcium (Ca), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Lithium (Li), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Phosphorus (P), Potassium (K), Selenium (Se), Silica (SiO ₂), Silver (Ag), Sodium (Na), Strontium (Sr), Technetium-99(Tc), Thallium (TI), Thorium (Th),Tin (Sn), Titanium (Ti), Uranium (U), Vanadium (V), Zinc (Zn
EPA 200.8	Determination of trace elements by inductively coupled plasma-mass spectrometry
	Parameters: Antimony (Sb), Arsenic (As), Barium(Ba), Boron (B), Beryllium (Be), Cadmium (Cd), Calcium (Ca), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Lithium (Li), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Phosphorus (P), Potassium (K), Selenium (Se), Silica (SiO2),





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	Silver (Ag), Sodium (Na), Strontium (Sr), Technetium-99(Tc), Thallium (Tl), Thorium (Th), Tin (Sn), Titanium (Ti), Uranium (U), Vanadium (V), Zinc (Zn
EPA 245.1	Mercury
EPA 300	Inorganic anions by ion chromatography: Bromide, Chloride, Fluoride, Nitrate as N, Nitrate plus nitrite as N, Nitrite as N, Orthophosphate as P, Sulfate
EPA 310.1	Alkalinity as CaCO3 - titrimetric Non-potable water only
EPA 335.1	Amenable Cyanide by Automated colorimetric, with off-line distillation Titrimetric and manual spectrophotometric
EPA 335.2	Total Cyanide by Titrimetric, manual Spectrophotometric, semi-automated colorimetric, Automated colorimetric
EPA 335.4	Total Cyanide by Titrimetric, manual Spectrophotometric, semi-automated colorimetric, Automated colorimetric
EPA 340.2	Fluoride – ISE
EPA 376.1	Sulfide - titrimetric, iodine
EPA 415.1	Total Organic Carbon (TOC)
EPA 1010A	Ignitability - flash point by Pensky-Martens closed cup tester
EPA 1040	Oxidizing Solids Hazardous Waste (Solid) only
EPA 1050	Substances Likely to Spontaneously Combust/Self Heat Solid Hazardous Waste (Solid) only
EPA 1110A	Corrosivity Towards Steel
EPA 1311	Toxicity characteristic leaching procedure
EPA 1312	Synthetic Precipitation Leaching Procedure
EPA 1664B	n-Hexane Extractable Material (O&G)
EPA 1664B	Oil and Grease
EPA 1664B	Silica Gel Treated n-Hexane Extractable Material (SGT-HEM) Non-Potable Water Solid Hazardous Waste (Aqueous) only
EPA 1664B	Total Petroleum Hydrocarbons Non-Potable Water Solid Hazardous Waste (Aqueous) only
EPA 2340B	Total Hardness as CaCO3 by Calculation Non-Potable Water only
EPA 6010D	Determination of metals and trace elements by inductively coupled plasma- atomic emission spectrometry



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	Parameters: Antimony (Sb), Arsenic (As), Barium(Ba), Boron (B), Beryllium (Be), Cadmium (Cd), Calcium (Ca), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Lithium (Li), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Phosphorus (P), Potassium (K), Selenium (Se), Silica (SiO ₂), Silver (Ag), Sodium (Na), Strontium (Sr), Technetium-99(Tc), Thallium (TI), Thorium (Th),Tin (Sn), Titanium (Ti), Uranium (U), Vanadium (V), Zinc (Zn
EPA 6020B	Determination of trace elements by inductively coupled plasma-mass spectrometry
	Parameters: Antimony (Sb), Arsenic (As), Barium(Ba), Boron (B), Beryllium (Be), Cadmium (Cd), Calcium (Ca), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Lithium (Li), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Phosphorus (P), Potassium (K), Selenium (Se), Silica (SiO2), Silver (Ag), Sodium (Na), Strontium (Sr), Technetium-99(Tc), Thallium (Tl), Thorium (Th), Tin (Sn), Titanium (Ti), Uranium (U), Vanadium (V), Zinc (Zn
EPA 7470A	Mercury
EPA 7471B	Mercury
EPA 9012B	Amenable Cyanide by Automated colorimetric, with off-line distillation Titrimetric and manual spectrophotometric
EPA 9014	Amenable Cyanide by Automated colorimetric, with off-line distillation Titrimetric and manual spectrophotometric
EPA 9034	Sulfide - titrimetric, iodine
EPA 9040C	pH / Corrosivity
EPA 9045D	pH / Corrosivity
EPA 9050A	Conductivity Non-Potable Water only
EPA 9095B	Paint Filter Hazardous Waste (Solid) only
EPA 9056A	Inorganic anions by ion chromatography: Bromide, Chloride, Fluoride, Nitrate as N, Nitrate plus nitrite as N, Nitrite as N, Orthophosphate as P, Sulfate
EPA 9060A	Total Organic Carbon (TOC)
EPA 9060M	Total Organic Carbon (TOC)
SM 2320B	Alkalinity as CaCO3 - titrimetric Non-potable water only
SM 2510B	Conductivity Non-potable water only
SM 2540C	Residue-filterable (TDS) - gravimetric, dried at 180°C



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	Non-potable water only
SM 2540D	Residue-nonfilterable (TSS) - gravimetric, dried at 103-105°C Non-potable water only
SM 4500F C	Fluoride – ISE
SW 846 9012B	Total Cyanide by Titrimetric, manual Spectrophotometric, semi-automated colorimetric, Automated colorimetric
SW 846 9014	Total Cyanide by Titrimetric, manual Spectrophotometric, semi-automated colorimetric, Automated colorimetric
UN 33.3.1.4	Substances Likely to Spontaneously Combust/Self Heat Solid Hazardous Waste (Solid) only
UN 33.3.1.6	Substances Likely to Spontaneously Combust/Self Heat Solid Hazardous Waste (Solid) only
UN 34.4.1	Oxidizing Solids Hazardous Waste (Solid) only
Chemistry Inorganic – Me	etals
Biological Tissue	
EPA 6010D, EPA 6020B	Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silica, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc
EPA 7471B	Mercury
Chemistry Environmenta	I – Organics
Non-potable water, Solid	Hazardous Waste (Aqueous and Solid)
EPA 1613B	Tetra- through octa-chlorinated dioxins and furans by dilution HRGC/HRMS
	Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) by high-resolution gas chromatography/high resolution mass spectrometry (HRGC/HRMS):
	OCDF OCDD 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD 1,2,3,4,7,8-HxCDF 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,7,8-PeCDF 1,2,3,7,8-PeCDD 2,3,4,6,7,8-HxCDF





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	2,3,4,7,8-PeCDF 2,3,7,8-TCDD Total HpCDF Total HpCDD Total HxCDF Total HxCDD Total PeCDD Total Total PeCDD Total TCDF Total TCDF
EPA 8015B	Non-Halogenated Organics: Ethanol, Isopropyl alcohol, Methanol
EPA 8081/8081A	PCBs: Aroclor -1016, Aroclor -1221, Aroclor -1232, Aroclor -1242, Aroclor -1248, Aroclor -1254, Aroclor -1260
EPA 8081/8081A/8081B	Pesticides: alpha-BHC, beta-BHC, delta-BHC, gamma-BHC (Lindane), Heptachlor, Aldrin, Heptachlor epoxide, Endosulfan I, Dieldrin, 4,4'-DDE, Endrin, Endosulfan II, 4,4'-DDD, Endosulfan sulfate, 4,4'-DDT, Methoxychlor, Endrin ketone, Endrin aldehyde, alpha-Chlordane, gamma-Chlordane, Chlordane, Toxaphene
EPA 8260D	Volatile organic compounds by gas chromatography/mass spectrometry (GC/MS): Dichlorodifluoromethane, Chloromethane, Vinyl chloride, Bromomethane, Chloroethane, Acetone, Trichlorofluoromethane, 1,1-Dichloroethene, Methylene chloride, Carbon disulfide, trans-1,2-Dichloroethene, 1,1-Dichloroethane, 2-Butanone, cis-1,2-Dichloroethene, Bromochloromethane, Chloroform, 2,2-Dichloropropane, 1,1,1-Trichloroethane, 1,1-Dichloropropane, Benzene, Carbon tetrachloride, Dibromomethane, 1,2-Dichloropropane, Bromodichloromethane, Trichloroethene, 4-Methyl-2-pentanone, cis-1,3-Dichloropropane, trans-1,3-Dichloropropene, 1,1,2-Trichloroethane, 1,3-Dichloropropane, Toluene, 2-Hexanone, Dibromochloromethane, 1,2-Dibromoethane Tetrachloroethene, 1,1,1,2-Tetrachloroethane, Chlorobenzene, Ethylbenzene, m-Xylene, p-Xylene, Bromoform, Styrene, 1,1,2,2-Tetrachloroethane, o-Xylene, 1,2,3-Trichloropropane, Isopropylbenzene, Bromobenzene, n-Propylbenzene, 2-Chlorotoluene, 4-Chlorotoluene, 1,3,5-Trimethylbenzene, 1,2,4-Trimethylbenzene, Tert-Butylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, n-Butylbenzene, 1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, n-Butylbenzene, 1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, Naphthalene, 1,2,3-Trichlorobenzene, Hexachlorobutadiene, 1,4-Dioxane, 2-Chloroethyl vinyl ether, 2-Nitropropane, Acetonitrile, Acrolein, Acrylonitrile, Allyl chloride, Benzyl chloride, Chloroprene, cis-1,4-Dichloro-2-butene, Diethyl ether, Ethyl methacrylate, Iodomethane, Isobutyl alcohol, Methacrylonitrile, Methyl methacrylate, Methyl tert-butyl ether (MTBE), n-Butyl alcohol, Propionitrile, trans-1,4-Dichloro-2-butene, Vinyl acetate, Ethyl acetate, Xylene (total), 1,1,2-Trichloro-1,2,2-trifluoroethane, Methylcyclohexane, Pentachloroethane
EPA 8270E	Semi-volatile organic compounds by gas chromatography/mass spectrometry (GC/MS):



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n-Nitrosodimethylamine, Pyridine, Aniline, bis(2-Chloroethyl)ether, Phenol, 2-Chlorophenol, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, Benzyl alcohol, bis(2-Chloroisopropyl)ether, 2-Methylphenol, n-Nitroso-di-n-propylamine, 4-Methylphenol, Nitrobenzene, Isophorone, 2-Nitrophenol, 2,4-Dimethylphenol, bis(2-Chloroethoxy) methane, 2,4-Dichlorophenol, 1,2,4-Trichlorobenzene, Naphthalene, 4-Chloroaniline, 2,6-Dichlorophenol, Hexachlorobutadiene, 4-Chloro-3-methylphenol, 2-Methylnaphthalene, Hexachlorocyclopentadiene, 2,4,6-Trichlorophenol, 2,4,5-Trichlorophenol, 2-Chloronaphthalene, 2-Nitroaniline, Acenaphthylene, Benzaldehyde, Pentachloroethane, Acetophenone, Hexachloropropene, Caprolactam, Safrole, 1,2,4,5-Tetrachlorobenzene, Isosafrole, 1,4-Naphthoguinone, 1,3-Dinitrobenzene, Pentachlorobenzene, 2,3,4,6-Tetrachlorophenol, 1,3,5-Trinitrobenzene, Phenacetin, Atrazine. Pentachloronitrobenzene, Pronamide, Methapyrilene, 4,4'-Methylene bis(2chloroaniline), 2-Acetylaminofluorene, Famphur, 2-Picoline, o-Toluidine, alpha alpha-Dimethylphenethylamine, 1,4-Dioxane, Acenaphthene, 3-Nitroaniline, 2,4-Dinitrophenol, Dibenzofuran, 2,4-Dinitrotoluene, 4-Nitrophenol, Fluorene, 4-Chlorophenyl-phenylether, Diethylphthalate, 4-Nitroaniline, 4,6-Dinitro-2methylphenol, n-Nitrosodiphenylamine/ Diphenylamine, Hexachlorobenzene, Pentachlorophenol, Phenanthrene, Anthracene, Carbazole, Di-nbutylphthalate, Fluoranthene, Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene, Chrysene, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g.h.i)pervlene. Methyl methanesulfonate. Aramite. 7.12-Dimethylbenz (a)anthracene, 3-Methylcholanthrene, 1.1'-Biphenyl, n-Nitrosomethylethylamine, n-Nitrosodiethylamine, n-Nitrosopyrrolidine, n-Nitrosomorpholine, n-Nitrosopiperidine, Benzal chloride, n-Nitrosodi-nbutylamine, Phthalic acid/Phthalic anhydride, 5-Nitro-o-toluidine, Phorate, Disulfoton, Methyl parathion, Parathion, p-Phenylenediamine, 1-Naphthylamine, 2-Naphthylamine, Dinoseb, 4-Aminobiphenyl, p-(Dimethylamino) azobenzene, 3,3'-Dimethylbenzidine

EPA 8280B

Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) by high-resolution gas chromatography/ low-resolution mass spectrometry (HRGC/LRMS:

OCDF OCDD 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD 1,2,3,4,7,8,9-HpCDF 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,7,8-PeCDF 1,2,3,7,8-PeCDD 2,3,4,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF





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	2,3,7,8-TCDF 2,3,7,8-TCDD Total HpCDF Total HpCDD Total HxCDF Total HxCDD Total PeCDF Total PeCDD Total TCDF Total TCDF
EPA 8290/8290A	Tetra- through octa-chlorinated dioxins and furans by dilution HRGC/HRMS
	Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) by high-resolution gas chromatography/high resolution mass spectrometry (HRGC/HRMS) OCDF OCDD 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD 1,2,3,4,7,8,9-HpCDF
	1,2,3,4,7,8-HxCDF 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDF 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDD
	1,2,3,7,8-PeCDF 1,2,3,7,8-PeCDD 2,3,4,6,7,8-HxCDF 2,3,4,7,8-PeCDF 2,3,7,8-TCDF 2,3,7,8-TCDD
	Total HpCDF Total HpCDD Total HxCDF Total HxCDD Total PeCDF Total PeCDD Total TCDF
Ob a maintain a Farainne ann an tal	Total TCDD
Chemistry Environmental – Organics	
Atmosphere and Emission	n
EPA TO-15/TO-14A	Volatile organic compounds: Dichlorodifluoromethane, Methyl Chloride, 1,2-Dichloro-1,1,2,2- Tetafluoroethane, Vinyl chloride, Methyl bromide, Ethyl chloride, Trichlorofluoromethane, 1,1-Dichloroethene, Methylene Chloride, 1,1,2- Trichloro-1,2,2-Trifluoroethane, 1,1-Dichloroethane, cis-1,2-Dichloroethylene, Chloroform, 1,2-Dichlorotheane, 1,1,1-Trichloroethane, Benzene, Carbon





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	tetrachloride, 1,2-Dichloropropane, Trichloroethylene, cis-1-3-Dichloropropene, trans-1,3-Dichloropropene, 1,1,2-Trichloroethane, Toluene, 1,2-Dibromoethane, Tetrachloroethylene, Chlorobenzene, Ethylbenzene, m-Xylene, p-Xylene, Styrene, 1,1,2,2-Tetrachloroethane, o-Xylene, 1,3,5-Trimethylbenzene, 1,2,4-Trimethylbenzene, m-Dichlorobenzene, Benzyl chloride, o-Dichlorobenzene, p-Dichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobutadiene, Trans-1,2-Dichloroethylene
TO-15	Volatile organic compounds: 1,4-Dioxane, Methyl methacrylate, Heptane, Vinyl Acetate
Chemistry Environmenta	I – Radiochemistry
Non-potable water, Solid	Hazardous Waste (Aqueous and Solid)
DOE Methods Compendium RP 300A	Nickel-59 Non-potable water only
DOE Methods Compendium RP 300A	Nickel-63 Non-potable water only
EPA 906.0	Tritium Solid Hazardous Waste (Aqueous/Solid) only
EPA 908.0	Uranium
EPA 9310	Gross Alpha
EPA 9310	Gross Beta
EPA EMSL LV 053917, p.33	Plutonium
EPA EMSL LV 053917, p.33	Thorium Solid Hazardous Waste (Aqueous/Solid) only
EPA EMSL LV 053917, p.33	Uranium
EPA EMSL LV 053917, p.65	Strontium-89/90 Solid Hazardous Waste (Aqueous/Solid) only
HASL-300 Am-06-RC	Americium
HASL-300 Am-06-RC	Plutonium
HASL-300 Ga-01-R	Gamma, Radioassay Solid Hazardous Waste (Aqueous/Solid) only
HASL-300 Se-03-RC	Americium
HASL-300 Se-03-RC	Plutonium
HASL-300 Se-03-RC	Uranium
HASL-300 Tc-01-RC	Technetium-99 Solid Hazardous Waste (Aqueous/Solid) only





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SM 7110B	Gross Alpha	
SM 7110B	Gross Beta	
Chemistry Environmenta	Chemistry Environmental – Radiochemistry	
Atmosphere and Emission	on	
EPA 900.0	Gross Alpha Gross Beta	
HASL-300 Am-03-RC	Americium-241	
HASL-300 Ga-01-R	Gamma, Radioassay	
HASL-300 Pu-01-RC	Plutonium	
HASL-300 U-02-RC	Uranium	
Radiochemistry		
Biological Tissue		
EPA EMSL LV 053917, p.33	Plutonium, Thorium, Uranium	
EPA EMSL LV 053917, p.65	Strontium-89/90	
Radiochemistry		
Alpha Spectrometry - TA	Ps For Various Matrices	
TAP 01-0411-031	Am-241, Am-243, Cf-252, Cm-242, Cm-243/244, Cm-245/246, Np-237,Po-209, Po-210, Pu-236, Pu-238, Pu-239/240, Pu-241, Pu-242, Pu-244, Ra-226, Th-228, Th-230, Th-232, U-232, U-233/234, U-235/236, U-238	
TAP 01-0411-043	Am-241, Am-243, Cf-252, Cm-242, Cm-243/244, Cm-245/246, Np-237, Po-209, Po-210, Pu-236, Pu-238, Pu-239/240, Pu-241, Pu-242, Pu-244, Ra-226, Th-228, Th-229, Th-230, Th-232, U-232, U-233/234, U-235/236, U-238	
TAP 01-0411-044	Am-241, Am-243, Cf-252, Cm-242, Cm-243/244, Cm-245/246, Np-237, Po-209, Po-210, Pu-236, Pu-238, Pu-239/240, Pu-241, Pu-242, Pu-244, Ra-226, Th-228, Th-229, Th-230, Th-232, U-232, U-233/234, U-235/236, U-238	
TAP 01-0411-045	Am-241, Am-243, Cf-252, Cm-242, Cm-243/244, Cm-245/246, Np-237,Po-209, Po-210, Pu-236, Pu-238, Pu-239/240, Pu-241, Pu-242, Pu-244, Ra-226, Th-228, Th-229, Th-230, Th-232, U-232, U-233/234, U-235/236, U-238	
TAP 01-0411-059	Am-241, Am-243, Cf-252, Cm-242, Cm-243/244, Cm-245/246, Np-237,Po-209, Po-210, Pu-236, Pu-238, Pu-239/240, Pu-241, Pu-242, Pu-244, Ra-226, Th-228, Th-229, Th-230, Th-232, U-232, U-233/234, U-235/236, U-238	
Gamma Spectrometry	·	
TAP 01-0411-015	Germanium gamma spectrum analysis: 46 to 1836 keV, I-129, I-131, Ni-59	



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TAP 01-0411-019	Germanium gamma spectrum analysis: 46 to 1836 keV, I-129, I-131, Ni-59
TAP 01-0411-024	Germanium gamma spectrum analysis: 46 to 1836 keV, I-129, I-131, Ni-59
TAP 01-0411-056	Germanium gamma spectrum analysis: 46 to 1836 keV, I-129, I-131, Ni-59
TAP 01-0411-057	Germanium gamma spectrum analysis: 46 to 1836 keV, I-129, I-131, Ni-59
TAP 01-0411-058	Germanium gamma spectrum analysis: 46 to 1836 keV, I-129, I-131, Ni-59
TAP-01-0411-056	Analysis of iron -55 and nickel – 69 by extended – range gamma analysis
Gas Flow Proportiona	I Counting
TAP 01-0411-007	Gross Alpha, Gross Beta, Total radium, Pb-210, Ra-228, Sr-89, Sr-90
TAP 01-0411-011	Gross Alpha, Gross Beta, Total radium, Pb-210, Ra-228, Sr-89, Sr-90
TAP 01-0411-022	Gross Alpha, Gross Beta, Total radium, Pb-210, Ra-228, Sr-89, Sr-90
TAP 01-0411-050	Gross Alpha, Gross Beta, Total radium, Pb-210, Ra-228, Sr-89, Sr-90
Liquid Scintillation	
TAP 01-0411-013	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP 01-0411-019	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP 01-0411-049	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP 01-0411-052	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP 01-0411-053	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP 01-0411-054	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP 01-0411-055	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP 01-0411-057	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP 01-0411-058	Analysis for total activity by liquid scintillation counting: Tc-99, C-14, Fe-55, H-3, I-129, Ni-59, Ni-63, Pm-147, Pu-241
TAP-01-0411-054	Tritium and carbon - 14 preparation using sample oxidizer
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Chemical	
ASTM C761	Standard test methods for chemical, mass spectrometric, spectrochemical, nuclear, and radiochemical analysis of uranium hexafluoride
ASTM C787	Standard specification for uranium hexafluoride for enrichment
ASTM C1287	Standard test method for determination of impurities in nuclear grade uranium compounds by inductively coupled plasma mass spectrometry
ASTM C1474	Standard test method for analysis of isotopic composition of uranium in nuclear- grade fuel material by quadrupole inductively coupled plasma-mass spectrometry
EPA 218.6	Determination of dissolved hexavalent chromium in drinking water, groundwater, and industrial wastewater effluents by ion chormatography
EPA 350.1	Nitrogen, ammonia (colorimetric, automated phenate)
EPA 365.3	Phosphorus, all forms (colorimetric, ascorbic acid, two reagent)
EPA 405.1	Biochemical oxygen demand (5 days, 20°C)
EPA 410.4	The determination of chemical oxygen demand by semi-automated colorimetry
EPA 3038A	Emission Testing
EPA 3571	Extraction of Solid and Aqueous Samples for Chemical Agents
EPA 3572	Extraction of Chemical Agents from Wipe Samples using Micro extraction
EPA 7196A	Chromium, hexavalent (colorimetric)
EPA 7199	Determination of hexavalent chromium in drinking water, groundwater and industrial wastewater effluents by ion chromatography
EPA 8151A	Chlorinated herbicides by GC using methylation or pentafluorobenzylation derivatization
EPA 8330A	Nitroaromatics and nitramines by high performance liquid chromatography (HPLC)
EPA 9030B	Acid-soluble and acid-insoluble sulfides: distillation
TAP-01-0406-166	Analysis and specification for uranium hexafluoride for enrichment
TAP-01-0406-166A	Hydrolysis of UF ₆ samples
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





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TAP-01-0406-166G	Determination of bromide and chloride in UF ₆
TAP-01-0406-166H	Determination of silicon in UF ₆
TAP-01-0406-166I	Determination of phosphrous in UF ₆
TAP-01-0406-166J	Preparation of UF ₆ Hydrolysates for metal
TAP-01-0411-045	Neodymium fluoride precipitation
TAP-01-0411-057	Analysis of nickel – 59/63 and iron – 55 by anion exchange resins
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-01-0605-094	LCMS analysis of wipe, soil/solid and liquid (Rinsate) samples for MPA, EMPA, DIMP, DMMP, TDG, IMPA and EA-2192
Fire	
10 CFR 71.73	Hypothetical accident conditions, Section 4 - Thermal (only)
16 CFR 1633	Commercial practices – standard for the flammability (open flame) of mattress sets
16 CFR 1634	Commercial practices – standard test to upholstered furniture
49 CFR 179, Appendix B	Procedures for simulated pool and torch fire testing
49 CFR 393.67, Section d / FMSCA 393.67	Liquid fuel tank tests — pressure resistance, safety venting test, and leakage tests (only)
ABD 0031	Fire test to aircraft material- Airbus standard
AITM 2.0007	Smoke Density Flaming Mode
AITM 3.0005	Combustion Toxicity for Insulated Wire/Cable
API 607	Fire test for soft-seated quarter turn valves
ASTM C167	Standard test methods for thickness and density of blanket or batt thermal insulations
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
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ASTM D2859	Standard test method for ignition characteristics of finished textile floor covering materials
ASTM D2863	Standard test method for measuring the minimum oxygen concentration to support candle-like combustion of plastics (oxygen index)
ASTM D3014	Standard test method for flame height, time of burning and loss of mass of rigid thermoset cellular plastics in a vertical position
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
ASTM E1354	Standard test method for heat and visible smoke release rates for materials and products using an oxygen consumption calorimeter





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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 E2226	Standard practice for application of hose stream
ASTM E2230	Standard practice for thermal qualification of type b packages for radioactive material Exclude Cl. 7.4 – Radiant Heating test
ASTM E2231	Standard practice for specimen preparation and mounting of pipe and duct insulation materials to asses 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
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 E2768	Standard test method for extended duration surface burning characteristics of building materials – 30 minute tunnel test
ASTM E2816	Standard test methods for fire resistive metallic HVAC duct systems
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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
ASTM G72	Standard test method for autogenous ignition temperature of liquids and solids in a high-pressure oxygen-enriched environment
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
CAN/ULC-S101	Fire endurance tests of building construction and materials
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 R34	Uniform provisions concerning the approval of vehicles with regard to the prevention of fire risks, only Annex 5, Section 5
ECE R100	Uniform provisions concerning the approval of vehicles with regard to specific requirements for the electric power train, Annex 8E, Fire resistance.
EN ISO 1182	Reaction to fire tests for products non-combustibility test
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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
EN 13823	Single burning item test for building materials and products
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 4651	Plastic suspended ceiling panels
FM 4996	Classification of pallets and other material handling products as equivalent to wood pallets (appendix C)
FM 5560	Water mist systems
FMVSS 302	Laboratory test procedure for flammability of interior materials
IEEE 1202	IEEE standard for flame testing of cables for use in cable tray in industrial and commercial occupancies
IMO FTP Code Annex 1 Part 1	Non-combustibility test
IMO FTP Code Annex 1 Part 2	Smoke and toxicity test
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)



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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
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



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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 14692-2	Petroleum and natural gas industries — Glass-reinforced plastics (GRP) piping — Part 2: qualification and manufacture Annex H – Fire endurance (only)
ISO 15371	Ships and marine technology – fire-extinguishing systems for protection of galley cooking equipment
ISO 22899-1	Determination of the resistance to jet fires of passive fire protection materials — Part 1: general requirements
MIL-DTL-17	Detail specification – cables, radio frequency, flexible and semirigid Cl. 4.8.23, 4.8.25, 4.8.26, 2.8.27, 4.8.29, and 4.2.30 (only)
MIL-DTL-3316	Detail specification-adhesives, fire-resistant for thermal insulation Cl. 4.6.15.2, 4.6.15.3, 4.6.15.5, and 4.6.15.6 (only)
MIL-DTL-24640	Detail specification: cables – lightweight – electric - for shipboard use - general specification
MIL-DTL-24643	Detail Specification – cables, electric, low smoke halogen-free, for shipboard use Cl. 4.5.2.2, 4.8.13, 4.8.14, 4.8.23, 4.8.24, 4.8.25 and 4.8.27 (only)
MIL-DTL-28830	Detail Specification – cables, radio frequency, coaxial, semirigid, corrugated outer conductor Cl. 4.7.17, 4.7.18, 4.7.19, 4.7.20, and 4.7.21 (only)
MIL-F-24385	Military specification: fire extinguishing agent - aqueous film forming foam (AFFF) liquid concentrate - for fresh and seawater
MIL-P-24608	Military specification – pipe, fittings, and adhesive kits, glass-reinforced thermosetting epoxy resin for shipboard piping systems Cl. 4.5.16 and Cl.4.8.17 (only)
MIL-PRF-32161	Performance specification: insulation - high temperature fire protection - thermal and acoustic
MIL-PRF-32664	Performance Specification-Deck Panels, False, Composite Cl. 4.5.3.2; 4.5.3.3, and 4.5.4 (only)
MIL-STD-3020	Department of defense standard practice-fire resistance of U.S. naval surface ships





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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)
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 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 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
NFPA 701	Standard methods of fire tests for flame propagation of textiles and films
SMP-800-C	Toxic gas generation
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



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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 to14)
UL 199	Standard for automatic sprinklers for fire-protection service (sections 30, 31.2 and 57 to 62)
UL 263	Standard for fire tests of building construction and materials
UL 555	Standard for fire dampers
UL 555C	Standard for ceiling dampers
UL 558	Industrial trucks, internal combustion engine-powered Cl. 39 Backfire deflector element test (only)
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 2196	Fire test for circuit integrity of fire-resistive power, instrumentation, control and data cables
UL 2218	Standard for impact resistance of prepared roof covering materials
UL 2335	Standard for fire tests of storage pallets
Vds 3883-5en	Fire test protocol for water mist systems - part 5: protection of selected sales and storage areas and mechanical floors
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
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UBC 26-2

Test method for the evaluation of thermal barriers

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

