SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CHEMICAL

Valid To: November 30, 2027 Certificate Number: 1873.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on tobacco, tobacco smoke, nicotine pouches, electronic cigarettes, and heated tobacco products:

Mainstream (MS) and Sidestream (SS) Smoke Analysis:

Test Description	Method	Test Procedure(s)
Aflatoxin B1 in Tobacco and MS Smoke by LC-MS/MS	AM-177	----------
Ammonia in MS (Cigar and cigarette) and SS (Cigarette) Smoke, HTP and ENDS Aerosol, E-Liquid and Tobacco by Ion Chromatography with Suppressed Conductivity Detection	AM-281	CRM No. 83, HC T-101, HC T-201
Benzo(a)pyrene (MS) by HPLC	AM-207	HC T-103
Caffeic Acid in MS Smoke and Tobacco by LC-MS/MS	AM-069	----------
Carbon Monoxide (MS/SS) by NDIR	AM-007	HC T-115, HC T-214, FR11178, FR46483, ISO 8454, CRM No. 68
Carbonyls (MS) by UHPLC with UV Detection Acetaldehyde Acetone Acrolein Butryaldehyde Crotonaldehyde Formaldehyde Methylethylketone Propionaldehyde	AM-254	CRM No. 74, HC T-104

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Test Description	Method	Test Procedure(s)
Carbonyls (MS Cigars) by UPLC Acetaldehyde Acetone Acrolein Butryaldehyde Crotonaldehyde Formaldehyde Methylethylketone Propionaldehyde	AM-076	----------
Carbonyls (SS) by UHPLC with UV detection. Acetaldehyde Acetone Acrolein Butryaldehyde Crotonaldehyde Formaldehyde Methylethylketone Propionaldehyde	AM-005	HC T-204
Ethyl Carbamate by GC/MS	AM-175	----------
Filter Efficiency (MS Nicotine) by GC	AM-026	CRM No. 9, T-106
Glycidol in ENDS E-Liquid, Aerosol, and MS Smoke by GC-MS	AM-274	----------
Humectants (MS) by GC-FID Diethylene Glycol (DEG) Ethylene Glycol (EG) Glycerol Propylene Glycol Triethylene Glycol (TEG)	AM-090	----------
Hydrogen Cyanide (MS/SS) by CFA	AM-111	HC T-107, HC T-205
Mercury (MS) by CVAA	AM-036	HC T-108
Mercury (SS) by CVAA	AM-041	HC T-206

Test Description	Method	Test Procedure(s)
Metals (MS) by ICP-MS Arsenic Beryllium Cadmium Chromium Cobalt Lead Nickel Palladium Selenium Tin	AM-021	HC T-109
Metals (SS) by ICP-MS Arsenic Cadmium Chromium Lead Nickel Selenium	AM-043	HC T-207
Nicotine, Water, and Menthol (MS) by GC	AM-001	HC T-115, FR11178, FR46483, ISO 10315, ISO 10362-1, ISO 4387, CRM No. 65, No. 66, No. 67
Nicotine in Aqueous Media and Saliva by GC/MS	AM-228	----------
Nitric Oxide in MS Smoke and HTP Aerosol by Chemiluminescence	AM-216	HC T-110
Nitric Oxide (SS) by Chemiluminescence	AM-217	HC T-208
Analysis of pH in Cigarette Smoke, e-Cigarette and HTP Aerosol	AM-237	----------
The Determination of pH in Mainstream Smoke - Health Canada Official Method T-113	AM-093	HC T-113
Phenolics (MS) by HPLC Catechol Hydroquinone m-Cresol o-Cresol p-Cresol Phenol Resorcinol	AM-027	HC T-114, CRM No. 78

Test Description	Method	Test Procedure(s)
Phenolics (SS) by HPLC Catechol Hydroquinone m-Cresol o-Cresol p-Cresol Phenol Resorcinol	AM-048	HC T-211
Polycyclic Aromatic Hydrocarbons (MS/SS) by GC/MS MS Cigar Smoke Benzo[a]pyrene (BaP) MS Cigarette Smoke Anthracene, Benz[a]anthracene (BaA) Benzo[a]pyrene (BaP) Benzo[e]pyrene (BeP) Chrysene, Fluoranthene Fluorene Indeno[1,2,3-cd]pyrene (IcdP) Naphthalene Phenanthrene Pyrene SS Cigarette Smoke Benz[a]anthracene (BaA) Benzo[a]pyrene (BaP)	AM-044	HC T-203B
Primary Aromatic Amines (MS) by GC/MS 1-Aminonaphthalene (1-naphthylamine) 2,6-Dimethylaniline 2-Aminonaphthalene (2-naphthylamine) 3-Aminobiphenyl 4-Aminobiphenyl o-Anisidine (2-methoxyaniline) o-Toluidine (2-methylaniline)	AM-199	----------
Primary Aromatic Amines (MS/SS) by GC/MS 1-Naphthylamine 2-Naphthylamine 3-Aminobiphenyl 4-Aminobiphenyl	AM-030	HC T-102, HC T-202
Selected Alkaloids in Tobacco and MS Smoke by GC/MS Anabasine Nornicotine	AM-100	----------
Semi-Volatiles (MS/SS) by GC/MS MS Smoke 3-vinylpyridine Pyridine Quinoline SS Smoke Pyridine Quinoline	AM-006	HC T-112, HC T-210
Tar and Nicotine (SS) by GC	AM-008	HC T-212

Test Description	Method	Test Procedure(s)
Tobacco Specific N-Nitrosamines (MS) by LC-MS/MS 4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK) N-Nitrosoanabasine (NAB) N-Nitrosoanatabine (NAT) N-Nitrosonornicotine (NNN)	AM-020	HC T-111B, CRM No. 75, ISO 19290
Tobacco Specific N-Nitrosamines (SS) by LC-MS/MS 4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK) N-Nitrosoanabasine (NAB) N-Nitrosoanatabine (NAT) N-Nitrosonornicotine (NNN)	AM-211	HC T-209B
Volatile Organics (MS/SS) by GC/MS 1,3-Butadiene Acrylonitrile Benzene Isoprene Styrene Toluene	AM-015	HC T-116, HC T-213, CRM No. 70
Volatile Organics I in MS Smoke and Tobacco Products by GC/MS 1,3-Butadiene Ethylene Oxide Isoprene Propylene Oxide Vinyl Acetate Vinyl Chloride	AM-180	----------
Volatile Organics II in MS Smoke and Tobacco Products by GC/MS 2,3-Benzofuran 2-Nitropropane Acrylonitrile Benzene Ethylbenzene Furan Naphthalene Nitrobenzene Nitromethane Styrene Toluene	AM-193	----------
Phenolic compounds in mainstream smoke, HTP, aerosol, and e-liquids by HPLC with fluorescence detection Catechol Hydroquinone m-Cresol o-Cresol p-Cresol Phenol	AM-246	----------
Acetamide and Acrylamide in Mainstream Smoke by GC-MS	AM-127	

Tobacco, Tobacco Products, and/or Nicotine Products:

Test Description	Method	Test Procedure(s)
Aflatoxin B1 in Tobacco and MS Smoke by LC-MS/MS	AM-177	----------
Benzo(a)pyrene by UPLC	AM-125	HC T-307
Caffeic Acid in MS Smoke and Tobacco by LC-MS/MS	AM-069	----------
Carbonyls in Tobacco and Tobacco-Free Nicotine Pouches by UPLC-MS/MS Cigarette Filler Acetaldehyde Acetone Acrolein Crotonaldehyde Formaldehyde Methyl Ethyl Ketone Propionaldehyde Hookah Acetaldehyde Acetone Acrolein Crotonaldehyde Formaldehyde Methyl Ethyl Ketone Smokeless Tobacco Acetaldehyde Acetone Acrolein Crotonaldehyde Formaldehyde Tobacco-Free Nicotine Pouches Acetaldehyde Acrolein Crotonaldehyde Formaldehyde	AM-240	CRM No. 86
Ethyl Carbamate (Urethane) by GC/MS	AM-174	----------
Humectants by GC-FID Diethylene Glycol (DEG, Ethylene Glycol (EG) Glycerol Propylene Glycol Triethylene Glycol (TEG)	AM-090	HC T-304
Karl Fischer Titration for the Analysis of Water in E-Cigarette Liquids, Aerosol, HTP and Tobacco-Free Pouches	AM-285	----------
Menthol by GC-FID	AM-070	----------
Mercury in Tobacco Products and E-Liquids by CVAA	AM-095	HC T-306

Test Description	Method	Test Procedure(s)
Metals in Tobacco Products, Filler, Hookah Smoke, Tobacco-Free Nicotine Pouches and Human Saliva by ICP/MS Arsenic Beryllium Cadmium Chromium Cobalt Lead Nickel Selenium	AM-052	HC T-306
Methyl Salicylate (Wintergreen) and Ethyl Salicylate by GC/MS	AM-078	----------
Moisture and pH for Smokeless Tobacco Products and Tobacco Free Nicotine Pouches	AM-071	FR Volume 74, No. 4 AOAC 966.02 (Modified)
N-Nitrosodiethanolamine by GC-TEA	AM-172	----------
Selected Alkaloids in Tobacco and Tobacco Smoke by GC/MS Anabasine Anatabine Myosmine Nicotine Nornicotine	AM-100	CRM No. 87
Nicotine and Minor Alkaloids by GC-NPD Anabasine Anatabine Myosmine Nicotine Nornicotine	AM-206	HC T-301
Nicotine in Dissolution Media by UPLC-UV	AM-219	----------
Nicotine in Filler, Smokeless Tobacco Products, and Tobacco-Free Nicotine Pouches by GC-FID	AM-072	FR Volume 74, No. 4 CRM No. 62
Nicotine Degradants In Nicotine Pouches and Smokeless Tobacco By LC-MS/MS Anabasine Anatabine Cotinine Myosmine Nicotine-N-oxide Nornicotine ß-nicotyrine	AM-288	----------
Nitrate in Tobacco and Nicotine Pouches by CFA	AM-218	HC T-308
Nitrite in Tobacco and Nicotine Pouches by CFA	AM-182	----------
PAAs in Smokeless Tobacco, Filler, and Nicotine Pouches By GC-MS	AM-252	----------
pH by pH Meter	AM-053	HC T-310

Test Description	Method	Test Procedure(s)
Polycyclic Aromatic Hydrocarbons in Tobacco and Tobacco Products by GC/MS Benz[j]aceanthrylene/benz[e]aceanthrylene* Benzo[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[c]fluorene, Benzo[c]phenanthrene Benzo[g,h,i]perylene Benzo[j]fluoranthene Benzo[k]fluoranthene Chrysene Cyclopenta[c,d]pyrene Dibenzo[a,e]pyrene Dibenzo[a,h]anthracene Dibenzo[a,h]pyrene Dibenzo[a,i]pyrene Dibenzo[a,l]pyrene Indeno[1,2,3-c,d]pyrene 5-MethylChrysene **these two analytes co-elute and are quantified together as the sum*	AM-248	----------
Quinoline by GC/MS	AM-243	----------
Reducing Sugars by CFA	AM-074	CRM No. 38
Sodium Propionate by GC-FID	AM-089	HC T-312
Sorbic Acid by HPLC	AM-098	HC T-313
Tobacco Specific N-Nitrosamines in Tobacco, Tobacco Products, Smoke Condensate, and Tobacco Free Nicotine Products by LC-MS/MS	AM-031	HC T-309 B, CRM No. 72
Total Alkaloids by CFA Nicotine	AM-114	ISO 15152
Total Sugars by CFA	AM-073	CRM No. 38
Triacetin by GC/MS	AM-099	HC T-311
Volatile Organics I in MS Smoke and Tobacco Products by GC/MS 1,3-Butadiene Ethylene Oxide Isoprene Propylene Oxide Vinyl Acetate Vinyl Chloride	AM-180	----------

Test Description	Method	Test Procedure(s)
Volatile Organics II in MS Smoke and Tobacco Products by GC/MS 2,3-Benzofuran 2-Nitropropane Acrylonitrile Benzene Ethylbenzene Furan Naphthalene Nitrobenzene Nitromethane Styrene Toluene	AM-193	----------
Volatile Organics in Nicotine Pouches and Swedish-Style Snus 1,3-Butadiene Acrylonitrile Benzene Isoprene Styrene Toluene	AM-278	----------
Water Activity in Smokeless Tobacco, E-Liquid, Tobacco-Free Nicotine Pouches, and Hookah Tobacco	AM-233	----------
Ammonia in smoke, HTP and ENDS Aerosol, E-Liquid and Tobacco by Ion Chromatography with Suppressed Conductivity Detection	AM-281	HC T-302
Determination of Caffeine in Tobacco-Free Oral Pouches, E-Liquid, Aerosol, ENDS, Gum, Masticated Gum, Artificial Saliva, and Human Saliva by HPLC with UV Detection	AM-064	

Electronic Cigarettes, E-Liquid, and Heated Tobacco Product Systems:

Test Description	Method	Test Procedure(s)
Amides in Electronic Nicotine Delivery Systems (ENDS) and Heated Tobacco Products by GC/MS Acetamide Acrylamide Ethyl Carbamate	AM-245	----------
Ammonia in MS (Cigar and cigarette) and SS (Cigarette) Smoke, HTP and ENDS Aerosol, E-Liquid and Tobacco by Ion Chromatography with Suppressed Conductivity Detection	AM-281	----------
Boiling Point of E-Liquid	AM-259	----------
Carbonyls in E-Cigarette Aerosol by HPLC-UV 2,3-Pentanedione Acetaldehyde Acetoin Acrolein Crotonaldehyde Diacetyl Formaldehyde	AM-236	----------

Test Description	Method	Test Procedure(s)
Carbonyls in E-Liquid and Aerosol by LC-MS/MS 2,3-Pentandeione Acetaldehyde Acetoin Acrolein Butyraldehyde (butanal) Carbonyls in E-Liquid and Aerosol by LC-MS/MS (cont.) Crotonaldehyde Diacetyl Formaldehyde Furfural Heptanedione Hexanedione Hydroxyacetone (acetol) Methyl Ethyl Ketone	AM-244	----------
Carbonyls in Heated Tobacco Product Aerosol, Mainstream Smoke, E-Liquid and Aerosol by LC-MS/MS HTP aerosol, MS cigarette smoke, e-liquids and aerosols: 2,3-Butanedione (diacetyl) 2,3-Pentanedione Acetaldehyde Acetoin Acetone Acrolein Butyraldehyde (butanal) Crotonaldehyde Formaldehyde Furfural Methyl Ethyl Ketone (2-butanone) Propionaldehyde (propanal) HTP, ENDS aerosol, and e-liquid: Hydroxyacetone (acetol)	AM-262	----------
Determination of Electrical Resistance of Cartomizer Heaters	AM-267	----------
Esters in ENDS Aerosol and E-Liquid by GC/MS	AM-275	----------

Test Description	Method	Test Procedure(s)
Primary Constituents, Menthol, DEG, EG, Water, and Ethanol in Aerosol, E-liquid, and Condensate E-cigarette aerosol, HTP aerosol, and e-liquid Nicotine Menthol Water Ethanol PG DEG EG VG ENDS, e-liquid, and e-cigarette aerosol 6-methylnicotine	AM-224	----------
Glycidol in ENDS E-Liquid, Aerosol, and MS Smoke by GC-MS	AM-274	----------
Karl Fischer Titration for the Analysis of Water in E-Cigarette Liquids, Aerosol, HTP, and Tobacco-Free Pouches	AM-285	----------
Mercury in ENDS Aerosol by Cold Vapor Atomic Absorption (CVAA)	AM-251	----------
Mercury in HTP Aerosol by ICP-MS	AM-265	----------
Mercury in Tobacco Products and E-Liquids by CVAA	AM-095	----------
Metals in ENDS and HTP Aerosol by ICP-MS Arsenic Beryllium Cadmium Chromium Cobalt Copper Iron Lead Nickel Selenium Silver Tin Vanadium Zinc	AM-249	----------
N-Nitrosodiethanolamine by GC-TEA	AM-172	----------
Nicotine Degradants in E-Liquid and E-Cigarette Aerosol by LC/MS Anabasine Anatabine Cotinine Myosmine Nicotine-N-oxide Nornicotine ß-nicotyrine	AM-238	----------

Test Description	Method	Test Procedure(s)
Nicotine, Menthol, Humectants and Contaminants in E-Cigarette Aerosol and E-Liquid by GC-FID	AM-201	CRM No. 84
NO/NOX in MS Smoke and HTP Aerosol by Chemiluminescence Detector	AM-216	----------
Non-Target Analytes in Aerosol and E-Liquid by GC-MS	AM-272	----------
Organic Acids in ENDS Aerosol and Liquid by GC-MS Formic acid Acetic acid Propionic acid Levulinic acid Benzoic acid Glycolic acid Lactic acid	AM-291	----------
Organic Acids in ENDS Aerosol and Liquid by IC Acetic acid Benzoic acid Formic acid Glycolic acid Lactic acid Oxalic acid Propionic acid	AM-282	----------
Particle Size Distribution of ENDS Aerosol using a MOUDI Cascade Impactor	AM-280	----------
Analysis of pH in Cigarette Smoke, e-Cigarette and HTP Aerosol	AM-237	----------
pH of E-Liquid	AM-232	----------

Test Description	Method	Test Procedure(s)
Polycyclic Aromatic Hydrocarbons in E-Liquid, and Aerosol by GC/MS 5-Methylchrysene Benz[j]aceanthrylene/benz[e]aceanthrylene* Benzo[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[c]fluorene Benzo[c]phenanthrene Benzo[g,h,i]perylene Benzo[j]fluoranthene Benzo[k]fluoranthene Chrysene Cyclopenta[c,d]pyrene Dibenzo[a,e]pyrene Dibenzo[a,h]anthracene Dibenzo[a,h]pyrene Dibenzo[a,i]pyrene Dibenzo[a,l]pyrene Indeno[1,2,3-c,d]pyrene **these two analytes co-elute and are quantified together as the sum* Polycyclic Aromatic Hydrocarbons in HTP Aerosol by GC/MS Pyrene Benzo[a]anthracene Benzo[a]pyrene Dibenzo[a,h]anthracene Polycyclic Aromatic Hydrocarbons inTobacco-Free Nicotine pouches (TFNP) by GC/MS Benzo[a]pyrene	AM-253	----------
Selected Metals in Trapped Aerosol by ICP/MS Arsenic Beryllium Cadmium Chromium Cobalt Copper Iron, Lead Nickel Selenium Silver Tin Zinc Selected Metals in E-Liquid by ICP/MS Aluminum Antimony	AM-235	----------

Test Description	Method	Test Procedure(s)
Selected Primary Aromatic Amines (PAAs) in E-Cigarette Aerosol and E-Liquid by GC/MS 1-Aminonaphthalene 2-Aminonaphthalene 3-Aminobiphenyl 4-Aminobiphenyl o-Toluidine	AM-221	----------
Semi-Volatiles Organics in ENDS, HTP Aerosol, and E-Liquid by GC-MS 2,3-Benzofuran 2-Nitropropane Ethylbenzene Naphthalene Nitrobenzene Pyridine Quinoline Styrene	AM-257	----------
Selected Tobacco-Specific *N*-Nitrosamines (TSNAs) in E-Liquid, Aerosol, Heated Tobacco Products (HTP) by LC-MS/MS 4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK) N-Nitrosoanabasine (NAB) N-Nitrosoanatabine (NAT) N-Nitrosonornicotine (NNN)	AM-220	----------
Triacetin by GC/MS	AM-099	----------
Viscosity of E-Liquid	AM-256	----------
Volatile Organic Compounds in ENDS Liquids and Aerosol by GC/MS 1 ,3-butadiene 2-Propen-1-ol Acrylonitrile Benzene Ethylene oxide Furan Furfurol Isoprene Nitromethane Propylene oxide Toluene Vinyl acetate Vinyl chloride	AM-283	----------

Test Description	Method	Test Procedure(s)
Phenolic compounds in mainstream smoke, HTP, aerosol, and e-liquids by HPLC with fluorescence detection Catechol Hydroquinone m-Cresol o-Cresol p-Cresol Phenol Resorcinol	AM-246	----------
Carbon Monoxide in Mainstream Smoke and HTP Aerosol by Non-Dispersive Infrared Analyzer	AM-007	----------
Hydrogen Cyanide In Tobacco Smoke and HTP Aerosol by Continuous Flow Analyzer	AM-111	----------
PAAs in Heated Tobacco Product (HTP) Aerosol by GC-MS	AM-266	----------
VOCs in ENDS Aerosol by GC-MS: Gas Phase VOCs 1,3-butadiene Isoprene Benzene Vinyl chloride Propylene oxide Toluene Ethylene oxide Acrylonitrile VOCs in HTP Aerosol by GC-MS: Gas Phase VOCs 1,3-butadiene Isoprene Benzene Vinyl chloride Propylene oxide Toluene Vinyl Acetate Acrylonitrile Ethylene oxide	AM-284	----------
Glycidol and 3-MCPD in ENDS Liquid and HTP Aerosol by GC/MS	AM-293	----------
Taurine in E-Liquid by LC-MS/MS	AM-294	----------
Nicotine and 6-MethylNicotine in Tobacco-Free Pouches by GC-FID	AM-299	----------

MECHANICAL

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on tobacco, tobacco smoke, and electronic cigarettes:

Test Description	**Method**	**Test Procedure(s)**
Aerosol Collection	SOP EQU-100	CRM No. 81
Ignition Propensity	AM-050	E2187-04, E2187-09, E2187-20A, E2187-24 AND ISO12863:2022
Physical Properties:	AM-009	----------
Circumference	AM-009	----------
Diameter	AM-009	ISO 2971
Length (Cigar, Cigarette, Tipping, Filter, Column, Vent)	AM-009	----------
Permeability	AM-009	ISO 2965
Pressure Drop	AM-009	ISO 6565
Tobacco Weight	AM-009	----------
Ventilation	AM-009	ISO 9512
Smoke Collection	SOP EQU-037	HC T-115, FR11178, FR45483, ISO 20778, ISO 3308, ISO 3402, ISO 4387, CRM No. 64

Key:
CRM = CORESTA Recommended Method
ENDS = Electronic Nicotine Delivery Systems
FR = Federal Register
HC = Health Canada
HTP = Heated Tobacco Products
ISO = International Standards Organization

Accredited Laboratory

A2LA has accredited

MCKINNEY SPECIALTY LABS, LLC

Richmond, VA

for technical competence in the field of

Chemical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 25th day of February 2026.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1873.01
Valid to November 30, 2027
Revised May 18, 2026

For the tests to which this accreditation applies, please refer to the laboratory's Chemical Scope of Accreditation.