



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

MCKINNEY SPECIALTY LABS, LLC.
1470 East Parham Road
Richmond, VA 23228
Alexei Korolev Phone: (804) 887-2114

CHEMICAL

Valid To: November 30, 2025

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:

<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
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
Carbonyls (MS Cigars) by UPLC Acetaldehyde Acetone Acrolein Butryaldehyde Crotonaldehyde Formaldehyde Methylethylketone Propionaldehyde	AM-076	-----

(A2LA Cert. No.1873.01) Revised 12/13/2024

Page 1 of 15

Test Description	Method	Test Procedure(s)
Carbonyls (SS) by UHPLC with UV detection. Acetaldehyde Acetone Acrolein Butryaldehyde Crotonaldehyde Formaldehyde Methyl ethyl ketone 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
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



<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
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
pH (MS) by pH Meter	AM-237	-----
pH (MS) by pH Meter	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
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	-----

Test Description	Method	Test Procedure(s)
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
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-Nitrosornicotine (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-Nitrosornicotine (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	-----

<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
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	-----

Tobacco, Tobacco Products, and/or Nicotine Products:

<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
Aflatoxin B1 in Tobacco and MS Smoke by LC-MS/MS	AM-177	-----
Anions by HPLC Chloride (Cl ⁻) Nitrate (NO ₃ ⁻) Nitrite (NO ₂ ⁻) Phosphate (PO ₄ ³⁻)	AM-110	-----
Benzo(a)pyrene by UPLC	AM-125	HC T-307
Caffeic Acid in MS Smoke and Tobacco by LC-MS/MS	AM-069	-----



Test Description	Method	Test Procedure(s)
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, 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	-----
Nicotine and Minor Alkaloids 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 β -nicotyrine	AM-288	-----
Nitrate in Tobacco and Nicotine Pouches by CFA	AM-218	HC T-308
Nitrite 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 <i>*these two analytes co-elute and are quantified together as the sum</i>	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	-----



<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
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

Electronic Cigarettes and Heated Tobacco Product Systems:

<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
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	-----
Carbonyls in E-Liquid and Aerosol by LC-MS/MS 2,3-Pentanedione Acetaldehyde	AM-244	-----



<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
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		
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	-----
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	-----



Test Description	Method	Test Procedure(s)
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, 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 Metals in ENDS and HTP Aerosol by ICP-MS (cont.) Cadmium Chromium Cobalt Copper Iron Lead Nickel Selenium Silver Tin 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 β-nicotyrine	AM-238	-----
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	AM-282	-----



<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
Formic acid Glycolic acid Lactic acid Oxalic acid Propionic acid		
Particle Size Distribution of ENDS Aerosol using a MOUDI Cascade Impactor	AM-280	-----
pH in Smoke and E-Cigarette Aerosol	AM-237	-----
pH of E-Liquid	AM-232	-----
Polycyclic Aromatic Hydrocarbons in E-Liquid and Aerosol by GC/MS 5-Methylchrysene Benz[<i>j</i>]aceanthrylene/benz[<i>e</i>]aceanthrylene* Benzo[<i>a</i>]anthracene Benzo[<i>a</i>]pyrene Benzo[<i>b</i>]fluoranthene Benzo[<i>c</i>]fluorene Benzo[<i>c</i>]phenanthrene Benzo[<i>g,h,i</i>]perylene Benzo[<i>j</i>]fluoranthene Benzo[<i>k</i>]fluoranthene Chrysene Cyclopenta[<i>c,d</i>]pyrene Dibenzo[<i>a,e</i>]pyrene Dibenzo[<i>a,h</i>]anthracene Dibenzo[<i>a,h</i>]pyrene Dibenzo[<i>a,i</i>]pyrene Dibenzo[<i>a,l</i>]pyrene Indeno[1,2,3- <i>c,d</i>]pyrene <i>*these two analytes co-elute and are quantified together as the sum</i> Polycyclic Aromatic Hydrocarbons in HTP Aerosol by GC/MS Pyrene Benzo[<i>a</i>]anthracene Benzo[<i>a</i>]pyrene Dibenzo[<i>a,h</i>]anthracene	AM-253	-----
Selected Metals in E-Liquid and Trapped Aerosol by ICP/MS Aluminum Antimony Arsenic Beryllium Cadmium Chromium Cobalt Copper Iron, Lead Nickel Selenium	AM-235	-----



<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
Silver Tin Zinc		
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	-----
Tobacco-Specific <i>N</i> -Nitrosamines (TSNAs) in Aerosol and E-Liquid by LC-MS/MS 4-(<i>N</i> -Nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK) Tobacco-Specific <i>N</i> -Nitrosamines (TSNAs) in Aerosol and E-Liquid by LC-MS/MS (cont.) N-Nitrosoanabasine (NAB) N-Nitrosoanatabine (NAT) N-Nitrosornicotine (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	-----
Volatile Organic Compounds in ENDS Aerosol: Gas Phase VOCs 1,3-butadiene Acrylonitrile	AM-284	-----



<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
Benzene Ethylene oxide Isoprene Propylene oxide Toluene Vinyl chloride		
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	-----



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:

<u>Test Description</u>	<u>Method</u>	<u>Test Procedure(s)</u>
Aerosol Collection	SOP EQU-100	CRM No. 81
Ignition Propensity	AM-050	ASTM E2187-04, ASTM E2187-09, ASTM E2187-20A, ISO 12863:2022
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 22nd day of February 2024.

A blue ink signature of Mr. Trace McInturff, written over a horizontal line.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1873.01
Valid to November 30, 2025
Revised October 28, 2024

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