

**Labstat International ULC
Offerings**

Labstat International ULC List of Offerings

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MAINSTREAM TOBACCO SMOKE - MULTIPLE SMOKING REGIMES

Tar, Nicotine, CO	TPM, water, nicotine, PMWNF, CO, puff number. Filter efficiencies Filter efficiencies (nicotine)
Carbonyls	Formaldehyde, Acetaldehyde, Acetone, Acrolein, Propionaldehyde, Crotonaldehyde, Methyl-Ethyl-Ketone, Butyraldehyde
Phenolics	Hydroquinone, Resorcinol, Catechol, Phenol, Cresol (<i>m+p</i> and <i>o</i>)
Benzo[a]pyrene	BaP (HPLC)
Aromatic Amines	3- and 4-aminobiphenyl, 1- and 2- aminonaphthene, o-toluidine, o-anisidine
Oxides of Nitrogen	NO, NO _x
Hydrogen Cyanide	HCN (gas and particulate phases)
Ammonia	NH ₃ by ion chromatography
Volatiles, Panel 1	Benzene, Toluene, 1,3-butadiene, Isoprene, Acrylonitrile
Semi-Volatiles	Acetamide, Acrylamide, Pyridine, Quinoline, Styrene
Trace Metals	Nickel (Ni) Cadmium (Cd) Lead (Pb) Chromium (Cr) Arsenic (As) Selenium (Se) Copper (Cu) Titanium (Ti)
Mercury	Mercury (Hg)
Smoke pH	Integrated Puff Profile

MAINSTREAM SMOKE – MULTIPLE SMOKING REGIMES

Tobacco Specific Nitrosamines

N-Nitrosornicotine (NNN)

N-Nitrosoanabasine (NAB)

N-Nitrosoanatabine (NAT)

4-(N-nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK)

Volatile Nitrosamines

N,N-Nitrosodimethylamine (NDMA)

N-Nitrosopyrrolidine (NPYR)

N,N-Nitrosodiethylamine (NDEA)

N,N-Nitrosoethylmethylamine (NEMA)

N,N-Nitrosodipropylamine (NDPA)

N,N-Nitrosodibuthylamine (NDBA)

N-Nitrosopiperidine (NPIP)

Polycyclic Aromatic Hydrocarbons

Naphthalene

1-Methylnaphthalene

2-methylnaphthalene

Acenaphthylene

Acenaphthene

Fluorene

Phenanthrene

Anthracene

Fluoranthene

Pyrene

Benzo(a)anthracene

Chrysene

5-Methylchrysene

Benzo(b)fluoranthene

Benzo(k)fluoranthene

Benzo(j)fluoranthene

Benzo(g,h,i)perylene

Benzo(e)pyrene

Benzo(a)pyrene

Perylene

Indeno(1,2,3,-cd)pyrene

Dibenzo(a,h)anthracene

Dibenz(a,j)acridine

Dibenz(a,h)acridine

Dibenz(a,e)pyrene

Dibenz(a,h)pyrene

Dibenz(a,i)pyrene

Dibenz(a,l)pyrene

7H-Dibenzo(c,g)carbazole

MAINSTREAM TOBACCO SMOKE – MULTIPLE SMOKING REGIMES

Heterocyclic Aromatic Amines

2-Amino-3-methylimidazo(4,5-f)quinoline (IQ)
2-Amino-3,4-dimethylimidazo(4,5-f)quinoline (MeIQ)
2-Amino-3-methyl-9H-pyrido(2,3-b)indole (MeAaC)
2-Amino-9H-pyrido(2,3-b)indole (AaC)
1-Methyl-9H-pyrido(3,4-b)indole (Harman)
9H-Pyrido(3,4-b)indole (Norharman)

Free Radicals

Vapour Phase and Particulate Phase

SIDESTREAM TOBACCO SMOKE

Tar and Nicotine	TPM, water, nicotine, PMWNF, puff number
Carbon Monoxide	CO
Carbonyls	Acetaldehyde, Acetone, Acrolein, Butyraldehyde, Crotonaldehyde, Formaldehyde, Methyl-Ethyl-Ketone, Propionaldehyde
Phenolics	Catechol, Cresol (<i>m+p</i> and <i>o</i>), Hydroquinone, Phenol, Resorcinol
Benzo[a]pyrene	BaP (GC/MS-SIM)
Aromatic Amines	3- and 4-aminobiphenyl, 1- and 2- aminonaphthene
Oxides of Nitrogen	NO, NO _x
Hydrogen Cyanide	HCN Gas and particulate phases
Ammonia	NH ₃ by ion chromatography
Volatiles	Benzene, Toluene, 1,3-Butadiene, Styrene (GVP), Isoprene, Acrylonitrile
Semi Volatiles	Quinoline and Pyridine
Trace Metals	Nickel (Ni) Cadmium (Cd) Lead (Pb) Chromium (Cr) Arsenic (As) Selenium (Se)
Mercury	Mercury (Hg)
pH	

SIDESTREAM TOBACCO SMOKE

Tobacco Specific Nitrosamines

N-Nitrosonornicotine (NNN)

N-Nitrosoanabasine (NAB)

N-Nitrosoanatabine (NAT)

4-(N-nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK)

Polycyclic Aromatic Hydrocarbons

Naphthalene

1-Methylnaphthalene

2-methylnaphthalene

Acenaphthylene

Acenaphthene

Fluorene

Phenanthrene

Anthracene

Fluoranthene

Pyrene

Benzo(a)anthracene

Chrysene

Benzo(b)fluoranthene

Benzo(k)fluoranthene

Benzo(e)pyrene

Benzo(a)pyrene

Perylene

Indeno(1,2,3,-cd)pyrene

Dibenzo(a,h)anthracene

Benzo(g,h,i)perylene

CIGARETTE FILLER

Tobacco Sodium Propionate	Propionic acid sodium salt
Tobacco Sorbic Acid	Sorbic Acid (2,4-Hexadienoic acid)
Tobacco pH	pH of a 10% wt/vol solution
Nitrate	Colourimetric by autoanalyzer Ion Chromatography
Nitrite	U.V. Spectrophotometry
Nicotine Alkaloids	Nicotine Nornicotine Anatabine Anabasine Myosmine
Tobacco Specific Nitrosamines	N-Nitrosornicotine (NNN) N-Nitrosoanabasine (NAB) N-Nitrosoanatabine (NAT) 4-(N-nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK)
Humectants	Propylene Glycol, Glycerol, Triethylene Glycol
Triacetin	Triacetin (glycerol triacetate)
Ammonia	NH ₃ by ion chromatography
Tobacco benzo[a]pyrene content	BaP (HPLC)
Eugenol	Eugenol
Toxic Trace Metals	Nickel (Ni) Cadmium (Cd) Lead (Pb) Chromium (Cr) Arsenic (As) Selenium (Se) Mercury (Hg)

CIGARETTE FILLER

Reducing Sugars	Colourimetric by autoanalyzer
Total Sugars	
Rutin, Scopoletin, Chlorogenic Acid	
Isovaleric Acid and 3-methyl valeric acid	
Pectin	Spectrophotometric
Tobacco Nitrite	Spectrophotometry
Tobacco moisture	Moisture (AOAC 966.02)
Carbonyls	Formaldehyde
Aromatic Amines	3 and 4 Aminobiphenyl 1 and 2 Aminonaphthlene
Volatiles	1-3 Butadiene Benzene
Semi-Volatiles	Acrylamide
Volatile Nitrosamines	N-Nirtosodimethylamine (NDMA) N-Nitrosopyrrolidine (NPYR) N-Nitrosodiethylamine (NDEA) N-Nitrosoethylmethylamine (NEMA) N-Nitrosodipropylamine (NDPA) N-Nitrosodibutylamine (NDBA) N-Nitrosopiperidine (NPIP)
Antioxidants	Butylated Hydroxytoluene (BHT) Butylated Hydroxyanisole (BHA) Nordihydroguaiaretic acid (NDGA)

CIGARETTE FILLER

Polycyclic Aromatic Hydrocarbons

Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Indeno(1,2,3,-cd)pyrene
Dibenzo(a,H)anthracene
Naphthalene
1-Methylnaphthalene
Chrysene
2-methylnaphthalene
Acenaphthylene
Acenaphthene
Benzo(e)pyrene
Fluorene
Phenathrene
Perylene
Anthracene
Fluoranthene
Pyrene
Benzo(g,h,i)perylene

SMOKELESS TOBACCO

Tobacco moisture	Moisture (AOAC 966.02)
Tobacco Sodium Propionate	Propionic acid sodium salt
Tobacco Sorbic Acid	Sorbic Acid (2,4-Hexadienoic acid)
Tobacco pH	pH of a 10% wt/vol solution
Nitrate	Colourimetric by autoanalyzer Ion Chromatography
Nitrite	U.V. Spectrophotometry
Nicotine Alkaloids	Nicotine Nornicotine Anatabine Anabasine Myosmine
Tobacco Specific Nitrosamines	N-Nitrosornicotine (NNN) N-Nitrosoanabasine (NAB) N-Nitrosoanatabine (NAT) 4-(N-nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK)
Humectants	Propylene Glycol, Glycerol, Triethylene Glycol
Triacetin	Triacetin (glycerol triacetate)
Ammonia	NH ₃ by ion chromatography
Tobacco benzo[a]pyrene content	BaP (HPLC)
Eugenol	Eugenol
Toxic Trace Metals	Nickel (Ni) Cadmium (Cd) Lead (Pb) Chromium (Cr) Arsenic (As) Selenium (Se) Mercury (Hg)

SMOKELESS TOBACCO

Reducing Sugars	Colourimetric by autoanalyzer
Tobacco Nitrite	Spectrophotometry
Carbonyls	Formaldehyde Crotonaldehyde Acetaldehyde
Aromatic Amines	3 and 4 Aminobiphenyl 1 and 2 Aminonaphthlene
Volatiles	1-3 Butadiene Benzene
Semi-Volatiles	Acrylamide
Volatile Nitrosamines	N-Nirtosodimethylamine (NDMA) N-Nitrosopyrrolidine (NPYR) N-Nitrosodiethylamine (NDEA) N-Nitrosoethylmethylamine (NEMA) N-Nitrosodipropylamine (NDPA) N-Nitrosodibutylamine (NDBA) N-Nitrosopiperidine (NPIP)
Antioxidants	Butylated Hydroxytoluene (BHT) Butylated Hydroxyanisole (BHA) Nordihydroguaiaretic acid (NDGA)

SMOKELESS TOBACCO

Polycyclic Aromatic Hydrocarbons

Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Indeno(1,2,3,-cd)pyrene
Dibenzo(a,H)anthracene
Naphthalene
1-Methylnaphthalene
Chrysene
2-methylnaphthalene
Acenaphthylene
Acenaphthene
Benzo(e)pyrene
Fluorene
Phenathrene
Perylene
Anthracene
Fluoranthene
Pyrene
Benzo(g,h,i)perylene

SMOKELESS TOBACCO - GOTHIA TEK[®] STANDARD (2008)

Nitrite
TSNA
Benzo[a]pyrene
NDMA

Cadmium
Lead
Arsenic
Nickel
Chromium

MEASURES OF BIOLOGICAL ACTIVITY

In Vitro Ames Reverse Mutagenicity (+S9,-S9) TA98, TA100, TA102, TA1535, TA1537 YG1021, YG1024, YG1026, YG1029	Particulate Phase
In Vitro Neutral Red Uptake (NRU) Assay	Particulate Phase Gas Vapour Phase Particulate and Gas Vapour Phase
In Vitro Micronucleus Assay	Particulate Phase
In Vitro Sister Chromatid Exchange	Particulate Phase Gas Vapour Phase
In Vitro Chromosomal Aberrations	Particulate Phase
Urine Mutagenicity	

MEASURES OF BIOLOGICAL ACTIVITY – SMOKELESS TOBACCO

In Vitro Ames Reverse Mutagenicity (+S9,-S9) TA98, TA100, TA102, TA1535, TA1537 YG1021, YG1024, YG1026, YG1029	
In Vitro Neutral Red Uptake (NRU) Assay	
In Vitro Micronucleus Assay	

MEASURES OF EXPOSURE

Nicotine and Nicotine Related Metabolites:

Nicotine	Matrices – Serum, Plasma, Saliva, Urine
Cotinine	Matrices – Serum, Plasma, Saliva, Urine
Trans-3-Hydroxycotinine	Matrices – Saliva, Urine
Cotinine-N-b-D-glucuronide	Matrix - Urine
Nicotine-N-b-glucuronide	Matrix - Urine
trans-3-Hydroxycotinine-O-b-D-glucuronide	Matrix - Urine

Aromatic Amines:

1-Aminonaphtalene	Matrix - Urine
2-Aminonaphtalene	Matrix - Urine
3 and 4 Aminobiphenyl	Matrix - Urine
o-Toluidine	Matrix - Urine

Acrolein:

3-Hydroxypropyl mercapturic acid	Matrix - Urine
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1,3 – butadiene:

Monohydroxybutenyl mercapturic acid	Matrix – Urine
Dihydroxybutyl mercapturic acid	Matrix – Urine

Benzene:

S-Phenyl mercapturic Acid	Matrix – Urine
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Caffeine

Matrices – Serum, Plasma, Saliva, Urine

Crotonaldehyde:

3-hydroxy-1methylpropylmercapturic acid	Matrix - Urine
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Tobacco Specific Nitrosamines:

NAB and BAB-N-glucuronide*	Matrix – Urine
NAT and NAT-N-glucuronide*	Matrix – Urine
NNN and NNN-N-glucuronide*	Matrix – Urine
NNK and NNK-N-glucuronide*	Matrix – Urine

*Total TSNA and corresponding N-glucuronide

NNK:

NNAL and Conjugated glucuronides	Matrix – Urine
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MEASURES OF EXPOSURE

Polycyclic Aromatic Hydrocarbons:

1-Hydroxypyrene	Matrix – Urine
1-Hydroxynaphthalene	
2-Hydroxynaphthalene	
2-Hydroxyfluorene	
2-/3-hydroxyphenanthrene (sum of)	
1-/9-hydroxyphenanthrene (sum of)	

Free Radicals:

8-hydroxy-2'-deoxyguanosine	Matrix - Urine
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Urine Mutagenicity

Yield in Use (Filter Nicotine)

IGNITION PROPENSITY

Ignition Propensity

ASTM E2187-04

PYROLYSIS

Pyrolysis

Identification of pyrolysis products from additives with subsequent toxicological evaluation, if required

CASING SOLUTIONS

Casing Solutions

Cacao (AOAC 980.14 Theobromine, Caffeine)
Licorice (AOAC 982.19 Glycyrrhizic Acid)

CIGARETTE PAPERS

Selected Inorganic Anions

Carbonate, Chloride, Phosphate, Sulphate (Ion Chromatography)

Selected Organic Acids

Acetic, Citric, Malonic, Succinic (Anion Exclusion Chromatography)

Selected Elements

Sodium (Na)
Potassium (K)
Magnesium (Mg)
Calcium (Ca)
Aluminum (Al)

PHYSICAL DETERMINATIONS

Resistance to Draw

Percentage Dilution

Tobacco Weight

Diameter

Overall Length

Tobacco Column Length

Filter Length

Tipping Length