

**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)	
Free Base 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		
Aromatic Amines	3- and 4-aminobiphenyl, 1- and 2- aminonaphthlene, o-toluidine, o-anisidine, aniline, m-toluidine, p-toluidine	
Oxides of Nitrogen	NO, NOx	
Hydrogen Cyanide	HCN (gas and particulate phases)	
Ammonia		
Volatiles	Benzene, Toluene, 1,3-butadiene, Isoprene, Acrylonitrile, Ethylene Oxide, Propylene Oxide, Vinyl Chloride	
Semi-Volatiles	Acetamide, Acrylamide, Pyridine, Quinoline, Styrene	
Trace Metals	Nickel (Ni) Cadmium (Cd) Lead (Pb) Chromium (Cr) Tungsten (W) Strontium (Sr) Iron (Fe) Aluminum (Al)	Arsenic (As) Selenium (Se) Copper (Cu) Titanium (Ti) Cobalt (Co) Molybdenum (Mo) Manganese (Mn) Zinc (Zn)
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

Menthol

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		
Aromatic Amines	3- and 4-aminobiphenyl, 1- and 2- aminonaphthlene	
Oxides of Nitrogen	NO, NO _x	
Hydrogen Cyanide	HCN Gas and particulate phases	
Ammonia		
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-Nitrosornicotine (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 Moisture	Moisture	
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		
Nitrite		
Nicotine Alkaloids	Nicotine Nornicotine Anatabine	Anabasine Myosmine
Free Base Nicotine		
Nicotine Content (Total) Moisture pH		
Menthol		
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		
Tobacco benzo[a]pyrene content		
Eugenol		

CIGARETTE FILLER

Toxic Trace Metals

Nickel (Ni)	Arsenic (As)
Cadmium (Cd)	Selenium (Se)
Lead (Pb)	Mercury (Hg)
Chromium (Cr)	Titanium (Ti)
Beryllium (Be)	Copper (Cu)
Tungsten (W)	Cobalt (Co)
Strontium (Sr)	Molybdenum (Mo)
Iron (Fe)	Manganese (Mn)
Aluminum (Al)	Zinc (Zn)

Reducing Sugars

Total Sugars

Rutin, Scopoletin, Chlorogenic Acid

Isovaleric Acid and 3-methyl valeric acid

Tobacco Nitrite

Tobacco moisture

Carbonyls

Formaldehyde

Aromatic Amines

3 and 4 Aminobiphenyl
1 and 2 Aminonaphthlene

Volatiles

1-3 Butadiene
Benzene
Acrylonitrile

Semi-Volatiles

Acrylamide

CIGARETTE FILLER

Volatile Nitrosamines

N-Nirtosodimethylamine (NDMA)
N-Nitrosopyrrolidine (NPYR)
N-Nitrosodiethylamine (NDEA)
N-Nitrosoethylmethylamine (NEMA)
N-Nitrosodipropylamine (NDPA)
N-Nitrosodibutylamine (NDBA)
N-Nitrosopiperidine (NPIP)
N-nitrosomorpholine (NMOR)
N-nitrosodiisopropylamine (NDiPA)
N-nitrosodibenzylamine (NDBzA)
N-nitrosodiethanolamine (NDELA)
N-nitrosodiisopropanolamine (NDiPLA)
N-nitrososarcosine (NSAR)

Ethyl Carbamate (urethane)

Chloride

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

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

Nitrite

Nicotine Alkaloids

Nicotine
Nornicotine
Anatabine

Anabasine
Myosmine

Free Base Nicotine

Nicotine Content (Total) Moisture pH

Menthol

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

Tobacco benzo[a]pyrene content

Eugenol

SMOKELESS TOBACCO

Toxic Trace Metals

Nickel (Ni)	Arsenic (As)
Cadmium (Cd)	Selenium (Se)
Lead (Pb)	Mercury (Hg)
Chromium (Cr)	Titanium (Ti)
Beryllium (Be)	Copper (Cu)
Tungsten (W)	Cobalt (Co)
Strontium (Sr)	Molybdenum (Mo)
Iron (Fe)	Manganese (Mn)
Aluminum (Al)	Zinc (Zn)

Reducing Sugars

Total Sugars

Rutin, Scopoletin, Chlorogenic Acid

Carbonyls

Formaldehyde
Crotonaldehyde
Acetaldehyde

Aromatic Amines

3 and 4 Aminobiphenyl
1 and 2 Aminonaphthlene

Volatiles

1-3 Butadiene
Benzene
Acrylonitrile

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)
N-nitrosomorpholine (NMOR)
N-nitrosodiisopropylamine (NDiPA)
N-nitrosodibenzylamine (NDBzA)
N-nitrosodiethanolamine (NDELA)
N-nitrosodiisopropanolamine (NDiPLA)
N-nitrososarcosine

Ethyl Carbamate (urethane)

Chloride

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
Gas Vapour Phase

In Vitro Neutral Red Uptake (NRU) Assay

Particulate Phase
Gas Vapour Phase
Particulate and Gas Vapour Phase

In Vitro Micronucleus Assay

Particulate Phase
Gas Vapour 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
Cotinine-N-Oxide	Matrix – Urine
Nicotine-1-Oxide	Matrix – Urine
Nornicotine	Matrix - Urine
Norcotinine	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

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)

ADDITIVES

Glycyrrhizic Acid
Theobromine/caffeine

PHYSICAL DETERMINATIONS

Resistance to Draw

Percentage Dilution/Tip Ventilation

Paper Porosity

Tobacco Weight

Diameter

Overall Length

Tobacco Column Length

Filter Length

Tipping Length

PESTICIDES IN WHOLE TOBACCO AND TOBACCO PRODUCTS

Organochlorine Pesticides
Organophosphorous Pesticides

Carbamate Pesticides
Phenoxyalkyl acid herbicides