Schedule of Accreditation

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Hall Analytical Laboratories Limited

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Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SMOKELESS NICOTINE DELIVERY PRODUCTS	Chemical Tests	
(e-cigarettes, electronic cigarettes, vaping devices), smokeless nicotine delivery vapour or aerosol	Nicotine Propylene glycol Glycerol Menthol	LWI 210 vapour generation and collection followed by SOP 08/126 based on CORESTA Method No. 81 and 84 by 450e vaping machine and gas chromatography with flame ionisation detection (GC-FID)
Electronic cigarette liquid	Nicotine Propylene glycol Glycerol Menthol	SOP 08/126 based on CORESTA method 84 using gas chromatography with flame ionisation detection (GC-FID)
	Tobacco Specific Nitrosamines N-nitrosoanatabine (NAT) N-nitrosoanabasine (NAB) N-nitrosonornicotine (NNN) Nicotine-derived nitrosamine ketone (NNK)	Documented in house method TM_SOP_010 using Liquid Chromatography with tandem Mass Spectrometry (LC-MS-MS)
	Protonated and Unprotonated Nicotine Ratio Nicotine/Nicotine+	Documented in house method TM_SOP_006 using gas chromatography with flame ionisation detection (GC-FID)
	Impurities Diethylene Glycol Ethylene Glycol Glycidol	Documented in house method SOP 08/129 using Direct Injection Gas Chromatography with Mass Spectrometry (DI-GC-MS)
	Water Content	Documented in house method TM_SOP_012 using gas chromatography with thermal conductivity detection (GC-TCD)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SMOKELESS NICOTINE DELIVERY PRODUCTS	Chemical Tests (cont'd)	
Electronic cigarette liquid (cont'd)	**Saturated Monocarbonyls** Acetaldehyde Butyraldehyde Formaldehyde	Documented in house method TM_SOP_005 using Liquid Chromatography with tandem Mass Spectrometry (LC-MS-MS)
	Volatile Organic Compounds and Specific Flavour Compounds in Methanol 1-Butanol Benzene Diacetyl Acrylonitrile Isoamyl Acetate Isobutyl Acetate Methyl Acetate 2,3-Pentanedione Toluene	Documented in house method TM_SOP_001 using Direct Injection Gas Chromatography with Mass Spectrometry (DI-GC-MS)
	Volatile Organic Compounds and Specific Flavour Compounds in Acetone Acrolein Benzaldehyde Benzyl Acetate Cinnemaldehyde Crotonaldehyde Ethyl Acetate Ethyl Acetoacetate Ethyl Vanillin Furfural Methyl Vanillin Propionic Acid Propylene Oxide Vanillin	Documented in house method TM_SOP_002 using Direct Injection Gas Chromatography with Mass Spectrometry (DI-GC-MS)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SMOKELESS NICOTINE DELIVERY PRODUCTS	Chemical Tests (cont'd)	
Electronic cigarette liquid (cont'd)	**Elemental Impurities** Antimony Arsenic Barium Cadmium Chromium Cobalt Copper Gold Iridium Lead Lithium Mercury Molybdenum Nickel Osmium Palladium Rhodium Ruthenium Platinum Selenium Silicon Silver Tin Titanium Thallium Vanadium	Documented in house method TM_SOP_007 using inductively coupled plasma mass spectrometry (ICP-MS)
Polyurethane foams	**Elemental Impurities** Antimony Arsenic Barium Cadmium Chromium Cobalt Copper Lead Mercury Nickel Selenium	Documented in house method TM_SOP_003 based on CertiPUR analysis CPSC-CH-E1002-08.3 using inductively coupled plasma mass spectrometry (ICP-MS)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SMOKELESS NICOTINE DELIVERY PRODUCTS	**Chemical Tests (cont'd)**	
Electronic Nicotine Delivery Systems (Electronic Cigarette Liquids and ENDS Emissions)	**Tobacco Specific Nitrosamines** N-nitrosoanatabine (NAT) N-nitrosoanabasine (NAB) N-nitrosonornicotine (NNN) Nicotine-derived nitrosamine ketone (NNK)	Documented In-House Method SOP TM_SOP_010 by LC-MS/MS
	Protonated and Unprotonated Nicotine Ratio Nicotine/Nicotine+	LWI210 vapour generation followed by Documented In-House Method TM_SOP_006 by GC-FID
	Impurities Diethylene Glycol Ethylene Glycol Glycidol	LWI210 vapour generation followed by Documented In-House Method SOP 08/129 by DI-GC-MS
	Water Content	LWI210 vapour generation followed by Documented In-House Method TM_SOP_012 by GC-TCD
	Saturated Monocarbonyls Acetaldehyde Butyraldehyde Formaldehyde	Documented In-House Method TM_SOP_005 by LC-MS/MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SMOKELESS NICOTINE DELIVERY PRODUCTS	**Chemical Tests (cont'd)**	
Electronic Nicotine Delivery Systems (Electronic Cigarette Liquids and ENDS Emissions)	**Volatile Organic Compounds and Specific Flavour Compounds** 1-Butanol 2,3-Pentanedione Acrolein Acrylonitrile Benzaladehyde Benzene Benzyl Acetate Crotonaldehyde Diacetyl Ethyl Acetate Ethyl Acetoacetate Furfural Isoamyl Acetate Isobutyl Acetate Methanol Methyl Acetate Propionic Acid Propylene Oxide Toluene	By documented In-House Method TM_SOP_046 by TD-GC-MS
	Volatile Organic Compounds and Specific Flavour Compounds Benzaldehyde Benzyl Acetate Cinnemaldehyde Ethyl Acetoacetate Ethyl Vanillin Furfural Methyl Vanillin Propionic Acid Vanillin	By documented In-House Method TM_SOP_002 by DI-GC-MS
	Nicotine Related Substances Anabasine, Anatabine Cotinine Myosmine Nicotine-N-Oxide Nicotyrine Nornicotine	By documented In-house method TM_SOP_004 by LC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SMOKELESS NICOTINE DELIVERY PRODUCTS	**Chemical Tests (cont'd)**	
Electronic Nicotine Delivery Systems (Electronic Cigarette Liquids and ENDS Emissions)	**Elemental Impurities** Antimony Arsenic Barium Cadmium Chromium Cobalt Copper Gold Iridium Lead Lithium Mercury Molybdenum Nickel Osmium Palladium Platinum Rhodium Rubidium Selenium Silicon Silver Thallium Tin Titanium Vanadium	Documented in house method TM_SOP_007 using inductively coupled plasma mass spectrometry (ICP-MS)

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