ORGANISMO URUGUAYO DE ACREDITACION

El Organismo Uruguayo de Acreditación (OUA) otorga el presente certificado a

LABORATORIO TECNOLÓGICO DEL URUGUAY

LATU

Avda. Italia 6201, Montevideo – Uruguay

Quien ha sido acreditado bajo los requisitos de la Norma ISO/IEC 17025:2017 (equivalente a Norma UNIT-ISO/IEC 17025:2017). Esto constituye la expresión formal de su competencia técnica para actuar como Laboratorio de Ensayo en el alcance establecido en el presente documento y en la página web de OUA. (www.organismouruguayodeacreditacion.org).

Ciclo de Acreditación **11.10.2022** al **11.10.2026**

El Laboratorio de Ensayo queda identificado con la siguiente marca de acreditación:

ORGANISMO URUGUAYO DE ACREDITACION
LE 009
Laboratorio de Ensayo

DETALLE DEL ALCANCE:

Nº REVISIÓN:	04
FECHA DE REVISIÓN:	21/03/2024

EFICIENCIA ENERGETICA			
PRODUCTO / MATERIAL A ENSAYAR	**ENSAYO**	**RANGO**	**MÉTODO DE ENSAYO**
Calentadores de agua eléctricos de acumulación	Capacidad nominal	≤ 300 L	PEC.EDM.032 versión 3 basado en la Norma UNIT-IEC 60379-1987 (Adopción febrero 2007, revisión diciembre 2011). Norma UNIT-IEC 60335-2:21:2012 Norma UNIT-NM 60335-1:2010 Norma UNIT 1157-2011
	Temperatura promedio del agua extraída relacionada a 50K (θp)	< 100ºC	
	Consumo de energía mensual	≤ 1230 kWh	
	Pérdida estática por cada 24 horas (Qpr)	≤ 27 kWh	
	Tiempo de calentamiento (t_R -50)	≤ 7 h	
	Potencia nominal	≤ 2300 W	
	Eficiencia Energética (EE)	No aplica	

JUGUETES			
PRODUCTO / MATERIAL A ENSAYAR	**ENSAYO**	**RANGO**	**MÉTODO DE ENSAYO**
Juguetes	Todos los ensayos de la norma establecida en “Método de ensayo”. Salvo las excepciones identificadas	Cumple / No cumple	Norma NM 300-1:2002 Seguridad de los juguetes. Parte 1 “Propiedades Generales, mecánicas” Excepto puntos 5.11.3, 5.13 y ensayos de fulminantes.
Juguetes	Todos los ensayos de la norma establecido en “Método de ensayo”	Cumple / No cumple	Norma NM 300-2:2002 Seguridad de los juguetes. Parte 2: Inflamabilidad.
Juguetes	Todos los ensayos de la norma establecida en “Método de ensayo”.	Cumple / No cumple	Norma NM 300-6:2002 Seguridad de los juguetes. Parte 6: Seguridad de los juguetes eléctricos.

BOLSAS PLASTICAS			
PRODUCTO / MATERIAL A ENSAYAR	**ENSAYO**	**RANGO**	**MÉTODO DE ENSAYO**
Bolsas plásticas	Dimensiones	< 2 m	ABNT NBR 14937:2010 Sacolas plásticas tipo camiseta - Requisitos e métodos de ensaio
	Resistencia a la carga dinámica bolsas	Cumple / No cumple	
	Resistencia a la carga estática bolsas	Cumple / No cumple	
Bolsas plásticas y films plásticos	Elongación Longitudinal y Transversal	< 1500 %	ASTM D 882-18 Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
	Tracción Longitudinal y Transversal	< 80 kgf/mm^2	
	Espesor	< 1 mm	ISO 4593:1993 (E) Plastics — Film and sheeting — Determination of thickness by mechanical scanning.
Bolsas plásticas	Análisis térmico DSC (Differential Scanning Calorimetry)	Presencia / ausencia de resinas declaradas	PEC.EDM.102 v4 Análisis por DSC
	Análisis FTIR (espectrometría infrarroja por transformada de Fourier)	Presencia / ausencia de resinas declaradas	PEC.EDM.521 v5 Análisis por FTIR.

LANAS			
PRODUCTO / MATERIAL A ENSAYAR	**ENSAYO**	**RANGO**	**MÉTODO DE ENSAYO**
Lana	Muestreo	No aplica	IWTO Core Test Regulations Ed. 2011
Lana	Muestreo	No aplica	IWTO Condition Testing Regulations for Scoured or Carbonised Wool Ed. 1999
Lana	Muestreo	No aplica	IWTO Condition Testing Regulations for Wool Tops Ed. 1996
Lana	Muestreo	No aplica	IWTO Sliver Test Regulations Ed. 2020
Lana	Muestreo	No aplica	IWTO Colour Test Regulations for raw wool Ed. 2007
Lana	Medida del promedio y distribución del diámetro de fibra utilizando el Sirolan- Laserscan Fibre Diameter Analyser.	Hasta 38 µm	IWTO-12-12 IWTO Core Test Regulations Ed. 2011 IWTO Sliver Test Regulations Ed. 2020
Lana	Determinación de la base lana y base materia vegetal de coreo de muestras de lana bruta.	(hasta 70) % wb (hasta 9) % vmb	IWTO-19-20 IWTO Core Test Regulations Ed. 2011
Lana	Determinación del diámetro medio de fibra de coreo de muestras de lana bruta por el método Air-Flow.	Hasta 38 µm	IWTO-28-13 IWTO Core Test Regulations Ed. 2011
Lana	Método para la medida de color de lana bruta.	X: (59-70) Y: (62-75) Z: (45-65) Y-Z: (hasta 17) D65/10	IWTO-56-20 IWTO Colour Test Regulations for raw wool Ed. 2007
Lana	Cálculo de certificados IWTO combinados para lana bruta	No aplica	IWTO-31-02
Lana	Método para la determinación de materia soluble en diclorometano en lana peinada, lavada o carbonizada.	Hasta 2%	IWTO-10-03 Excluyendo el método NIR IWTO Core Test Regulations Ed. 2011
Lana	Método para la determinación de la masa seca y masa comercial de lana lavada o carbonizada.	Hasta 25%	IWTO-33-03 IWTO Condition Testing Regulations for Scoured or Carbonised Wool Ed. 1999
Lana	Determinación de la masa seca y masa comercial de lana tops.	Hasta 25%	IWTO-34-17 IWTO Condition Testing Regulations for Wool Tops Ed. 1996
Lana	Método de ensayo para la determinación del diámetro medio de las fibras de lana en cintas peinadas usando el equipo Air-Flow.	Hasta 37 µm	IWTO-6-13 IWTO Sliver Test Regulations Ed. 2020
Lana	Determinación de la longitud de fibra y parámetros de distribución.	(hasta 105) mm	IWTO-17-20 IWTO Sliver Test Regulations Ed. 2020
Lana	Medición del color de cintas de lana.	X: (59-70) Y: (62-75) Z: (45-65) Y-Z: (hasta 17) D65/10	IWTO-35-20
Lana y otras fibras animales	Método para determinar los parámetros de distribución del diámetro de fibra y porcentaje de fibras meduladas en lana y otras	Hasta 40µm	IWTO-8-11

	fibras animales utilizando el microscopio de proyección.		

FORESTALES			
PRODUCTO / MATERIAL A ENSAYAR	**ENSAYO**	**RANGO**	**MÉTODO DE ENSAYO**
Madera contrachapada (Plywood)	Resistencia a la flexión y módulo de elasticidad	Celda de carga de hasta 50kN	AS/NZS 2269.1 2012 Apartados 7.1 y 7.2
Madera contrachapada (Plywood)	Dimensiones, espesor, largo, ancho y cuadratura.	Plywood de espesores entre 4 a 50 mm, largos y anchos según estándares (por ejemplo 2,40m x 1,20m)	AS/NZS 2098.4:2006 Apartados 6.2, 6.3 y 6.4
Madera contrachapada (Plywood)	Calidad de unión de la madera contrachapada – Prueba de cincel - Prueba de unión tipo A mediante vaporización.	0 a 10 de valor de calidad de encolado	AS/NZS 2098.2:2012 con tratamiento según 7.2.2- Tipo A con vapor
Madera	Peso específico aparente (densidad básica)	Todo el rango en madera.	TAPPI 258 om-16
Madera y productos derivados de la madera	Humedad	Todo el rango en madera	ASTM D4442-20
Madera contrachapada (Plywood)	Humedad	Todo el rango	AS/NZS 2098.1:2006
Pulpa (FRB)	Gramaje (masa por unidad de area) Preparación de hojas de laboratorio para ensayos de pulpa.	60 ± 2 g/m^2 (base seca) 65± 2 g/m^2 (base húmeda)	ISO 5270:2022 ISO 536:2019 ISO 5269-1:2005
Pulpa (FRB)	Espesor Preparación de hojas de laboratorio para ensayos de pulpa.	0 a 500 micras	ISO 5270:2022 ISO 534:2011 ISO 5269-1:2005
Pulpa (FRB)	Volumen específico por cálculo Preparación de hojas de laboratorio para ensayos de pulpa.	No corresponde	ISO 5270:2022 ISO 5269-1:2005
Pulpa (FRB)	Densidad por cálculo Preparación de hojas de laboratorio para ensayos de pulpa.	No corresponde	ISO 5270:2022 ISO 5269-1:2005
Pulpa (FRB)	Resistencia a la tracción Preparación de hojas de laboratorio para ensayos de pulpa.	Celda de carga de hasta 300N	ISO 5270:2022 ISO 1924-2:2008 ISO 5269-1:2005
Pulpa (FRB)	Índice de tracción por cálculo	No corresponde	ISO 5270:2022

ENSAYOS ELECTRICOS			
PRODUCTO / MATERIAL A ENSAYAR	**ENSAYO**	**RANGO**	**MÉTODO DE ENSAYO**
Fichas y tomacorrientes para usos domésticos y similares	Capítulo 8 – Marcado	Cumple/ No cumple	UNIT-NM 60884-1:2009 Fichas y tomacorrientes para usos domésticos y similares -Parte 1: Requisitos generales
	Capítulo 10 – Protección contra contactos eléctricos Ensayos 10.1 - 10.2 - 10.3 - 10.4 – 10.5 - 10.6 - 10.7	Cumple/ No cumple	
	Capítulo 11 – Disposiciones para la puesta a tierra Ensayo 11.5	Cumple/ No cumple	

ENSAYOS ELECTRICOS			
PRODUCTO / MATERIAL A ENSAYAR	**ENSAYO**	**RANGO**	**MÉTODO DE ENSAYO**
	Capítulo 16 – Resistencia al envejecimiento, protección proporcionada por las envolventes y resistencia a la humedad Ensayo 16.3	Cumple/ No cumple	
	Capítulo 17 – Resistencia de aislación y rigidez dieléctrica (prev. 16.3) Ensayos 17.1 – 17.1.1 – 17.1.2 – 17.2	Cumple/ No cumple	
	Capítulo 25 – Resistencia al calor Ensayos 25.1 – 25.2 – 25.3 – 25.4	Cumple/ No cumple	
	Capítulo 27 – Líneas de fuga, distancias en aire y distancias a través del material sellado Ensayos 27.1 – 27.2 – 27.3	Cumple/ No cumple	
	Capítulo 28 – Resistencias del material aislante Ensayos 28.1.1 – 28.1.2 – 28.2	Cumple/ No cumple	
Interruptores para instalaciones eléctricas fijas, domiciliarias y similares	Capítulo 8 – Marcado	Cumple/ No cumple	UNIT-NM 60669-1:2004 Interruptores para instalaciones eléctricas fijas, domiciliarias y similares - Parte 1: Requisitos generales
	Capítulo 10 – Protección contra choques eléctricos Ensayos 10.1 - 10.2 - 10.3.1 – 10.3.2 - 10.4 – 10.5 - 10.6 - 10.7	Cumple/ No cumple	
	Capítulo 11 – Disposiciones para la puesta a tierra Ensayo 11.4	Cumple/ No cumple	
	Capítulo 15 – Resistencia al envejecimiento, protección asegurada por las envolturas y resistencia a la humedad Ensayo 15.3	Cumple/ No cumple	
	Capítulo 16 – Resistencia de aislación y rigidez dieléctrica Ensayos 16.1 – 16.2	Cumple/ No cumple	
	Capítulo 21 – Resistencia al calor Ensayos 21.1 – 21.2 – 21.3	Cumple/ No cumple	
	Capítulo 23 – Líneas de fuga, distancias en aire y distancias a través del material de relleno Ensayos 23.1 – 23.2	Cumple/ No cumple	
	Capítulo 24 – Resistencias del material aislante al calor anormal, al fuego y a las corrientes superficiales Ensayos 24.1.1 – 24.2	Cumple/ No cumple	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
MILK and DAIRY PRODUCTS as specified	<u>Chemical Tests</u>	Documented In-House Methods identified by method number based on standard methods	
	Moisture	PEC.AGROPEC.037 based on:	Lab - AGROPEC
Butter Butter Oil		IDF 80:1977	
Cheese		ISO 5534/IDF 4:2004	
Dried Milk, Milk Powders, Dried Cheese, Whey Powder		IDF 26A:1993	
Milk (liquid) Skimmed Milk (Milk solids not fat)		ISO 6731/IDF 21:2010	
Dulce de Leche		ISO 6734/IDF 15:2010	
MILK and DAIRY PRODUCTS as specified:	Fat acidity	PEC.AGROPEC.137 based on:	Lab - AGROPEC
Butter Butter Oil		AOAC Official Methods of Analysis 969.17:1974, 2019, 21st Edition	
	Ash	PEC.AGROPEC.040 based on:	Lab - AGROPEC
Dried Milk, Milk Powders, Whey Powder		AOAC Official Methods of Analysis 930.30:1930, 2019, 21st Edition	
Milk		AOAC Official Methods of Analysis 945.46:1945, 2019, 21st Edition	
Dulce de Leche		AOAC Official Methods of Analysis 945.48:1945, 2019, 21st Edition	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
MILK and DAIRY PRODUCTS as specified: (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Dried whey and dry milk	Insolubility index at 24ºC	PEC.AGROPEC.175 based on ISO 8156/IDF 129:2005	Lab - AGROPEC
Milk powders and whey powders	Scorched particles	PEC.AGROPEC.175 based on American Dairy Products Institute Dairy Products Standards	Lab - AGROPEC
Milk and Dairy Products	Fat (Milk fat in dry matter)	PEC.AGROPEC.159 (Gravimetric Method) based on:	Lab - AGROPEC
Dried Milk Whey Dried, Whey and Whey Butter		ISO 1736/ IDF 9:2008	
Cheese		ISO 23319/IDF 250:2022	
Milk (liquid)		ISO 1211/IDF1:2010	
	Fat (Milk fat in dry matter)	PEC.AGROPEC.163 (Butyrometric Method) based on: BS 696 Part 2 withdrawn:	Lab - AGROPEC
Cheese, Dried Cheese		ISO11870/IDF 152:2009, ISO3433/ IDF222:2008	
Dulce de Leche	Fat	ISO11870/IDF 152:2009, ISO3433/ IDF222:2008	Lab - AGROPEC
Dried Milk, Whey Powder	Acidity (titratable)	PEC.AGROPEC.043 based on: ISO 6091/IDF 86:2010	Lab - AGROPEC
Milk (liquid), Cream		PEC.AGROPEC.043 based on: AOAC Official Methods of Analysis 947.05:1947, 2019, 21st Edition	Lab - AGROPEC
Dairy Products	Nitrogen (Protein by Calculation) Milk protein in milk solids not fat	PEC.AGROPEC.172 based on: ISO 8968-1/IDF 20-1:2014	Lab - AGROPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
MILK and DAIRY PRODUCTS as specified: (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Cheese	pH	PEC.AGROPEC.177 based on: BS 770. Part 5:1976. British Standard Methods for Chemical Analysis of cheese Determination of pH value	Lab - AGROPEC
Milk and Dairy Products		Standard Methods for the Examination of Dairy Products, Chapter 15, 2004, 17th Edition	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
ANIMAL FEED, FOOD & FOOD PRODUCTS	Chemical Tests	Documented In-House Methods identified by method number based on standard methods	
Food (General)	Ash	Kirk Ronald S., Sawyer R. Pearson's composition and analysis of foods. 9th edition, 1991, page.13	
Spices and condiments	Ash	ISO 928:1997	
Apple juice Apple juice concentrate Apple puree	Patulin	PEC.AGROPEC.080 Based on AOAC International Official Methods of Analysis of AOAC International. , 2019, Gaithersburg: AOAC Official Method 995.10:1999, 21st Edition	Lab - AGROPEC
Foods and food products (excluding cereal and dairy products) which require drying under reduced pressure	Moisture	PEC.AGROPEC.109 by vacuum oven drying, based on ISO 1026:1982	Lab - AGROPEC
Honey	Hydroxymethyl-furfural	PEC.AGROPEC.197 based on Harmonised methods of the International Honey Commission 2009, chapter 5 Determination of hydroxymethylfurfural by HPLC	Lab - AGROPEC
Honey	Moisture	PEC.AGROPEC.004 refractometric method based on AOAC Official Methods of Analysis 969.38:1969, 2019, 21st Edition	Lab - AGROPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
ANIMAL FEED, FOOD & FOOD PRODUCTS	Chemical Tests	Documented In-House Methods identified by method number based on standard methods	
Honey	Total Acidity	PEC. AGROPEC.001 method based on AOAC Official Methods of Analysis 962.19:1977, 2019 21st Edition	Lab - AGROPEC
Sugar	Colour	PEC.AGROPEC.059 Based on - International Commission for Uniform Methods of Sugar Analysis / ICUMSA Methods Book. Berlin: Bartens, 2005, ICUMSA Supplement 2011	Lab - AGROPEC
MEAT AND MEAT PRODUCTS FOOD and ANIMAL FEED HONEY	Ash	PEC.AGROPEC.040 using muffle furnace based on ISO 936:1998 ISO 5984:2022 International honey commission 2009 method 3	Lab - AGROPEC
	Moisture	PEC.AGROPEC.037 air drying based on AOAC Official Methods of Analysis 950.46:1991, 2019, 21st Edition	Lab - AGROPEC
	Nitrogen Moisture:protein ratio	PEC.AGROPEC.172 by Kjeldahl based on ISO 937:1978	Lab - AGROPEC
FRUIT and VEGETABLE PRODUCTS	Soluble Solids	PEC.AGROPEC.126 based on ISO 2173:2003	Lab - AGROPEC
	pH	PEC.AGROPEC.177 based on ISO 1842:1991	Lab - AGROPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FRUIT and VEGETABLE PRODUCTS (cont'd) Fruit, fruit juices and vegetables	Chemical Tests (cont'd) Pesticide residues Acetamiprid Azinphos-methyl Azoxistrobin Bifentrin Carbaryl Carbendazim Carbofuran Cypermethrin Cyproconazole Clomazone Chorfenvinphos Chlorpiriphos Chlorpiriphos-methyl Deltamethrin Diazinon Diphenoconazole Diflubenzuron Dimethoate Edifenphos Ethion FenbuconazoleFenthion Fenitrotion Phosalone Phosmet Imazalil Imidachloprid Iprodione Isoprotiolane Kresoxim-methyl Lambda-Cyalothrin Malathion Malaoxon Methalaxyl Methamidophos Metidation Methiocarb Methomyl Omethoate	Documented In-House Methods identified by method number based on standard methods PEC.CROMA.019 based on QuEChERS extraction and gas chromatography tandem mass spectrometry (GCMS/MS) and high performance liquid chromatography tandem mass spectrometry (LCMS/MS)	Lab - CROMA

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FRUIT and VEGETABLE PRODUCTS (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Fruit, fruit juices and vegetables	Pesticide residues: Parathion Permethrin 2-Phenyl phenol (OPP) Phosalone Phosmet Pyrachlostrobin Pyrimethanil Pirimicarb Pyrimiphos-ethyl Pyrimiphos-methyl Prochloraz Profenofos Propetamphos Propiconazole Spinosad Tebuconazole Thiacloprid Tricyclazole Triflumuron Thibendazol	PEC.CROMA.019 based on QuEChERS extraction and gas chromatography tandem mass spectrometry (GCMS/MS) and high performance liquid chromatography tandem mass spectrometry (LCMS/MS)	Lab - CROMA

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS	Chemical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Cereals, Oilseeds and by products	Crude Protein – Combustion Method	PEC.CEMIC.CER.210 / AOAC 992.23,2019,21st edition	Lab - CEMIC
Cereals, oilseeds and their products	Moisture	PEC.CEMIC.001 ISO 712:2009 ISO665:2020 ISO 6540 1980 EBC 3.2 1997 EBC 4.2 2000 AACC 44-15A 1999 10TH Ed 2000 AOCS Ac 2-41:2017 7th Edition 2017	Lab - CEMIC
FOODS, GRAINS AND CEREAL PRODUCTS	Water activity	PEC.CEMIC.CER.501/ ISO 18787:2017	Lab - CEMIC
Cereals, cereal products, Oilseeds and by products,	Crude Protein – Kjeldahl method	PEC.CEMIC.003 based on ISO 5983-1:2008, ISO 20483:2013, EBC 3.3.1 2004 and 4.3.1:2004	Lab - CEMIC
RICE	Classification of Rice: Broken grains Chalky grains Impurities (Foreign Matter) Paddy grains Red rice Stained grains	PEC.CEMIC.CER.010 based on Decreto MGAP No 544/987and 321/988	Lab - CEMIC
Rice quality testing	Brown Rice, Mill Rice, Broken grains, Colour SATAKE, Head rice yield.	PEC.CEMIC.CER.009 / Decreto MGAP Nº 544/987 y 321/988	Lab - CEMIC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS (cont'd)	Chemical and Physical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Cereals, oilseeds and their products	Extractable matter (Fat) Fat Oil content	PEC.CEMIC.CER.504 using Soxtec solvent extraction system based on ISO 11085:2015, ISO 659:2009	Lab - CEMIC
Oils and Fats (Grease)	Peroxide Index	PEC.CEMIC.CER. 401 based on AOCS Cd 8b-90:,017	Lab - CEMIC
Oils and Fats (Grease)	Specific UV extinction at 232nm and 268nm	PEC.CEMIC.CER.423 based on AOCS Ch5-91:2018 and COI/T20/DocNo 19	Lab - CEMIC
Oils and Fats (Grease)	Free Fatty Acids	PEC.CEMIC.CER. 402 based on AOCS Ca 5a-40: 2017 and COI/T.20/Doc.Nº3 4 and ISO 660:2020	Lab - CEMIC
Oils and Fats (Grease)	Moisture	PEC.CEMIC.CER. 406 based on AOCS Ca 2c-2017 and ISO 662:2016	Lab - CEMIC
Wheat flour	Iron	PEC.CEMIC.CER.214 based on AACC Method 40-41B:1999,10th Edition 2000 and AOAC 944.02:1993, 2019 21st Edition	Lab - CEMIC
Dairy products including Cheese, Milk, Milk powders, Liquid Dairy Products (flavoured milks, yoghurt) and dairy desserts (Pudding)	Aflatoxin M_1	PEC.AGROPEC.075 Extraction using immunoaffinity column clean up. HPLC based on ISO14501:2007 using fluorescence detection	Lab - AGROPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS (cont'd)	Chemical and Physical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Nuts, Grains and Dried Fruit including By-products and Finished products for all. Animal Feeds	Aflatoxin B_1, B_2, G_1, G_2	PEC.AGROPEC.053 based on immunoaffinity column clean up. HPLC based on AOAC Official Methods of Analysis 991.31:1994 and 994.08: 1997, 2019, 21st Edition using HPLC and fluorescence detection	Lab - AGROPEC
Grains including Byproducts and Finished products, Animal Feeds	Deoxynivalenol (DON)	PEC. AGROPEC.063 extraction based on AOAC Official Methods of Analysis, 986.17:1990 2019, 21st Edition or Immunoaffinity column clean up. HPLC based on Journal of Association of Official Analytical Chemists 70(3), 1987, 479-483 using PDA detection	Lab - AGROPEC
Nuts, Grains and Dried Fruit, including By-products and Finished products for all. Coffee, Grapes and Animal Feeds	Ochratoxin A	PEC.AGROPEC.076 based on immunoaffinity column clean up HPLC based on Analytica Chimica Acta 566 2006:117-121 using HPLC and fluorescence detection	Lab - AGROPEC
Wine	Ochratoxin A	PEC. AGROPEC.072 based on Analytica Chimica Acta 566 2006:117-121 using HPLC and fluorescence detection	Lab - AGROPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS (cont'd)	Chemical and Physical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Edible Iodized Salt	Iodine	PEC.PQAR.910 by titration based on Rosin J, 1966. Reagent Chemicals and Standards. Potassium Iodate, pgs. 383-384. D. Van Nostrand Company Inc., 5th ed. New York	Lab - PQAR
Fats and Oils	Fatty acid profile	PEC.CROMA.005 using GC-MS based on AOCS Official Method Ce 2-66	Lab - CROMA
Olive oil	Stigmasta-3,5-diene	PEC.COMB.026 based on AOAC Method Cd 26-96,2017 7th Edition	Lab - COMB
Honey, soft drinks, and drinks powders, Jam and Sweets	Sugars: Glucose, Fructose, Sucrose	PEC.CROMA.004 using HPLC and RI detection	Lab - CROMA
Herbs	Arsenic, Cadmium and Lead	PEC.ESPEC.014 based on US FDA Method 4.4 Version 1.1:2015 using Inductively Coupled Plasma-Atomic Emission Spectrometric Determination Using Microwave Assisted Digestion	Lab - ESPEC
Food and Food Products	Arsenic, Cadmium and Lead	PEC.ESPEC.022 based on US FDA Method 4.7 Version 1.2:2020 using Inductively Coupled Plasma-Mass Spectrometric Determination Using Microwave Assisted Digestion	Lab - ESPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Bakery products fortified with iron	Iron	PEC.ESPEC.014 based on AOAC Official Method 2011.14 using Microwave Digestion and Inductively Coupled PlasmaOptical Emission Spectrometry	Lab - ESPEC
Candies and sugar products	Copper	PEC.ESPEC.022 based on US FDA Method 4.7 Version 1.2:2020 Inductively Coupled Plasma-Mass Spectrometric Using Microwave Assisted Digestion	Lab - ESPEC
Food and Food products	Sodium	PEC.ESPEC.014 based on AOAC Official Method 2011.14 using Microwave Digestion and Inductively Coupled PlasmaOptical Emission Spectrometry	Lab - ESPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS including dairy products, meat and meat products and ready to eat foods, unless otherwise stated	<u>Microbiological Tests</u> Detection:	Documented In-House Methods identified by method number based on standard methods	
	Listeria spp	PEC.MIC.022 based on ISO 11290-1: 2017 (retaining 48h incubation of selective enrichment broths)	Lab - MIC
	Listeria monocytogenes	PEC.MIC.022 based on ISO 11290-1: 2017 (retaining 48h incubation of selective enrichment broths)	Lab - MIC
	Listeria monocytogenes	PEC.MIC.066 using selective culture enrichment and presumptive detection by iQCheck Prep System for Automated DNA Extraction and manual extraction by real time PCR using Bio-Rad system, AOAC RI 010802, with biochemical confirmation using PEC.MIC.022 if required	Lab - MIC
Dairy Products	*Listeria monocytogenes*	PEC.MIC.026 using selective culture enrichment and presumptive detection by real time PCR using Dupont Qualicon BAX PCR system, ISO 11290:2017), with biochemical confirmation using PEC.MIC.022 if required	Lab - MICFB
	Salmonella spp	PEC.MIC.023 based on ISO 6579-1:2017+A1:2020	Lab - MIC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS including dairy products, meat and meat products and ready to eat foods, unless otherwise stated (cont'd)	Microbiological Tests (cont'd) Detection: (cont'd)	Documented In-House Methods identified by method number based on standard methods	
	Salmonella spp	PEC.MIC.065 using selective culture enrichment and presumptive detection by iQCheck Prep System for Automated DNA Extraction and manual extraction by real time PCR using Bio-Rad system by real time PCR AOAC 010803 RI, with serological and biochemical confirmation using PEC.MIC.023 if required	Lab - MIC
Dairy Products	*Salmonella* spp	PEC.MIC.024 using selective culture enrichment and presumptive detection by real time PCR using Dupont Qualicon BAX PCR System, AOAC OMA Official methods No 2013.02, with serological and biochemical confirmation using PEC.MIC.023 if required	Lab - MICFB
Meat and Meat Products and Poultry	Presumptive *Escherichia coli* O157 H7 and Presumptive *E. coli* O157:H7/NM	PEC.MIC.067 using selective culture enrichment and presumptive detection by iQCheck Prep System for Automated DNA Extraction and manual extraction by real time PCR using Bio-Rad system by real time PCR and AOAC RI 020801	Lab - MIC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS including dairy products, meat and meat products and ready to eat foods, unless otherwise stated (cont'd)	Microbiological Tests (cont'd) Detection: (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Meat and Meat Products and Poultry	Confirmation of *Escherichia coli* O157:H7	PEC.MIC.032 using Biochemical and Serological tests based on USDA Microbiology Laboratory Guidebook 5.09 after presumptive detection using method PEC.MIC.067 Real Time PCR	Lab - MIC
Raw meat	Shiga Toxin-Producing *Escherichia coli* (STEC) by detection of STX1, STX2 and EAE gene sequences in serogroups 026, 045, 0103, 0111, 0121 and 0145	PEC.MIC.064 and PEC.MIC.049 based on USDA FSIS MLG 5B.05 by iQ-Check Prep System for Automated DNA Extraction and manual extraction by real time PCR using Bio-Rad system AOAC RI 121203 screening using iQ-Check STEC VirX and confirmation of serogroups using iQ-Check STEC SerO II Kit	Lab - MIC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS including dairy products, meat and meat products and ready to eat foods, unless otherwise stated (cont'd)	Microbiological Tests (cont'd) Enumeration:	Documented In-House Methods identified by method number based on standard methods	
	Aerobic colony count at 35.5 □C for 48h	PEC.MIC.029 based on APHA Compendium of Methods for the Microbiological Examination of Foods, 5th Edition, 2015	Lab - MIC
	Aerobic colony count	PEC.MIC.038 using Biomerieux TEMPO AC (AOAC tested Method Certificate Nº121204)	Lab - MIC
	Total Coliforms	PEC.MIC.036 using Biomerieux TEMPO TC	Lab - MIC
	Total Coliforms and Thermotolerant (Faecal) Coliforms	PEC.MIC.028 using MPN based on APHA Compendium of Methods for the Microbiological Examination of Foods 5th Edition, 2015	Lab - MIC
	Total Coliforms	PEC.MIC.059 based on ISO 4832:2006	Lab - MIC
	Coagulase-positive Staphylococci	PEC.MIC.020 based on APHA Compendium of Methods for the Microbiological Examination of Foods, 5th Edition, 2015	Lab - MIC
Milk Powder	Enterobacteriaceae	PEC.MIC.031 based on ISO 21528-2:2017	Lab - MICFB
Milk Powder	Coagulase positive Staphylococci	PEC.MIC 020 based on APHA Compendium of Methods for the Microbiological Examination of Foods, 5th Edition, 2015	Lab - MICFB

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
FOOD & FOOD PRODUCTS including dairy products, meat and meat products and ready to eat foods, unless otherwise stated (cont'd)	Microbiological Tests (cont'd) Enumeration: (cont'd)	Documented In-House Methods identified by method number based on standard methods	
Milk Powder	Aerobic colony count at 35.5°C	PEC.MIC.029 based on Compendium of Methods for the Microbiological Examination of Foods, 5th edition, 2015	Lab - MICFB
Meat and Meat products and Dairy	Aerobic colony count at 30 □C for 72h	PEC.MIC.029 based on 4883:2013+A1:2022	Lab - MIC
Meat and Meat products and Dairy	Enterobacteriaceae	PEC.MIC.031 based on ISO 21528-2: 2017+A1:2020	Lab - MIC
Red meat	Enterobacteriaceae	PEC.MIC.039 using Biomerieux TEMPO EB (AOAC tested Method Certificate Nº050801)	Lab - MIC
FOODS including dairy products,meat and meat products and ready to eat foods, excluding Cheese Products	Coagulase positive Staphylococci	PEC.MIC.044 based on Petrifilm method AOAC 2003.07, 2003.08 and 2003.11, and 4883:2013+A1:2022	Lab - MIC
Milk Powder	Coagulase positive Staphylococci	PEC.MIC.044 based on Petrifilm method AOAC 2003.07, 2003.08 and 2003.11, and 4883:2013+A1:2022	Lab - MICFB
FOODS including cereals products, dairy products and ready to eat foods	*Bacillus cereus* (presumptive)	PEC.MIC.025 based on ISO 7932:2004 and Amd 2020	Lab - MIC
Chicken (processed)	*Listeria monocytogenes*	PEC.MIC.035 based on ISO 11290-2 2017	Lab - MIC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
ENVIRONMENTAL SAMPLES (sponge swabs)	<u>Microbiological Tests</u> (cont'd) Detection: *Listeria monocytogenes*	Documented In-House Methods identified by method number based on standard methods PEC.MIC.066 using selective culture enrichment and presumptive detection by iQCheck Prep System for Automated DNA Extraction and manual extraction by real time PCR using Bio-Rad system, AOAC RI 010802, with biochemical confirmation using PEC.MIC.022 if required	Lab - MIC
	Salmonella spp	PEC.MIC.065 using selective culture enrichment and presumptive detection by iQCheck Prep System for Automated DNA Extraction and manual extraction by real time PCR using Bio-Rad system by real time PCR AOAC 010803 RI, with serological and biochemical confirmation using PEC.MIC.023 if required	Lab - MIC
TOYS AND TOY PACKAGING	<u>Chemical Tests</u> Migration of certain elements: Arsenic Barium Antimony Cadmium Chromium Lead Selenium Mercury	PEC.ESPEC.024 based on Mercosur Standard NM-3003:2022 – Safety of toys – migration of certain elements using ICP-OES and ICP-MS	Lab - ESPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATER and EFFLUENTS	<u>Chemical and Physical Tests</u>		
Potable water	Anion: Bromate	PEC.PQAR.113 by ion chromatography based on EPA 300.1:1997	Lab - PQAR
Fresh surface water, wastewater, effluents	Anions: Chlorate	PEC.PQAR.113 by ion chromatography based on EPA 300.1:1997	Lab - PQAR
Fresh surface water, groundwater, potable water	Anions: Fluoride, Chloride, Nitrate, Sulphate	PEC.PQAR.113 by ion chromatography based on ISO 10304-1:2007	Lab - PQAR
	Alkalinity (total)	PEC.PQAR.105 by titration based on ASTM D1067-16	Lab - PQAR
	Hardness (total)	PEC.PQAR.106 by titration based on APHA, 2017, 23rdEdition, 2340-C	Lab - PQAR
Fresh surface water, groundwater, potable water, wastewater, effluents	pH	PEC.PQAR.601 by electrode based on APHA, 2017, 23 Edition, 4500_H & ASTM 1293-12	Lab - PQAR
	Conductivity	PEC.PQAR.112 by electrode based on ISO 7888:1985 and APHA, 2017, 23rd Edition, 2520-A&B	Lab - PQAR
	Cyanides (total and free)	PEC.PQAR.602 by spectrometry based on EPA 335.4:1993	Lab - PQAR
	Extractable matter (by solvent)	PEC.PQAR.007 based on APHA, 2017, 23rd Edition, 5520-D	Lab - PQAR
	Phenols	PEC.PQAR.603 based on EPA 420.1:1978	Lab - PQAR

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATER and EFFLUENTS (cont'd)	<u>Chemical and Physical Tests</u> (cont'd)	Documented In-House Methods identified by method number based on standard methods	
	Total suspended solids	PEC.PQAR.006 by gravimetry based on APHA, 2017, 23rd Edition, 2540-D	Lab - PQAR
	Total dissolved solids	PEC.PQAR.004 by gravimetry based on APHA, 2017, 23rd Edition, 2540-C	Lab - PQAR
	Total solids	PEC.PQAR.003 by gravimetry based on APHA, 2017, 23rd Edition, 2540-B	Lab - PQAR
	Settleable solids	PEC.PQAR.002 by gravimetry based on APHA, 2017, 23rd Edition, 2540-F	Lab - PQAR
Fresh surface water, wastewater, effluents	Absorbable Organic Halogens (AOX)	PEC.PQAR.604 based on ISO 9562:2004	Lab - PQAR
	Total Nitrogen (TN)	PEC.PQAR.606 by combustion-oxidation based on ISO 11905-2:1997	Lab - PQAR
Wastewater, effluents	Biochemical Oxygen Demand	PEC.PQAR.010 by manometric monitoring based on APHA, 2017, 23rd Edition, 5210-D app. 2016	Lab - PQAR
Fresh surface water, groundwater, wastewater, effluents	Colour	PEC.MAFB.011 based on ISO 7887:2011, APHA, 2017, 23rd Ed. Standard Method 2120B & ASTM D 1209-05 (2011)	Lab - MAFB
	Conductivity	PEC.MAFB.112 using conductivity meter based on ISO 7888:1985	Lab - MAFB

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS and EFFLUENTS (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods identified by method number based on standard methods	
	pH	PEC.MAFB.001 using pH meter based on APHA, 2017, 23rd Ed. Standard Method 4500 H+ B, app. 2000 Rev. 2011 & ASTM D 1293-18	Lab - MAFB
	Soluble Phosphorus	PEC.MAFB.014 by spectrophotometry based on ISO 6878:2004	Lab - MAFB
	Total suspended solids	PEC.MAFB.006 by gravimetry based on APHA, 2017, 23rd Edition, 2540-D equivalent to ISO 11923:1997	Lab - MAFB
Wastewater, effluents	Biochemical Oxygen Demand	PEC.MAFB.010 by manometric monitoring based on APHA, 2017, 23rd Ed., 5210-D, app. 2016	Lab - MAFB
Fresh surface water, groundwater, wastewater, effluents	Chemical Oxygen Demand	PEC.MAFB.009 by sealedtube methodology based on ISO 15705:2002	Lab - MAFB
Potable, fresh surface, groundwaters and Wastewater Effluents	Mercury	PEC.ESPEC.010 based on ISO 15587-2 Annex C ISO12846:2012	Lab - ESPEC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	<u>Chemical Tests</u>	Documented In-House Methods identified by method number based on standard methods	
Potable, fresh surface and groundwaters	Arsenic, Cadmium, Chromium, Lead, Nickel, Selenium	PEC.ESPEC.012 using graphite furnace AAS based on ISO 15586:2003	Lab - ESPEC
	Aluminium, Barium, Boron, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium & Zinc	PEC.ESPEC.014 using ICPOES based on ISO 11885:2007	Lab - ESPEC
	Organochlorine Pesticides: Aldrin Trans-chlordane Chlorpyrifos o,p-DDD p,p-DDD Dieldrin Alpha-endosulfan Beta-endosulfan Endosulfan sulphate Endrin Ethion Beta-HCH Heptachlor Heptachlor epoxide Hexachlorobenzene Lindane (γ-HCH) Malathion Methoxychlor Mirex Trans-nonachlor	PEC.CROMA.001 using GC-ECD and GC-MS based on UNE-EN-ISO 6468:1996	Lab - CROMA

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS and EFFLUENTS	Microbiological Tests Enumeration:		
Potable, including mineral water, fresh surface and groundwater	Total aerobic colony count	PEC.MIC.018 based on Standard methods for the examination of water and waste water APHA, 23rd Edition, Method 9215 A and B (approved 2016)	Lab - MIC & Lab - MICFB
Potable, including mineral water, fresh surface and groundwater and wastewater effluents	Coliforms Thermotolerant coliforms *Escherichia coli* (presumptive)	PEC.MIC.030 incorporating ISO 9308-2:1990 using MPN technique to meet national requirements	Lab - MIC & Lab - MICFB
Potable, including mineral water	Total coliforms *Escherichia coli* (presumptive)	PEC.MIC.016 using Endo Agar based on Standard methods for the examination of water and waste water APHA, 23rd Edition, Method 9222B (approved 2015) using membrane filtration technique	Lab - MIC & Lab - MICFB
Sea water, fresh surface waters, groundwater and effluents	Thermotolerant (faecal) coliforms	PEC.MIC.016 using mFC Agar based on Standard methods for the examination of water and waste water APHA, 23rd Edition, Method 9222D (approved 2015) using membrane filtration technique	Lab - MIC & Lab - MICFB
Potable, including bottled and mineral waters, and groundwater , including boreholes and wells	*Pseudomonas aeruginosa*	PEC.MIC.034 based on Standard methods for the examination of water and waste water APHA, 23rd Edition, Method 9213 E (approved 2007)	Lab - MIC & Lab - MICFB

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATER and EFFLUENTS (cont'd)	Biological toxicity Test	Documented In-House Methods identified by method number based on standard methods	
Fresh surface water, wastewater, effluents	Determination of toxicity using Daphnia magna immobilisation test (ED50) or lethality test (LC)	PEC.PQAR.607 based on EPS1/RM/14 Environmental Protection Series. Environment Canada, Ottawa, 2nd Edition, December 2000	Lab-PQAR
Effluents	Determination of Toxicity using *Pimephales promelas* lethal concentration (LC50) test, or half maximal effect concentration (EC50) test	PEC.PQAR616 based on EPA-821-R-02-012. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition, October 2002	Lab-PQAR
SEDIMENTS	Biological Tests		
River and Estuary Sediments	Biomass determination, identification and enumeration of benthic invertebrates to family level	PEC.MAM.200 based on USA EPA/620/R-95/008, 1995 Environmental Monitoring Assessment programme Laboratory Manual - Volume 1: Biological and Physical Analysis	Lab - PQAR

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS and SEDIMENTS	<u>Sampling</u>	Documented In-House Methods identified by method number based on standard methods	
Surface estuary and fresh waters	Collection of samples for biological examination (plankton)	PRD.MUA.007 qualitative and quantitative using a variety of sampling equipment as described in ITR.MUA 200 and 201 based on Standard Methods for the Examination of Water and Wastewater - APHA 23rd Edition, 2017, Part 10200	Site (Environmental - MUA)
Surface estuary and fresh waters	Collection of samples for microbiological analysis	ITR.MIC.061 and ITR.MUA.205 based on Standard Methods for the Examination of Water and Wastewater - APHA Part 9060A 2006	Site (Environmental - MUA)
Surface estuary and fresh waters	Collection of samples for physicochemical analysis	PRD.MUA.007 based on ISO 5667-6	Site (Environmental MUA)
River and Estuary Sediments	Collection of grab samples for physicochemical analysis	PRD.MUA.005 based on ASTM E1391-03 (Reapproved 2014)	Site (Environmental – MUA)
	Collection of grab samples for biological examination, benthic invertebrates	PRD.MUA.005 based on ASTM E1391-03 (Reapproved 2014)	Site (Environmental - MUA)
Surface estuary and fresh waters	In-situ determination of temperature, pH, conductivity & dissolved oxygen (DO)	PEC.MUA.300 using multiparameter probes	Site (Environmental - MUA)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
ATMOSPHERIC POLLUTANTS AND EFFLUENTS – STACK GAS SAMPLES	<u>Physical Testing</u>	National, International and other recognised standards using documented In-House work instructions	
Filter Papers and Rinse Solutions	Weighing of Particulate Matter	PEC.MAM.CAE.004 based on EN 13284-1:2017	Lab - MAM
Testing of Stack Emissions to Atmosphere	<u>Sampling</u> (with subsequent analysis by an ISO/IEC 17025 accredited laboratory)	National, International and other recognised standards using documented In-House work instructions to meet the requirements of EN 15259:2007	
	Total Particulate Matter	PEC.MAM.CAE.004 based on EN 13284-1:2017	Site - MAM
	<u>Sampling and On-Line Analysis</u>		
	Pressure, Temperature and Velocity (Point Velocity Method to support measurement of total particulate matter)	PEC.MAM.CAE.004 based on PD CEN/TR 17078:2017 / EN 16911-1:2013	Site - MAM