Accreditation No: LAB 002

Awarded to

PCSIR LABORATORIES COMPLEX, KARACHI, PAKISTAN.

The scope of accreditation is in accordance with the standard specifications outlined in the following page(s) of this document. The accredited scope shall be visible and legible in areas such as customer service, sample-receiving section etc and shall not mislead its users.

The accreditation was first time granted on **31-01-2004** by Pakistan National Accreditation Council.

The laboratory complies with the requirements of **ISO/IEC 17025:2017.**

The accreditation requires regular surveillance, and is valid until **01-10-2027.**

The decision of accreditation made by Pakistan National Accreditation Council implies that the organization has been found to fulfill the requirements for accreditation within the scope.

The organization however, itself is responsible for the results of performed measurements/tests.

PAKISTAN NATIONAL ACCREDITATION COUNCIL

30-06-2025
Date

_____SD_____
Director General

Testing Laboratory.

Accreditation Scope of PCSIR laboratories complex, Shahrah Dr. Saleem-uz-Zaman Road, off University Road, Karachi-75280, Pakistan

Permanent laboratory premises X

Laboratory Name: **Chemical-Environment**

Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Legumes, beans and seeds	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023), 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 980.19
Fruit	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023), 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 980.19

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Oil and fats	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 935.51, 979.17, 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09
Baked goods/ Biscuit/cakes	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 990.05, 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09
Coffee, tea/Herbal tea	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 971.20, 984.27, 6.999.11, 2013.06, 7.930.34, 930.34, 939.09

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Milk , infant formula, and dairy products	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 973.35, 974.13, 979.17, 985.35, 971.21, 980.19, 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09
Eggs	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023), 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09
Vegetables	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023), 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 980.19

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Fish and Sea food	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 977. 15, 972.23, 980.19, 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09
Plant and pet foods	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 975.03, 985.01, 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09
Sugar, syrup and enteral products	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 997.15, 985.35, 984.27,985.16

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Raw and processed foods	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
Nuts	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
Culinary and herbs	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Food additives	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
Food supplements	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
Taboo food and drink	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Cooked and roasted foods	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
Seasoning food	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
Staple foods/ cereals (wheat, barley, rye, maize, or rice, or starchy tubers or root vegetables such as potatoes, yams, taro, and cassava)	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16

Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Prepared foods (Appetizers, Condiments/ preserved foods, Confectionery, Convenience foods, Desserts, Dips, pastes and spreads, Dried foods, Fast food, Fermented foods, . Noodles, Pies, Salads, Sandwiches, Sauces, Snack foods, Soups, Stews)	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
Flesh meat and Processed meat	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Savory/Sauces	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
White roots and tubers (Dark green leafy vegetables)	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16
Spices, Condiments, Beverages	Food Testing	1. Aluminum 2. Arsenic 3. Cadmium 4. Calcium 5. Chromium 6. Copper 7. Iron 8. Lead 9. Mercury 10. Manganese 11. Selenium 12. Tin 13. Zinc	AOAC Official Method 22nd Edition (2023) 984.27, 999.11, 2013.06, 930.34, 930.34, 939.09, 985.16

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Sea food spices, vegetable, fruits, cereals, Beverages, condiments, and food supplement	Environmental Testing	Sodium	AOAC Official Method 22nd Edition (2023) 985.35, 984.27
Sea food spices, vegetable, fruits, cereals, Beverages, condiments, and food supplement	Environmental Testing	Potassium	AOAC Official Method 22nd Edition (2023) 985.35, 984.27
Drinking water	Environmental Testing	Electrical Conductance	Standard Method for the Examination of Water and Waste Water 24th Edition, American Public Health Association, 2023
Drinking water	Environmental Testing	Total Dissolved Solids	
Drinking water	Environmental Testing	Hardness	
Drinking water	Environmental Testing	Alkalinity	
Waste Water	Environmental Testing	Total Dissolved Solids	In-House Lab developed Method (KL/CES/WW/NSM-04)
Municipal Wastewater/ Industrial Liquid Effluent	Environmental Testing	Chemical Oxygen Demand	5220-B: Standard Method for the Examination of Water and Waste Water 24th Edition, American Public Health Association, 2023
Municipal Wastewater/ Industrial Liquid Effluent	Environmental Testing	Biological Oxygen Demand	5210-B: Standard Method for the Examination of Water and Waste Water 24th Edition, American Public Health Association, 2023

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Municipal Wastewater/ Industrial Liquid Effluent	Environmental Testing	pH	4500-H-B: Standard Method for the Examination of Water and Waste Water 24th Edition, American Public Health Association, 2023
Food item (sea food, milk and dairy products, fruits, vegetables, beverages, bakery items, condiments, food supplements etc.)	Environmental Testing	Phosphate / phosphorus	AOAC Official Method 22nd Edition (2023) 991.27, 995.11
Food	Environmental testing	Pesticide residue: 1. Tecnazene 2. HCB 3. Quintozene 4. BHC-Alpha 5. BHC-beta 6. BHC-gama 7. Heptachlor 8. Aldrin 9. Heptachlor exo-epoxide 10. Heptachlor endo-epoxide 11. Transchlordane 12. cis-chlordane 13. Dieldrin 14. Alpha endosulfan 15. Beta endosulfan 16. Endrin 17. Endrin Aldehyde 18. DDE (o,p-DDE + p,p-DDE)	AOAC Official Method 2007.01 Pesticide Residues in Foods by Acetonitrile Extraction and Partitioning with Magnesium Sulfate (AOAC Official Method 22nd Edition, 2023).

		19. DDD (o,p-DDD + p,p-DDD) 20. Endosulfan sulfate 21. DDT (o,p-DDT + p,p-DDT) 22. Methoxychlor 23. Bifenthrin 24. Fipronil 25. Lambda cyhalothrin 26. Trifloxystrobin 27. Chlorpyrifos 28. Difenconazole 29. Tebuconazole 30. Cypermethrin 31. Permethrin 32. Deltamethrin 33. Chlorpyrifos-methyl 34. Diazinon 35. Melathion 36. Dichlorvos 37. Primiphos-methyl 38. Fenitrothion 39. Methamidophos	
Food	Environmental testing	1. Tecnazene 2. HCB 3. Quintozene 4. BHC-Alpha 5. BHC-beta 6. BHC-gama 7. Heptachlor 8. Aldrin 9. Heptachlor exo-epoxide 10. Heptachlor endo-epoxide 11. Transchlordane 12. cis-chlordane 13. Dieldrin 14. Alpha endosulfan 15. Beta endosulfan 16. Endrin	AOAC Official Methods 970.52. Organochlorine and organophosphorus pesticide residues (AOAC Official Method 22nd Edition, 2023)

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		17. Endrin Aldehyde 18. DDE (o,p-DDE + p,p-DDE) 19. DDD (o,p-DDD + p,p-DDD) 20. Endosulfan sulfate 21. DDT (o,p-DDT + p,p-DDT) 22. Methoxychlor 23. Bifenthrin 24. Fipronil 25. Lambda cyhalothrin 26. Trifloxystrobin 27. Chlorpyrifos 28. Difenconazole 29. Tebuconazole 30. Cypermethrin 31. Permethrin 32. Deltamethrin 33. Chlorpyrifos-methyl 34. Diazinon 35. Melathion 36. Dichlorvos 37. Primiphos-methyl 38. Fenitrothion 39. Methamidophos	
Agriculture products	Environmental testing	Pesticide residues: 1. Bifenthrin 2. Cypermethrin 3. Permethrin 4. Deltamethrin 5. Fenpropathrin 6. Fenvelerate	AOAC official method 998.01, Synthetic Pyrithroids in Agriculture products. (AOAC Official Method 22nd Edition, 2023)
Fish	Environmental Testing	PAH as Naphthalene, Acenaphthylen, Acenaphthene, Fluorene, Phenanthrene	Gas Chromatography (Validated) Pena, A.,Morales, J., et al. (2003) Optimization of clean-up procedures by column chromatography and solid phase extraction for the PAH determination by GC: Application to fish. Revistar International de Contamination Ambiental, 19(12). 13-23.

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Fish	Environmental Testing	PCBs: 1. PCB-28 2. PCB-52 3. PCB-101 4. PCB-138 5. PCB-153 6. PCB-180	Gas Chromatography EPA-1668-Revision-A for PCBs in Fisheries
Fish	Environmental Testing	Dibenzo dioxin	Gas Chromatography Modified EPA- 8290

Laboratory Name: **Textile**

Materials/ Products Tested	Testing Field (e.g. Environmental Testing or Mechanical Testing)	Types of Test/ Properties Measured	Reference to Standardized Method (e. g. ISO-14577-1: 2003)/ Internal Method Reference
Fabric	Textile	Colour fastness to water	ISO 105 EO1
Fabric	Textile	Colour fastness to sea water	ISO 105 EO2
Fabric	Textile	Colour Fastness to Rubbing organic solvent	ISO 105 DO2
Fabric	Textile	Angle of Crease Wrinkle Recovery Tester	AATCC 66–2003
Fabric	Textile	Tear Strength	ISO-13937-2
Fabric	Textile	Blend Ratio (Polyester / Cotton)	ISO1833, Section 10 (Mixture of Cellulose & polyester)
Fabric	Textile	Ends & Picks	ISO-7211-2
Fabric	Textile	Abrasion (Martindale)	ISO-12947-2
Fabric	Textile	Spray Rating	AATCC-22
Fabric	Textile	Count of yarn	ISO-7211-5

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Materials/ Products Tested	Testing Field (e.g. Environmental Testing or Mechanical Testing)	Types of Test/ Properties Measured	Reference to Standardized Method (e. g. ISO-14577-1: 2003)/ Internal Method Reference
Fabric	Textile	Tensile Strength	ISO-13934-1
Fabric	Textile	Weight of fabric	ISO-3801

Chemical Testing (ACRC)

Edible Oils	Chemical Testing	Free Fatty acids	Titrimetric Method
Edible Oils	Chemical Testing	Moisture and Volatiles	Gravimetric Method

Laboratory Name: **Chemical-Pharmaceutical**

Materials/ Products Tested	Testing Field (e.g. Environmental Testing or Mechanical Testing)	Types of Test/ Properties Measured	Reference to Standardized Method (e. g. ISO-14577-1: 2003)/ Internal Method Reference
Edible Oil and Products Containing Edible Oil	Food	Erucic Acid	Validated self-developed method KL/PRC/Erucic Acid/03 Gas Chromatograph
Chilli Products containing: 1. Chilli Whole 2. Chilli Crushed 3. Chilli Powder 4. Chilli Sauces 5. Chilli Paste 6. Pickles 7. Food Colors 8. Spices containing Chilli	Food & Spices	Sudan I, II, III and IV	AOAC, 920.208B (2012) UV Visible Spectrophotometer
Canned food, Pickles & dates	Food	Water Activity	AOAC 978.18 (2019) Hygrometer
Non Sterile pharmaceutical Product	Pharmaceutical	Water activity	USP 1112 - 2020

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Materials/ Products Tested	Testing Field (e.g. Environmental Testing or Mechanical Testing)	Types of Test/ Properties Measured	Reference to Standardized Method (e. g. ISO-14577-1: 2003)/ Internal Method Reference
Chilli Products containing: 1. Chilli Whole 2. Chilli Crushed 3. Chilli Powder 4. Chilli Sauces 5. Chilli Paste 6. Chilli Oleoresins 7. Pickles 8. Food Colors 9. Spices containing Chilli	Food & Spices	Para red	HPLC J.Chem.Soc.Pak., 31(1), 151-155, 2009
Herbal Products 1. Tablets 2. Capsules 3. Creams/Lotion 4. Supplements 5. Energizers	Food and Medicine	Cortisone Acetate	BP/TLC (Lab Validated Method) KL/PRC/WI/067
Nutraceutical Product 1. Tablets 2. Capsules 3. Creams/Lotions 4. Supplements 5. Energizers	Food and Medicine	Cortisone Acetate	BP/TLC (Lab Validated Method) KL/PRC/WI/067
Cannabis and related Products 1. Hemp Oil 2. Hemp Extract 3. Hemp Leaves 4. Hemp Flowers 5. Plant Crude Extracts	Cannabis and related Products	Total Cannabidiol (CBD) Content	HPLC-UV (Modified Method) UNODC recommended methods for the identification and analysis of cannabis and cannabis products. (Manual for use by national drug analysis laboratories, New York 2009) KL/PRC/WI/CBD-BM KL/PRC/WI/CBD-OE
Cannabis and related Products 1. Hemp Oil 2. Hemp Extract 3. Hemp Leaves	Cannabis and related Products	Total Δ9-tetrahydrocannabinol (Δ9-THC) Content	HPLC-UV (Modified Method) UNODC recommended methods for the identification and analysis of cannabis and cannabis products.

4. Hemp Flowers 5. Vape/ E- cigarette Flavours 6. Narcotics liquid			(Manual for use by national drug analysis laboratories, New York 2009) KL/PRC/WI/THC-BM KL/PRC/WI/THC-OE

Laboratory Name: **Food Technology and Nutrition Laboratory**

Materials/ Products Tested	Testing Field (e.g. Environmental Testing or Mechanical Testing)	Types of Test/ Properties Measured	Reference to Standardized Method (e. g. ISO-14577-1: 2003)/ Internal Method Reference
Cereal foods	Food testing	Moisture	AOAC 22nd edition (2023) Method No. 925.10 (32.1.03)
Cereal foods	Food testing	Protein	AOAC 22nd edition (2023) Method No. 920.87 (32.1.22)
Cereal foods	Food testing	Fat	AOAC 22nd edition (2023) Method No. 920.39 (4.5.01)
Cereal foods	Food testing	Ash	AOAC 22nd edition (2023) Method No. 923.03 (32.1.05)
Cereal foods	Food testing	Carbohydrates(by difference)/ Nitrogen Free Extract (NFE)	By difference/nitrogen free extract Modern food Analysis by Hart & fisher 1971
Cereal foods	Food testing	Calorific value/ Energy value	By calculation MacCane & Widdowson's The composition of Food by Paul & Southgate 4th ed.1988

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Materials/ Products Tested	Testing Field (e.g. Environmental Testing or Mechanical Testing)	Types of Test/ Properties Measured	Reference to Standardized Method (e. g. ISO-14577-1: 2003)/ Internal Method Reference
Cereal foods	Food testing	Fat	Acid Hydrolysis method AOAC 22nd edition (2023) Method No. 922.06 (32.1.14)
Cereal foods	Food testing	Vitamin C	AOAC 22nd edition (2023) Method No. 967.21 (45.1.14)
Raw/ Processed Food	Food testing	Vitamin A	Pearson's Composition & analysis of Food 9th edition, page 646 Food analysis, by S.Suzanne Neilsen., 4th edition, page 188 The Essential Chromatography and Spectroscopy Catalog. (Agilent Technologies) 2007-2008 edition page 656
Raw/ Processed Food	Food testing	Vitamin C	ASEAN Manual of Food Analysis, 2011. Regional Centre of ASEAN Network of Food Data System, Thailand pp.141-144
Food Products	Food testing	Saturated Fat Mono-unsaturates Poly-unsaturates Total trans fatty acids	J. Anim. Sci., 85: 1511-1521. Gas Chromatography

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Laboratory Name: **Food & Feed Safety Laboratory**

Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Food & Feed Commodities 1. Rice & Rice Protein 2. Wheat 3. Maize or Corn 4. Red Chili (Spices) 5. Guar gum 6. Sesame seed 7. Black and Green Tea 8. Dates 9. Dried Fruits and Edible Nuts 10. Lentils and Pulses 11. Licorice roots (Herbs) 12. Animal Feed (Cattle & Poultry Feed & their ingredients)	Food and Feed Safety; Mycotoxins	Determination of Aflatoxin B_1	Official Methods of Analysis of AOAC International, 22nd Edition (2023) Chapter # 49, AOAC Official Method (Adapted) # 975.36 (49.2.05), 968.22 (49.2.08), 970.43 (49.1.01), 999.07 (49.2.29), 971.22 (49.2.03), 970.44 (49.2.02).
Food & Feed Commodities 1. Rice & Rice Protein 2. Wheat 3. Maize or Corn 4. Red Chili (Spices) 5. Guar gum 6. Sesame seed 7. Black and Green Tea 8. Dates 9. Dried Fruits and Edible Nuts 10. Lentils and Pulses 11. Licorice roots (Herbs) 12. Animal Feed (Cattle & Poultry Feed & their ingredients)	Food and Feed Safety; Mycotoxins	Determination of Aflatoxin B_2	Official Methods of Analysis of AOAC International, 22nd Edition (2023) Chapter # 49, AOAC Official Method (Adapted) # 975.36 (49.2.05), 968.22 (49.2.08), 970.43 (49.1.01), 999.07 (49.2.29), 971.22 (49.2.03), 970.44 (49.2.02).

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Food & Feed Commodities 1. Rice & Rice Protein 2. Wheat 3. Maize or Corn 4. Red Chili (Spices) 5. Guar gum 6. Sesame seed 7. Black and Green Tea 8. Dates 9. Dried Fruits and Edible Nuts 10. Lentils and Pulses 11. Licorice Roots (Herbs) 12. Animal Feed (Cattle & Poultry Feed & their ingredients)	Food and Feed Safety; Mycotoxins	Determination of Aflatoxin G_1	Official Methods of Analysis of AOAC International, 22nd Edition (2023) Chapter # 49, AOAC Official Method (Adapted) # 975.36 (49.2.05), 968.22 (49.2.08), 970.43 (49.1.01), 999.07 (49.2.29), 971.22 (49.2.03), 970.44 (49.2.02).
Food & Feed Commodities 1. Rice & Rice Protein 2. Wheat 3. Maize or Corn 4. Red Chili (Spices) 5. Guar gum 6. Sesame seed 7. Black and Green Tea 8. Dates 9. Dried Fruits and Edible Nuts 10. Lentils and Pulses 11. Licorice Roots (Herbs) 12. Animal Feed (Cattle & Poultry Feed & their ingredients)	Food and Feed Safety; Mycotoxins	Determination of Aflatoxin G_2	Official Methods of Analysis of AOAC International, 22nd Edition (2023) Chapter # 49, AOAC Official Method (Adapted) # 975.36 (49.2.05), 968.22 (49.2.08), 970.43 (49.1.01), 999.07 (49.2.29), 971.22 (49.2.03), 970.44 (49.2.02).

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Food & Feed Commodities 1. Rice & Rice Protein 2. Wheat 3. Maize or Corn 4. Red Chili (Spices) 5. Guar gum 6. Sesame seed 7. Black and Green Tea 8. Dates 9. Dried Fruits and Edible Nuts 10. Lentils and Pulses 11. Licorice roots (Herbs) 12. Animal Feed (Cattle & Poultry Feed & their ingredients)	Food and Feed Safety; Mycotoxins	Determination of Total Aflatoxins	Official Methods of Analysis of AOAC International, 22nd Edition (2023) Chapter # 49, AOAC Official Method (Adapted) # 975.36 (49.2.05), 968.22 (49.2.08), 970.43 (49.1.01), 999.07 (49.2.29), 971.22 (49.2.03), 970.44 (49.2.02).
Milk and Dairy Products 1. Liquid & Dried Milk 2. Butter 3. Cheese	Food and Feed Safety; Mycotoxins	Determination of Aflatoxin M_1	Official Methods of Analysis of AOAC International, 22nd Edition (2023) Chapter # 49, AOAC Official Method (Adapted) # 980.21 (49.3.02), 974.17 (49.3.01), 970.43 (49.1.01), 978.15 (49.2.21), 970.44 (49.2.02), 968.22 (49.2.08), 2000.08 (49.3.07)
Food & Feed Commodities 1. Rice 2. Wheat 3. Maize or Corn 4. Raisins 5. Licorice roots 6. Animal Feed (Cattle & Poultry Feed etc.)	Food and Feed Safety; Mycotoxins	Determination of Ochratoxin 'A'	Official Methods of Analysis of AOAC International, 22nd Edition (2023) Chapter # 49, AOAC Official Method (Adapted) # 973.37 (49.6.01), 2000.09 (49.6.02A).

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Laboratory Name: **Microbiology**

Materials/ Products Tested	Testing Field (e.g. Environmental Testing or Mechanical Testing)	Types of Test/ Properties Measured	Reference to Standardized Method (e. g. ISO-14577-1: 2003)/ Internal Method Reference
Food **1.**Milk & Milk products. **2.** Cereal and Cereal based foods. **3.** Meat, Fish/Seafood, Poultry, Eggs and their products. **4.** Vegetables, spices, herb & their products. **5.** Fruits & Fruit products. **6.** Confectionary items. **7.** Guar gum, guar splits.	Food Microbiology	Aerobic Plate Count	Bacteriological Analytical Manual, Online USFDA, Chapter # 03 (January 2001), (By Pour Plate method)
Food **1.**Milk & Milk products. **2.** Cereal and Cereal based foods. **3.** Meat, Fish/Seafood, Poultry, Eggs and their products. **4.** Vegetables, spices, herb & their products. **5.** Fruits & Fruit products. **6.** Confectionary items. **7.** Guar gum, guar splits.	Food Microbiology	Total Coliforms	Bacteriological Analytical Manual, Online USFDA, Chapter # 04 (Oct, 2020), (By MPN Multiple tube method)
Food **1.**Milk& Milk products. **2.** Cereal and Cereal based foods. **3.** Meat, Fish/Seafood, Poultry, Eggs and their products. **4.** Vegetables, spices, herb & their products. **5.** Fruits & Fruit products. **6.** Confectionary items. **7.** Guar gum, guar splits.	Food Microbiology	Faecal Coliforms	Bacteriological Analytical Manual, Online USFDA, Chapter # 04 (Oct, 2020), (MPN Multiple tube method)

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Food **1.**Milk& Milk products. **2.** Cereal and Cereal based foods. **3.** Meat, Fish/Seafood, Poultry, Eggs and their products. **4.** Vegetables, spices, herb & their products. **5.** Fruits & Fruit products. **6.** Confectionary items. **7.** Guar gum, guar splits.	Food Microbiology	Mould & Yeast Count	Bacteriological Analytical Manual, Online USFDA, Chapter # 18 (April 2001), (Spread plate/pour plate method)
Food **1.**Milk& Milk products. **2.** Cereal and Cereal based foods. **3.** Meat, Fish/Seafood, Poultry, Eggs and their products. **4.** Vegetables, spices, herb & their products. **5.** Fruits & Fruit products. **6.** Confectionary items. **7.** Guar gum, guar splits.	Food Microbiology	*Salmonella* Detection	Bacteriological Analytical Manual, Online USFDA, Chapter # 05 (May 2024), (Selective enrichment method)
Food **1.**Milk& Milk products. **2.** Cereal and Cereal based foods. **3.** Meat, Fish/Seafood, Poultry, Eggs and their products. **4.** Vegetables, spices, herb & their products. **5.** Fruits & Fruit products. **6.** Confectionary items. **7.** Guar gum, guar splits.	Food Microbiology	*Staphylococcus aureus* Enumeration	Bacteriological Analytical Manual, Online USFDA, Chapter # 12 (March 2016), (Spread plate method)

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Materials /Products tested	Testing field(e.g. environmental testing or mechanical testing	Types of test/properties measured	Reference to standardized method (e.g. ISO 14577-1:2003)/Internal method reference
Food **1.**Milk& Milk products. **2.** Cereal and Cereal based foods. **3.** Meat, Fish/Seafood, Poultry, Eggs and their products. **4.** Vegetables, spices, herb & their products. **5.** Fruits & Fruit products. **6.** Confectionary items. **7.** Guar gum, guar splits.	Food Microbiology	*E.coli* in food	Bacteriological Analytical Manual, Online USFDA, Chapter # 04 (Oct, 2020), (MPN Multiple tube method)
Drinking Water	Water Microbiology	Heterotrophic Plate Count	Standard Method for the examination of water & wastewater, 24th Edition 2023, (Pour plate method).
Drinking Water	Water Microbiology	Total Coliforms Count	-ISO-9308-1, Part 1: Membrane filtration Method 2014, (Membrane filtration Method) -ISO-9308-2, Part 2: Multiple Tube Method 1st Edition, 1990, (MPN Multiple tube method) -ISO-9308-2, Part 2: MPN Method 2nd Edition, 2012, (IDEXX)
Drinking Water	Water Microbiology	Faecal Coliforms Count	-ISO-9308-1, Part 1: Membrane filtration Method 2014, (Membrane filtration Method) -ISO-9308-2, Part 2: Multiple Tube Method 1st Edition, 1990, (MPN Multiple tube method)
Drinking Water	Water Microbiology	*E. coli* in Water	-ISO-9308-1, Part 1: Membrane filtration Method 2014, (Membrane filtration Method) -ISO-9308-2, Part 2: Multiple Tube Method 1st Edition, 1990, (MPN Multiple tube method) -ISO-9308-2, Part 2: MPN Method 2nd Edition, 2012, (IDEXX)

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Calibration Laboratory.

Permanent laboratory premises X

Field of measurement: MASS METROLOGY			
Measured quantity	**Range**	***Expanded Uncertainty (±)**	**Technique, Reference Standard, Equipment**
Balance/Weighing Machine **	2.0mgto220g	0.020mg –2.0 mg	Ultra Class Masses(Equivalent To E2 Class Masses), ASTM 1 Class Masses(EquivalentToF1 Class Masses) **KL/MSRC/Cal-M/M-01**
	2.0mgto610g	0.020mg –10.0 mg	Ultra Class Masses(Equivalent To E2 Class Masses), ASTM 1Class Masses(EquivalentToF1 Class Masses) **KL/MSRC/Cal-M/M-01**
	2.0mgto6.1 kg	0.20mg –50.0 mg	Ultra Class Masses(Equivalent To E2 Class Masses), ASTM 1 Class Masses(EquivalentToF1 Class Masses) **KL/MSRC/Cal-M/M-01**
	100mg to20kg	0.010g– 5.0g	Ultra Class Masses(Equivalent To E2 Class Masses), ASTM 1 Class Masses(EquivalentToF1 Class Masses) **KL/MSRC/Cal-M/M-01**
Masses/Weights	10mgto200g	0.10mg-0.2g	Ultra Class Masses (Equivalent To E2 Class Masses), ASTM 1 Class Masses(Equivalent To F1 Class Masses) and Analytical Balance, Radwag XA210.5Y **KL/MSRC/Cal-M/M-02**

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Measured quantity	Range	*Expanded Uncertainty (±)	Technique, Reference Standard, Equipment
Masses/Weights	500 gto 5 kg	1.0mg-0.3mg	Ultra Class Masses (Equivalent To E2 Class Masses), ASTM 1 Class Masses(EquivalentToF1 Class Masses) and Mass Comparator, Mettler Toledo XP 5003, **KL/MSRC/Cal-M/M-02**
Masses/Weights	10kgto 20kg	2.0mg-0.05kg	Ultra Class Masses(Equivalent To E2 Class Masses), ASTM 1 Class Masses(EquivalentToF1 Class Masses)Mass Comparator Mettler Toledo KA 30-3/P and Top Loading Balance, ANDGP-40K, **KL/MSRC/Cal-M/M-02**
Field of measurement: THERMAL METROLOGY			
Liquid in Glass Thermometer	0ºCto200ºC 300ºC to400 ºC	0.20ºC– 0.70ºC 0.70ºC– 0.90ºC	Digital Thermometer DIGI Sense Temperature Controller, with (K Type Temperature Probe)and Dry Block Calibrators ISOTECH 650B **KL/MSRC/Cal/T-01, KL/MSRC/Cal-M/T-01**
Dial Gauge Thermometer(**)	0ºCto200 ºC 300ºC to400 ºC	0.20ºC– 0.70ºC 0.70ºC– 0.90ºC	Digital Thermometer, DIGI Sense Temperature Controller with (K Type Temperature Probe)and Dry Block Calibrators ISOTECH 650B **KL/MSRC/Cal/T-01, KL/MSRC/Cal-M/T-01**
Oven(**)	50ºC to200 ºC	0.20ºC– 0.70ºC	Digital Thermometer, DIGI Sense Temperature Controller with (K Type Temperature Probe) **KL/MSRC/Cal-M/T-01**

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Measured quantity	Range	*Expanded Uncertainty (±)	Technique, Reference Standard, Equipment
Dry Block Calibrator	50ºC to200 ºC 300ºC to400 ºC 400ºC to500 ºC	0.20ºC– 0.70ºC 0.70ºC– 0.90ºC 0.90ºC – 1.1ºC	Digital Thermometer, DIGI Sense Temperature Controller with (K Type Temperature Probe) **KL/MSRC/Cal-M/T-03**
Digital Thermometer with T/K/S Type thermocouple, PRT,PT 100	0ºC to200 ºC 300ºC to400 ºC 400ºC to700 ºC 800ºC to1000 ºC	0.20ºC– 0.70ºC 0.70ºC– 0.90ºC 0.90ºC– 1.1ºC 1.1ºC– 1.6ºC	Digital Thermometer, DIGI Sense Temperature Controller with (K Type Temperature Probe)and Dry Block Calibrators ISOTECH 650B **KL/MSRC/Cal/T-01** **KL/MSRC/Cal-M/T-03**
Furnace (**)	50ºC to200 ºC 300ºC to400 ºC 400ºC to700 ºC 800ºC to1000ºC	0.20ºC– 0.70ºC 0.70ºC– 0.90ºC 0.90ºC– 1.1ºC 1.1ºC– 1.6ºC	Digital Thermometer, DIGI Sense Temperature Controller with (K Type Temperature Probe) **KL/MSRC/Cal-M/T-01**
Temperature indicators (**) (Dryer/ Lander-o meter, Hygrometer, Refrigerator, Bath, Wascator, Incubator, Washer)	0ºC to100 ºC	0.20ºC– 0.70ºC	Digital Thermometer, DIGI Sense Temperature Controller with (K Type Temperature Probe), Humidity Chamber and Dry Block Calibrators ISOTECH 650B **KL/MSRC/Cal-M/T-02** **KL/MSRC/Cal-M/T-03**
Field of measurement: DIMENSION METROLOGY (LENGTH)			
Micrometer(external)	0.01 mm to100 mm	0.50 µm– 50.0 µm	GaugeBlockSetGrade0and1 **KL/MSRC/Cal-M/D-01**
Calliper (external, internal and depth)	0.01 mm to300 mm	0.50 µm – 50.0µm	GaugeBlockSetGrade0and1 **KL/MSRC/Cal-M/D-01** Dial Indicator Calibrator
Dial Indicator	0.01 mm to 25mm	2.0 µm – 50.0µm	DigitalCaliper300and600mm **KL/MSRC/Cal-M/D-03**

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Measured quantity	Range	*Expanded Uncertainty (±)	Technique, Reference Standard, Equipment
Measuring scale, measuring tape, templates, (length interval marked on equipment **)	0.01 mm to 1000 mm	0.20 mm– 0.50 mm	Digital Caliper 300/600 mm **KL/MSRC/Cal-M/D-02**
Field of measurement: PRESSURE METROLOGY			
Pressure Gauges Transmitters and Recorders	100psito5000psi (Hydraulic)	0.010 %-0.030 %of reading 0.030of full-scale deflection	Deadweight Tester Pressure Calibrator **KL/MSRC/Cal-M/P-01** **KL/MSRC/Cal-M/P-02**
Pressure Gauges Transmitters and recorders	100psi to2000psi (Pneumatic)	0.030 to 0.050 %(of Full scale deflection)	Pressure Calibrator **KL/MSRC/Cal-M/P-02**
Field of measurement: ELECTRICAL METROLOGY			
DC Voltage (Source &measurement)	1mV-300 mV 1V-10V 10V-300V 300V-1000V	0.010mV-0.020 mV 0.050 mV– 0.090 mV 0.090 mV– 5.0 mV 5.0 mV– 0.3 V	Universal Calibration System Model: 9100 Keithley Multimeter Model: 2002 DMM/Reference Multimeter Agilent Multimeter Model: 344401 **KL/MSRC/CAL-M/E-01** **KL/MSRC/CAL-M/E-02** **Eurametcg-15**
ACVoltage@50Hz (Source &measurement)	1mV-300 mV 1V-10V 10V-300V 300V-1000V	0.040mV-0.70 mV 0.90 mV– 7.0 mV 7.0 mV– 60.0 mV 0.060 V– 0.30 V	
Resistance (Source &measurement)	1Ω-100Ω 1KΩ-100kΩ 1MΩ-10MΩ	8.0 mΩ– 20.0 mΩ 0.10 Ω– 3.0 Ω 0.10 kΩ– 9.0 kΩ	

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Measured quantity	Range	*Expanded Uncertainty (±)	Technique, Reference Standard, Equipment
Field of measurement: TIME METROLOGY			
Stop Watch/ Timers**	30 s -30 min	0.20s – 0.48 s	Digital Stopwatch(Q &Q) **KL/MSRC/CAL-M/TF-01**
Field of measurement: RPM MEASUREMENT			
Tachometers/RPM Measurements (**) (Source &measurement)	50rpm-40000 rpm	0.10 rpm to 2.0 rpm	Tachometer, Model:TM-5010 Signal Generator with Photo tachometer Calibrator Circuit Model: DD-S271 Fluke **KL/MSRC/CAL-M/TF-02**
Field of measurement: VOLUME METROLOGY			
Pipette	1mLto 50mL	10.0 µL–30.0µL	Analytical Balance Model: GX 6100 Analytical balance Model: ME-414 ASTM E542 **KL/MSRC/Cal-M/V-001**
Burette	1mLto 100mL	10.0 µL–50.0µL	
Measuring Cylinder	5 mLto2000mL	50.0 µL–5.80mL	
Measuring Beakers	25 mLto1000mL	0.20 mL–6.0mL	
Volumetric Flask	1 mLto2000mL	10.0 µL–0.36mL	
Pycnometer	10 mL25 mL/50mL	2.0 µL–20.0µL	
Density Bottle	50mL100mL/250mL	5.0 µL–50.0µL	

* **Expanded Uncertainty:**

- Expanded Uncertainty is the measurement uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of k = 2. This measurement uncertainty is a value for which the laboratory has been accredited using the procedure that was the subject of assessment. In certificates issued under its accreditation scope an accredited laboratory is not permitted to quote an uncertainty that is smaller than the published uncertainty for respective ranges as given above.

** On Site Accreditation (as well)

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