

Laboratory National Agro Foundation - Laboratory Services Division, Research & Development Centre, Anna University Taramani Campus, CSIR Road, Taramani, Chennai, Tamil Nadu

Accreditation Standard ISO/IEC 17025: 2005

Discipline Chemical Testing **Issue Date** 08.12.2016

Certificate Number T-3228 **Valid Until** 07.12.2018

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S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. POLLUTION AND ENVIRONMENT				
1.	Soil (Agriculture/ polluted/ Non polluted)	pH	IS 2720 (Part 26): 1982 (RA 2002) / FAO UN (2008)	2 to 12
		Electrical Conductivity	IS 14767: 2000 / FAO UN (2008)	0.1 mS/cm to 200 mS/cm
		Organic Matter	IS 2720 (Part 22): 1972 (RA 2001)	0.05 % to 50 %
		Organic Carbon	IS 2720 (Part 22): 1972 (RA 2001)	0.025 % to 25 %
		Nitrate Nitrogen	FAO UN (2008)	0.1 mg/kg to 1000 mg/kg
		Available Sulfur	Lab SOP No. NAF/LM/STL/TP/001 based on FDCO Methods of Analysis 2009	0.1 mg/kg to 500 mg/kg
		Available Phosphorous	FAO UN (2008)	0.1 mg/kg to 600 mg/kg
		Exchangeable (Available) Potassium	FDCO Methods of Analysis 2009	1 mg/kg to 1000 mg/kg
		Exchangeable (Available) Calcium	FDCO Methods of Analysis 2009	1 mg/kg to 8000 mg/kg
		Exchangeable (Available) Magnesium	FDCO Methods of Analysis 2009	1 mg/kg to 1000 mg/kg
		Available Zinc	FAO UN (2008)	0.5 mg/kg to 500 mg/kg
		Available Copper	FAO UN (2008)	0.5 mg/kg to 500 mg/kg
		Available Iron	FAO UN (2008)	0.5 mg/kg to 500 mg/kg
Available Manganese	FAO UN (2008)	0.5 mg/kg to 500 mg/kg		
Available Boron	FAO UN (2008)	0.5 mg/kg to 500 mg/kg		

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II. WATER				
1.	Drinking Water / Irrigation Water / Swimming Pool Water / Water for Processed Food Industry / Raw Water/ Bore Well Water	pH	IS 3025 (Part 11) : 1983 (RA 2002)/ 4500-H+ B, APHA 22 nd Edition 2012	2 to 12
		Electrical Conductivity	IS 3025 (Part 14) : 1984 (RA 2002) / 2510 B, APHA 22 nd Edition 2012	1 uS/cm to 20,000 uS/cm
		Total Dissolved Solids	IS 3025 (Part 16) : 1984 (RA 2009)/ 2540 C, APHA 22 nd Edition 2012	10 mg/L to 20,000 mg/L
		Copper as Cu	IS 3025 (Part 42 / Sec 6) : 1992 (RA 2003)/ 3111B, APHA 22 nd Edition 2012	0.01 mg/L to 100 mg/L
		Iron as Fe	IS 3025 (Part-53/ Sec 7): 2003 / 3111 B APHA 22 nd Edition 2012	0.1 mg/L to 100 mg/L
		Manganese as Mn	3111B, APHA 22 nd Edition 2012	0.01 mg/L to 100 mg/L
		Nitrate as NO3	4500-NO3 B, APHA 22 nd Edition 2012	0.1 mg/L to 100 mg/L
		Zinc as Zn	IS 3025 (Part 49 / Sec 5): 1994 (RA 2003) / 3111 B, APHA 22 nd Edition 2012	0.1 mg/L to 100 mg/L
		Chloride as Cl	IS 3025 (Part 32/Sec 2): 1988 (RA 2003)/ 4500-Cl- B APHA 22 nd Edition 2012	1 mg/L to 10,000 mg/L

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	Drinking Water / Irrigation Water / Swimming Pool Water / Water for Processed Food Industry / Raw Water/ Bore Well Water	Sulphate as SO ₄	IS 3025 (Part 24 / Sec 4): 1986 (RA 2003)/ 4500-SO ₄ , APHA 22 nd Edition 2012	1 mg/L to 1000 mg/L
		Total Alkalinity as CaCO ₃	IS 3025 (Part 23): 1986 (RA 2003)/2320 B, APHA 22 nd Edition 2012	1 mg/L to 1000 mg/L
		Calcium as Ca	IS 3025 (Part 40 / Sec 6): 1991 (RA 2003) / 3111 B, APHA 22 nd Edition 2012	1 mg/L to 1000 mg/L
		Magnesium as Mg	IS 3025 (Part 46/ Sec 7): 1994 (RA 2003) / 3111 B, APHA 22 nd Edition 2012	1 mg/L to 1000 mg/L
		Potassium as K	IS 3025 (Part 45/ Sec 6): 1993 (RA 2003)/ 3111 B, APHA 22 nd Edition 2012	1 mg/L to 1000 mg/L
2.	Drinking Water / Packaged Drinking Water / Packaged Natural Mineral Water / Irrigation Water / Reagent Grade Water / Swimming Pool Water / Water for Processed Food Industry / Raw Water/ Bore Well Water	Sodium as Na	IS 3025 (Part 45/ Sec 6): 1993 (RA 2003)/ 3111 B, APHA 22 nd Edition 2012	1 mg/L to 4000 mg/L
		Phosphorus as P	IS 3025 (Part 31/ Sec 4): 1988 (RA 1999)	0.2 mg/L to 100mg/L
		Lead as Pb	IS 3025 (Part 47/ Sec 7) 1994 (RA 2003)/ 3111 B, APHA 22 nd Edition 2012	0.1 mg/L to 100 mg/L
		Nickel as Ni	IS 3025 (Part 54/ Sec 7): 2003/ Annex L of IS 13428:2005/ 3111B, APHA 22 nd Edition 2012	0.1 mg/L to 50.0 mg/L

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	Drinking Water / Packaged	P-Alkalinity as CaCO ₃	IS 3025 (part 23) : 1986 (RA 2003)/ 2320 B, APHA 22 nd Edition 2012	1 mg/L to 50 mg/L
	Drinking Water / Packaged Natural Mineral Water / Irrigation Water / Reagent Grade Water / Swimming Pool Water / Water for Processed Food Industry / Raw Water/ Bore Well Water	Carbonate as CaCO ₃	IS 3025 (Part 51): 2001/ IS:3025 (Part-23) 1986 (RA 2003)	0.01 mg/L to 1000 mg/L
		Bicarbonate as CaCO ₃	IS 3025 (Part 51) : 2001/ IS 3025 (Part-23) 1986 (RA 2003)	0.1 mg/L to 1000 mg/L
		Sodium Adsorption Ratio	IS 11624 : 1986 (RA 2001) [By Calculation]	1 to 100
		Residual Sodium Carbonate	IS 11624:1986 ((RA 2001) [By Calculation]	0.001 m.eq/L to 10 m.eq/L

III. FOOD AND AGRICULTURAL PRODUCTS

1.	Nutritional Parameters (Cereal and Millet Mixes, Sweets and Savories, Spice based Products and Mixes)	Moisture	FSSAI Manual of Methods of Analysis of Foods – S.No.2.0 Cereal and Cereal Products 2016 S.No.14.3 Cereal and Cereal Products 2016 S.No.3.0 Spices and Condiments 2016 S.No.7.2 Sugar and sugar Products DGHS lab manual 4, 2005	0.1 % to 90%
		Total Ash	IS 1155: 1968 (RA 2010)	0.1 % to 20 %
		Extracted Fat	IS 4684: 1975 (RA 2010)	0.1 % to 60 %
		Total Fat	AOAC, Ch-32, 922-06, 19 th Edition	0.1 % to 60 %

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	Nutritional Parameters (Cereal and Millet Mixes, Sweets and Savories, Spice based Products and Mixes)	Protein	FSSAI Manual of Methods of Analysis of Foods – S.No.8.7 Cereal and Cereal Products 2016 IS 4684: 2010	0.1 % to 80 %
		Crude Fiber	IS 10226 (Part I): 2010	0.1 % to 30 %
		Carbohydrate (by difference)	Lab SOP No. NAF/LM/FTL/TP/035	5 % to 90 %
		Energy kcal (by calculation)	Lab SOP No. NAF/LM/FTL/TP/036	10 kcal/100g to 900 kcal/100g
2. Wheat Atta	Moisture	IS 1155: 1968 (RA 2010)	0.5 % to 15 %	
	Total Ash	IS 1155: 1968 (RA 2010)	0.01 % to 10 %	
	Acid Insoluble Ash	IS 1155: 1968 (RA 2010)	0.01 % to 5 %	
	Alcoholic Acidity	IS 1155: 1968 (RA 2010)	0.01 % to 5%	
	Protein	FSSAI Manual of Methods of Analysis of Foods – S.No.8.7 Cereal and Cereal Products 2016 IS 4684: 2010	0.1 % to 20 %	
	Crude Fiber	IS 1155: 1968 (RA 2010)	0.1 % to 12 %	
	Carbohydrate (by difference)	Lab SOP No. NAF/LM/FTL/TP/035	1 % to 80 %	
Energy kcal (by calculation)	Lab SOP No. NAF/LM/FTL/TP/036	20 kcal/100g to 400 kcal/100g		

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3.	Maida	Moisture	IS 1009: 1979 (RA 2010)	0.5 % to 15 %
		Total Ash	IS 1009: 1979 (RA 2010)	0.01 % to 5 %
		Acid Insoluble Ash	IS 1009: 1979 (RA 2010)	0.01 % to 5 %
		Alcoholic Acidity	IS 1009: 1979 (RA 2010))	0.1 % to 5 %
		Crude Fiber	IS 1155: 1968 (RA 2010)	0.1 % to 12 %
		Protein	FSSAI Manual of Methods of Analysis of Foods - S.No.8.7 Cereal and Cereal Products 2016 IS 4684: 2010	0.1 % to 20 %
		Carbohydrate (by difference)	Lab SOP No. NAF/LM/FTL/TP/035	1 % to 70 %
	Energy kcal (by calculation)	Lab SOP No. NAF/LM/FTL/TP/036	20 kcal/100g to 400 kcal/100g	
4.	Spices and Condiments	Moisture	IS 1797: 1985 (RA 2009) S.No: 9.0	0.1 % to 20 %
		Total Ash	IS 1797: 1985 (RA 2009) S.No: 6.0	0.1 % to 10 %
		Acid Insoluble Ash	IS 1797: 1985 (RA 2009) S.No: 8.0	0.01 % to 10 %
		Crude Fiber	IS 1797: 1985 (RA 2009) S.No: 13.0	0.1 % to 30 %
5.	Bakery Products	Moisture	IS 12711: 1989 (RA 2010) S.No: 5	0.1 % to 50 %

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	Bakery Products	Total Ash	IS 12711: 1989 (RA 2010) S.No: 6	0.1 % to 10 %
		Acid Insoluble Ash	IS 12711: 1989 (RA 2010) S.No: 7	0.01% to 5 %
		Total Solids	IS 12711: 1989 (RA 2010) S.No: 8	0.1 % to 95 %
		Fat	IS 12711: 1989 (RA 2010) S.No: 10	0.1 % to 60 %
		Crude Fiber	IS 12711: 1989 (RA 2010) S.No: 13	0.1 % to 10 %
		Alcoholic Acidity	IS 12711: 1989 (RA 2010) S.No: 14	0.1 % to 5 %
		Protein	FSSAI Manual of Methods of Analysis of Foods – S.No.8.7 Cereal and Cereal Products, 2016 IS 4684-2010	0.1 % to 30 %
		Carbohydrate (by difference)	Lab SOP No. NAF/LM/FTL/TP/035	1 % to 80 %
		Energy kcal (by calculation)	Lab SOP No. NAF/LM/FTL/TP/036	20 kcal/100g to 900 kcal/100g
6.	Tea	Moisture	S.No:1.2 Analysis of Beverages, DGHS Manual 2005, Lab Manual 4	0.1 % to 10 %
		Total Ash	S.No:1.3 Analysis of Beverages, DGHS Manual 2005, Lab Manual 4	0.1 % to 10 %

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	Tea	Water soluble Ash	S.No:1.4 Analysis of Beverages, DGHS Manual 2005, Lab Manual 4	0.5% to 95% of Total Ash
		Acid Insoluble Ash	S.No:1.5 Analysis of Beverages, DGHS Manual 2005, Lab Manual 4	0.05 % to 5 %
		Alkalinity of Soluble Ash	S.No:5.7 Analysis of Beverages, DGHS Manual 2005, Lab Manual 4	0.1 % to 5 %
		Crude Fiber	S.No:5.8 Analysis of Beverages, DGHS Manual 2005, Lab Manual 4	0.1 % to 20 %
7.	Milk	Fat	FSSAI Manual of Methods of Analysis of Foods - S.No.1.3.4.2 Milk and Milk Products, 2016	0.1% to 15 %
		Total Solids	FSSAI Manual of Methods of Analysis of Foods – S.No.1.3.3 Milk and Milk Products, 2016	0.1% to 20%
		Solids Not Fat	FSSAI Manual of Methods of Analysis of Foods - S.No.1.3.3 Milk and Milk Products, 2016	0.1% to 15%
8.	Food Grains, Cereals, Pulses and (Whole and ground)	Moisture	FSSAI Manual of Methods of Analysis of Foods - S.No:2.0 Cereal & Cereal Products. 2016	0.5% to 20%
		Total Ash	FSSAI Manual of Methods of Analysis of Foods - S.No:8.2 Cereal & Cereal Products. 2016	0.5% to 10%
		Acid Insoluble Ash	FSSAI Manual of Methods of Analysis of Foods - S.No:8.3 Cereal & Cereal Products. 2016	0.05 % to 5%

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	Food Grains, Cereals, Pulses and (Whole and ground)	Crude Fiber	IS 10226 (Part I): 2010	1% to 20%
		Protein	FSSAI Manual of Methods of Analysis of Foods - S.No:8.7 Cereal & Cereal Products. 2016 IS 4684: 2010	1% to 50%
		Fat	AOAC, Ch-32, 922-06 19 th Edition	1% to 10%
9.	Ready to cook Foods	Moisture	FSSAI Manual of Methods of Analysis of Foods – S.No:2.0 Cereal and Cereal Products 2016 S.No:14.3 Cereal and Cereal Products 2016 S.No:3.0 Spices and Condiments 2016 S.No:7.2 Sugar and sugar Products DGHS lab manual 4, 2005	0.1 % to 90%
		Total Ash	IS 1155: 1968 (RA 2010)	0.1 % to 20 %
		Total Fat	AOAC, Ch-32, 922-06, 19 th Edition IS 4684: 2010	0.1 % to 60 %
		Protein	FSSAI Manual of Methods of Analysis of Foods – S.No:8.7 Cereal and cereal Products 2016 IS 4684: 2010	0.1 % to 80 %
		Carbohydrate (by difference)	Lab SOP No. NAF/LM/FTL/TP/035	5 % to 90 %
		Energy kcal (by calculation)	Lab SOP No. NAF/LM/FTL/TP/036	10 kcal/100g to 900 kcal/100g

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10.	Oils & Fats	Moisture	FSSAI Manual of Methods of Analysis of Foods – S.No:3.0 Oils and Fats 2016	0.01 % to 10 %
		Acid Value	FSSAI Manual of Methods of Analysis of Foods –S.No: 11.0 Oils and Fats 2016	0.1 to 20.0
		FFA	FSSAI Manual of Methods of Analysis of Foods –S.No:11.0 Oils and Fats 2016	0.1 % to 10.0 %
IV. FERTILISER				
1.	Bio-fertiliser, Others (Organic Fertiliser, Organic Manure)	Moisture	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	1 % to 95 %
		pH	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	2 to 12
		Electrical Conductivity	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	1 uS/cm to 20,000 uS/cm
		Organic Carbon	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	0.1 % to 50 %

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	Bio-fertiliser, Others (Organic Fertiliser, Organic Manure)	Total Nitrogen	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	0.1% to 10 %
		Lead	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	5 mg/kg to 2000 mg/kg
		Nickel	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	2 mg/kg to 2000 mg/kg
		Zinc	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	1 mg/kg to 2000 mg/kg
		Copper	Biofertilizers and Organic Fertilizers in The Fertilizer (Control) Order 1985, Schedule IV – Part D	5 mg/kg to 5000 mg/kg

-X-X-X-X-X-X-X-X-X-X-X-X-

NOTE: The Laboratory has demonstrated competence for the stated scope for **WATER**. This however **does not fully cover** the specification requirements of **BIS for the Packaged Drinking Water as per IS 14543 and the Packaged Natural Mineral Water IS 13428**.

K. Soundira Pandian
Convenor

N. Venkateswaran
Program Manager