SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EUROFINS SCIENTIFIC; NUTRITION ANALYSIS CENTER
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CHEMICAL

Valid To: February 28, 2022 Certificate Number: 2927.01

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the laboratory's compliance with ISO/IEC 17025:2017 and the A2LA Food Testing Program Requirements, containing the 2018 *"AOAC International Guidelines for Laboratories Performing Microbiological and Chemical Analyses of Food, Dietary Supplements, and Pharmaceuticals"*), accreditation is granted to this laboratory to perform the following tests on feeds, pet foods, food, dietary supplements, oils, commodities, and spices:

Test Type/Technology:	**Test Method(s):**
Acid Value (or Acid Number)	AOAC 940.28 AOCS Cd 3d-63 Eurofins Method: MET3334
Amino Acids by Acid Hydrolysis (HPLC) - Alanine, Arginine, Aspartic Acid, Glutamic Acid, Glycine, Histidine, Hydroxyproline, Isoleucine, Leucine, Phenylalanine, Proline, Lysine, Serine, Threonine, Tyrosine, Valine	AOAC 982.30 modified Eurofins Method: MET3307
Amino Acids by Alkaline Hydrolysis (HPLC) - Tryptophan	AOAC 988.15 modified Eurofins Method: MET3302
Amino Acids by Performic Acid Oxidation (HPLC) - Cystine, Taurine and Methionine	AOAC 994.12 modified Eurofins Method: MET3306
Ash	AOAC 942.05 AOAC 945.38c (ref. 923.03) Eurofins Method: MET3364
ASTA Color	ASTA 20.1 Eurofins Method: MET16009
Calories from Fat and Saturated Fat	Calculated using the Atwater (4.9.4) formula, as cited in 21CFR101.9(c)(1)(A&B) Eurofins Method: SOP3090
Cholesterol by GC	AOAC 994.10 modified Eurofins Method: MET3353
Choline by High Performance Ion-Exchange Chromatography - Conductivity Detection (HPIC-CD)	AOAC 2012.20 modified Eurofins Method: MET18670

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Test Type/Technology:	**Test Method(s):**
Crude Fat by Acid and/or Alkaline Hydrolysis	AOAC 954.02 AOAC 945.44 AOAC 925.12 AOAC 922.06 AOAC 989.05 AOAC 933.05 AOAC 925.32 AOAC 935.38 AOAC 974.09 AOAC 995.19 AOAC 932.02 AOAC 932.06 AOAC 952.06 AOAC 950.54 Eurofins Method: MET3328
Crude Fat by Solvent Extraction	AOAC 920.39 AOAC 945.16 AOCS Ba 3-38 modified AOCS Ac 3-44 AOCS Aa 4-38 Eurofins Method: MET3373
Crude Fiber	AOCS Ba 6-84 AOAC 962.09 Eurofins Method: MET3363
Crude Fiber by Filter Bag Technique - Acid Detergent Fiber (ADF)	ANKOM ADF for A2000 modified Eurofins Method: MET3366
Crude Fiber by Filter Bag Technique - Neutral Detergent Fiber (NDF)	ANKOM NDF for A2000 modified Eurofins Method: MET3367
Dietary Fiber: Soluble, Insoluble, and Total Fiber	AOAC 991.43 Eurofins Method: MET3402
Elements by ICP-MS: Selenium (Se), Chromium (Cr), and Molybdenum (Mo)	AOAC 2011.19 modified Eurofins Method: MET17445
Elements by ICP-OES: Calcium (Ca), Sodium (Na), Iron (Fe), Phosphorus (P), Potassium (K), Magnesium (Mg), Zinc (Zn), Copper (Cu), and Manganese (Mn)	AOAC 965.17 modified AOAC 927.02 modified Eurofins Method: MET3284 AOAC 984.27 modified AOAC 985.01 modified Eurofins Method: MET3285

Test Type/Technology:	**Test Method(s):**
Elements by ICP-OES: Sulfur	Internal method based on the following publications: T.T. Nham. *Analysis of soil extracts using the Varian 725-ES*, Varian ICP-OES Application Note No. 34. A. R. Jurgensen, J. C. Hart, L. L. Farrow. *Sulfur limits of detection and spectral interference corrections for DWPF sludge matrices by inductively coupled plasma emission spectrometry*, WSRC-TR-2004-00090 Z. A. Grosser, L. J. Davidowski, P. Wee. *The analysis of biodiesel for inorganic contaminants, including sulfur, by ICP-OES*, Application note, PerkinElmer 2009 Eurofins Method: MET3289
Fatty Acids by GC - Fatty Acid Profile Including Total Fat, Unsaturated, Saturated, and Trans Fat	AOAC 996.06 modified AOCS Ce 1j-07 modified AOAC 925.32 Eurofins Method: MET3332
Fatty Acids by GC - Fatty Acid Profile, Non-NLEA	AOCS Ce 2-66 modified AOCS Ce 1b-89 modified Eurofins Method: MET3352, MET3339
Fatty Acids by GC - Marine Oil Fatty Acid Profile (MOFAP)	AOCS Ce 1b-89 modified Eurofins Method: MET3360, MET3339
Fatty Acids by GC - Omega-3 EPA and DHA	GOED Voluntary Monograph Eurofins Method: MET3336
Free Fatty Acids	AOAC 940.28 AOCS Ca 5a-40 Eurofins Method: MET3334
Glucosinolates in Rapeseeds	AOCS AK 1-92 ISO 9167-1.*"Rapeseed – Determination of Glucosinolates Content."* The 10th International Rapeseed Congress, 1999.*"Determination of glucosinolates in rapeseed. Improvement of the official HPLC ISO method (precision and speed)."* Japan Agricultural Research Quarterly, Vol. 31 No. 2, 73-80, 1997. *"Separation and Identification of Desulfoglucosinolates in Japanese Rapeseed by LC/APCI-MS."* Eurofins Method: MET3324

Test Type/Technology:	**Test Method(s):**
Heavy Metals by ICP-MS: Arsenic (As), Cadmium (Cd), Mercury (Hg), and Lead (Pb)	Julshamn et al. *Determination of Arsenic, Cadmium, Mercury, and Lead by Inductively Coupled Plasma Mass Spectrometry in Foods after Pressure Digestion: NMKL Interlaboratory Study*, Journal of AOAC Int., 90, No 3, 2007, modified based on the following publications: Determination of Cadmium and Lead by ICP-MS, Method CLG-TM3.01, USDA Food Safety and Inspection Service, 2006. J. Entwisle. *Determination of Mercury in Microwave Digests of Foodstuffs by ICP-MS*, Application note, Agilent Technologies, 2004. Zbinden, P. Andrey, D. *Determination of Trace Element Contaminants in Food Matrices Using a Robust, Routine Analytical Method for ICP-MS*, Atomic Spectroscopy, Vol. 19 (6), p. 214 – 219. Eurofins Method: MET3292
Iodine Value	AOCS Cd 1d-92 Eurofins Method: MET3333
Moisture and Volatiles by Vacuum Oven	AOAC 920.151 AOAC 925.09 AOAC 925.45 AOAC 926.08 AOAC 927.05 AOAC 934.06 Eurofins Method: MET3409
Moisture by Forced Draft Oven (Loss on Drying)	AOCS Ba 2a-38 AOCS Ac 2-41 AOCS Aa 3-38 AOAC 925.10 AOAC 930.15 AOAC 935.29 AOAC 950.46 AACC 44-15.02 NFTA 2.2.2.5 NFTA Method 2.1.4 Eurofins Method: MET3365
Moisture by Karl Fischer Titration	AOCS Ca 2e-84 Moisture Karl Fischer Reagent Metrohm Water Determination by Karl Fischer Titration (Monograph) – 8.026.5013 – 2006-02 Eurofins Method: MET9062
Moisture by Toluene Distillation	AOAC 925.04 ASTA 2.0 Eurofins Method: MET17933, MET 17940

Test Type/Technology:	**Test Method(s):**
Neutral Oil and Loss	AOCS Ca 9f-57 Eurofins Method: MET17934
p-Anisidine Value	AOCS Cd 18-90 Eurofins Method: MET3344
Peroxide Value	AOCS Cd 8-53 Eurofins Method: MET3341
Protein, Combustion	AOCS Ba 4e-93 AOCS Ba 4f-00 AOAC 992.15 AOAC 990.03 Eurofins Method: MET3362
Protein, Kjeltec	AOAC 2001.11 Eurofins Method: MET3368
Saponification Value	AOCS Cd 3-25 Eurofins Method: MET3340
Scoville Heat Units by UPLC-FLR	AOAC 995.03 modified ASTA 21.3 modified Eurofins Method: MET3311
Steam Volatile Oil	ASTA 5.2 Eurofins Method: MET5895
Sugar Profile (Fructose, Glucose, Sucrose, Maltose, and Lactose) by HPLC-ELSD	AOAC 982.14 modified Nollet, L.M.L. (Ed.) (2000). *Food Analysis by HPLC*. New York, NY: Marcel Dekker, Inc. (Peris-Tortjada, M. (Author) *HPLC Determination of Carbohydrates in Foods* Chapter 7 pg. 287-302) Eurofins Method: MET3319
Total Calories	Calculated using the Atwater (4.9.4) formula, as cited in 21CFR101.9(c)(1)(A&B) or 21CFR101.9(c)(1)(i)(C) Eurofins Method: SOP3090
Total Carbohydrates	Calculated by difference, as cited in 21CFR101.9(c)(6) Eurofins Method: SOP3090
Totox Value	GOED Voluntary Monograph Eurofins Method: SOP3105
Unsaponifiable Matter	AOCS Ca 6a-40 Eurofins Method: MET3359
Vitamin A: Total Vitamin A, β-Carotene, and Retinol by HPLC	AOAC 974.29 modified Eurofins Method: MET3391
Vitamin B1: Thiamin by Fluorescence Detection	AOAC 942.23 modified Eurofins Method: MET3390
Vitamin B2: Riboflavin by Fluorometric Method	AOAC 970.65 modified Eurofins Method: MET3376
Vitamin B3: Niacin by Microbiological Method	AOAC 944.13 modified Eurofins Method: MET3379

Test Type/Technology:	**Test Method(s):**
Vitamin B5: Pantothenic Acid by Microbiological Method	AOAC 945.74 modified Eurofins method: MET3381
Vitamin B6: Pyridoxine by UPLC-FLR	Journal of AOAC International, 88, 30-37, (2005) modified Eurofins Method: MET3395
Vitamin B7: Biotin by Microbiological Method	Biotin, *Methods of Vitamin Assay*, 3rd ed., Interscience Publishers, 1966, chap. 12 Eurofins Method: MET3377
Vitamin B9: Total Folate by Microbiological Method	AOAC 992.05 modified Eurofins Method: MET3389
Vitamin B12: Cobalamin by Microbiological Method	AOAC 952.20 modified Eurofins Method: MET3378
Vitamin C by Fluorescence	AOAC 967.22 modified Eurofins Method: MET3375
Vitamin D by LC-MS/MS: Total Vitamin D, D2 (ergocalciferol), and D3 (cholecalciferol)	Huang et al.: Journal of AOAC International, 2012, Vol. 95, No.2, 1-3 Gilliand & Dowell: Journal of AOAC International, 2012, Vol 95, No.3, 583-588 Huang etc., *Rapid Commun. Mass Spectrom 2014, 28, 2101-2110* Eurofins Method: MET3401
Vitamin E by HPLC: Profile including: Total Vitamin E and Tocopherol Isomers: alpha (α), beta (β), gamma (γ), and delta (δ)	AOAC 971.30 modified Eurofins Method: MET3399
Water Activity	AOAC 978.18 modified Eurofins Method: MET3406

Accredited Laboratory

A2LA has accredited

EUROFINS SCIENTIFIC; NUTRITION ANALYSIS CENTER

Des Moines, IA

for technical competence in the field of

Chemical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of A2LA *R204 – Food and Pharmaceutical Testing Laboratory Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 4th day of March 2020.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2927.01
Valid to February 28, 2022

For the tests to which this accreditation applies, please refer to the laboratory's Chemical Scope of Accreditation.