Pet Food Ingredient Scheme

Dried Kelp

Test Material Code # 202244

Method Summary Report

(Precision Report Follows)

 # Labs Reporting: 80

 # Methods Reported: 274

Issue Date : 12/31/2022

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO ffp Robust SD	Uncertainty (U) - Robust	% RSD - Robust	Average Range (R-bar)	Thompson Horwitz %RSD
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	40	**39**	10.30	0.2425	**10.31**	0.2293	0.0459	2.22%	0.1099	2.82%
001.99	Loss on Drying, Miscellaneous (%)	9	**9**	9.732	1.399	**10.00**	0.8327	0.3469	8.32%	0.1467	2.83%
001.00	Loss on Drying, Vac 95°C 5 hr (%)	3	3	10.46	0.1154	10.46	0.1154	0.0816	1.10%	0.1880	2.81%
001.03	Loss on Drying, Low temp. methods (%)	2	2	10.03	0.0424						
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	67	**66**	6.934	0.2972	**6.949**	0.2507	0.0386	3.61%	0.1700	2.99%
002.01	Protein, Crude, Auto Kjel-Foss (%)	6	**6**	7.081	0.3601	**7.054**	0.3458	0.1764	4.90%	0.0800	2.98%
002.04	Protein, Crude, Copper Catalyst (%)	2	2	6.548	0.6329						
002.05	Protein, Crude, Copper, Boric Acid (%)	2	2	6.875	0.0141						
002.00	Protein, Crude, Crude (%)	1	1	7.500							
002.08	Protein, Crude, Cu/Ti (%)	1	1	6.925							
002.10	Protein, Crude, Block dig/distillation (%)	1	1	6.835							
002.11	Protein, Crude, NIR (%)	1	1	10.76							
003.14	Fat, Crude, Ankom (%)	14	**14**	2.128	0.6650	**1.996**	0.3002	0.1003	15.04%	0.1849	3.60%
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	6	**6**	2.233	0.5393	**2.233**	0.6116	0.3121	27.38%	0.1645	3.54%
003.10	Fat, Crude, Randall, Pet Ether (%)	6	**6**	1.751	0.1273	**1.751**	0.1443	0.0737	8.24%	0.0928	3.68%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	5	4	1.890	0.0794	1.890	0.0794	0.0397	4.20%	0.0553	3.63%
003.99	Fat, Crude, Miscellaneous (%)	4	4	2.531	0.6774	2.531	0.6774	0.3387	26.76%	0.0875	3.48%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	4	3	1.972	0.0916	1.972	0.0916	0.0529	4.65%	0.1210	3.61%
003.06	Fat, Crude, Pet Ether (%)	2	2	3.143	1.849						
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	1	1	1.750							
003.11	Fat, Crude, NIR (%)	1	1	0.9750							
003.12	Fat, Crude, Hexane Ext (%)	1	1	2.030							
004.07	Fiber, Crude, ANKOM (%)	16	**15**	3.557	0.8878	**3.437**	0.6472	0.2089	18.83%	0.3883	3.32%
004.00	Fiber, Crude, Asbestos Free (%)	8	**8**	3.180	0.6078	**3.045**	0.3137	0.1386	10.30%	0.1826	3.38%
004.03	Fiber, Crude, Fritted Glass (%)	3	3	2.957	0.8699	2.957	0.8699	0.5022	29.42%	0.1000	3.40%
004.06	Fiber, Crude, Fibertec (%)	4	3	3.254	1.051	3.254	1.051	0.6069	32.31%	0.3163	3.35%
005.00	Ash, 2h @ 600°C (%)	43	**42**	24.43	2.059	**24.49**	2.135	0.4118	8.72%	0.6311	2.02%
005.05	Ash, 3h @ 550°C (%)	18	**17**	24.25	1.924	**24.53**	1.197	0.3628	4.88%	0.2595	2.02%
005.99	Ash, Miscellaneous (%)	5	5	20.72	1.386	20.72	1.386	0.6200	6.69%	0.3660	2.20%

Test Material Code # 202244 **(Precision Report Follows)** **Issue Date : 12/31/2022**

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005.03	Ash, Microwave furnace (%)	3	3	19.96	0.4739	19.96	0.4739	0.2736	2.37%	0.7167	2.24%
005.11	Ash, NIR (%)	1	1	15.78							
006.00	Total Sugars, As sucrose (%)	2	2	3.058	0.9938						
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	10	**10**	19.45	6.719	**19.44**	7.619	3.012	39.18%	2.227	2.27%
008.02	Fiber, Acid Detergent, Crucible (%)	3	3	20.16	1.977	20.16	1.977	1.142	9.81%	0.6799	2.23%
008.99	Fiber, Acid Detergent, Miscellaneous (%)	2	2	21.24	3.035						
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	9	**9**	27.61	10.18	**27.61**	11.55	4.811	41.83%	2.609	1.90%
009.99	Fiber, Neutral Detergent, Miscellaneous (%)	2	2	27.59	14.20						
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	1	1	18.88							
010.99	Moisture, Miscellaneous (%)	3	3	10.22	0.2697	10.22	0.2697	0.1557	2.64%	0.1600	2.82%
010.03	Moisture, Karl-Fischer (%)	1	1	8.695							
010.11	Moisture, NIR (%)	1	1	12.74							
011.01	Loss on Drying, HT, 135°C 2hr (%)	16	**16**	11.21	0.3317	**11.22**	0.2226	0.0696	1.98%	0.1649	2.78%
011.02	Loss on Drying, HT, 130°C for 2 hours (%)	3	3	11.41	0.2221	11.41	0.2221	0.1282	1.95%	0.1767	2.77%
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	4	3	0.9344	0.3981	0.9344	0.3981			0.4321	4.04%
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	1	1	0.1267							
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	1	1	0.3000							
012.11	Starch, NIR (%)	1	1	0.1550							
012.00	Starch, Polarimetric (Ewers) (%)	5									
013.02	Fat, Acid Pretreat, Mojonnier, Bak Ext (%)	24	**23**	2.522	0.4389	**2.526**	0.4703	0.1226	18.62%	0.1596	3.48%
013.00	Fat, Acid Pretreat, Acid hydrolysis (%)	16	**16**	2.710	0.4548	**2.659**	0.3029	0.0946	11.39%	0.3246	3.45%
013.10	Fat, Acid Pretreat, Soxtec-Acid Hydrolysis (%)	2	2	4.605	2.539						
013.13	Fat, Acid Pretreat, Ankom- Acid Hydrolysis (%)	2	2	3.368	0.3046						
014.01	Fiber, Total Dietary, Enz-Grav (%)	1	1	49.05							
014.99	Fiber, Total Dietary, Miscellaneous (%)	1	1	49.11							
015.41	Aluminum, ICP, Dry ash (ppm)	3	3	136.0	5.758	136.0	5.758	3.324	4.23%	4.986	7.64%
015.43	Aluminum, ICP, Microwave (ppm)	2	2	108.0	57.98						
015.53	Aluminum, ICP-MS, Microwave (ppm)	2	2	181.8	8.079						
017.43	Boron, ICP, Microwave (ppm)	2	2	84.92	2.238						
017.41	Boron, ICP, Dry ash (ppm)	1	1	82.05							
017.53	Boron, ICP-MS, Microwave (ppm)	1	1	85.16							
019.44	Calcium, ICP, Dry ash (%)	25	**24**	1.257	0.1397	**1.241**	0.0616	0.0157	4.97%	0.0709	3.87%
019.43	Calcium, ICP, Microwave (%)	13	**13**	1.294	0.0550	**1.294**	0.0603	0.0209	4.66%	0.0281	3.85%
019.41	Calcium, ICP, Dry ash (%)	8	**8**	1.241	0.1153	**1.251**	0.1062	0.0469	8.49%	0.0462	3.87%
019.53	Calcium, ICP-MS, Microwave (%)	4	4	1.548	0.1862	1.548	0.1862	0.0931	12.03%	0.0297	3.75%
019.31	Calcium, AAS, Dry ash (%)	3	3	1.248	0.0029	1.248	0.0029	0.0017	0.23%	0.0167	3.87%
019.42	Calcium, ICP, Open vessel (%)	3	3	1.374	0.1009	1.374	0.1009	0.0583	7.34%	0.0649	3.81%
019.52	Calcium, ICP-MS, Open vessel (%)	1	1	1.835							
021.43	Cobalt, ICP, Microwave (ppm)	4	4	2.256	0.2271	2.256	0.2271	0.1135	10.07%	0.0087	14.15%
021.41	Cobalt, ICP, Dry ash (ppm)	4	3	1.352	0.2980	1.352	0.2980	0.2107	22.05%	0.0100	15.29%

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021.53	Cobalt, ICP-MS, Microwave (ppm)	2	2	2.185	0.0215						
021.52	Cobalt, ICP-MS, Open vessel (ppm)	1	1	3.240							
022.43	Copper, ICP, Microwave (ppm)	10	**10**	3.504	2.610	**2.982**	1.433	0.5664	48.06%	0.2743	13.57%
022.41	Copper, ICP, Dry ash (ppm)	4	4	2.573	1.714	2.573	1.714	0.8568	66.60%	0.1632	13.88%
022.53	Copper, ICP-MS, Microwave (ppm)	4	3	2.378	0.0796	2.378	0.0796	0.0460	3.35%	0.0464	14.04%
022.31	Copper, AAS, Dry ash (ppm)	3	1								
022.33	Copper, AAS, Microwave (ppm)	1	1	3.455							
022.42	Copper, ICP, Open vessel (ppm)	1	1	1.978							
022.44	Copper, ICP, Dry ash (ppm)	1	1	3.000							
025.43	Iron, ICP, Microwave (ppm)	10	**10**	353.8	20.27	**353.8**	22.99	9.088	6.50%	11.45	6.61%
025.41	Iron, ICP, Dry ash (ppm)	7	**7**	310.8	26.13	**310.8**	29.63	14.00	9.53%	9.016	6.74%
025.31	Iron, AAS, Dry ash (ppm)	4	4	238.0	50.60	238.0	50.60	25.30	21.26%	3.223	7.02%
025.53	Iron, ICP-MS, Microwave (ppm)	4	3	342.3	11.16	342.3	11.16	6.444	3.26%	6.904	6.65%
025.42	Iron, ICP, Open vessel (ppm)	2	2	333.0	16.26						
025.52	Iron, ICP-MS, Open vessel (ppm)	1	1	448.0							
027.44	Magnesium, ICP, Dry ash (%)	25	**24**	0.7272	0.0388	**0.7216**	0.0252	0.0064	3.50%	0.0128	4.20%
027.43	Magnesium, ICP, Microwave (%)	12	**12**	0.7184	0.0414	**0.7184**	0.0468	0.0169	6.51%	0.0169	4.20%
027.41	Magnesium, ICP, Dry ash (%)	8	**8**	0.6986	0.0464	**0.7049**	0.0366	0.0162	5.20%	0.0222	4.22%
027.31	Magnesium, AAS, Dry ash (%)	4	4	0.7540	0.0561	0.7540	0.0561	0.0281	7.44%	0.0056	4.17%
027.53	Magnesium, ICP-MS, Microwave (%)	4	4	0.7535	0.0557	0.7535	0.0557	0.0278	7.39%	0.0172	4.17%
027.42	Magnesium, ICP, Open vessel (%)	3	3	0.7624	0.0508	0.7624	0.0508	0.0294	6.67%	0.0310	4.17%
027.33	Magnesium, AAS, Microwave (%)	1	1	0.7300							
027.52	Magnesium, ICP-MS, Open vessel (%)	1	1	1.050							
028.44	Manganese, ICP, Dry ash (ppm)	15	**14**	26.89	1.111	**26.88**	1.235	0.4127	4.60%	0.6784	9.75%
028.41	Manganese, ICP, Dry ash (ppm)	9	**9**	25.58	2.159	**25.66**	2.278	0.9491	8.88%	0.5670	9.82%
028.43	Manganese, ICP, Microwave (ppm)	10	**9**	26.67	1.392	**26.52**	1.189	0.4955	4.48%	0.3513	9.77%
028.53	Manganese, ICP-MS, Microwave (ppm)	4	4	26.59	1.640	26.59	1.640	0.8200	6.17%	0.2673	9.76%
028.31	Manganese, AAS, Dry ash (ppm)	3	3	23.49	3.841	23.49	3.841	2.217	16.35%	1.713	9.95%
028.42	Manganese, ICP, Open vessel (ppm)	3	3	25.56	2.298	25.56	2.298	1.327	8.99%	0.9467	9.82%
028.52	Manganese, ICP-MS, Open vessel (ppm)	1	1	44.31							
031.44	Phosphorus, ICP, Dry ash (%)	24	**22**	0.1495	0.0140	**0.1495**	0.0158	0.0042	10.59%	0.0090	5.32%
031.43	Phosphorus, ICP, Microwave (%)	14	**14**	0.1366	0.0109	**0.1363**	0.0118	0.0039	8.63%	0.0032	5.40%
031.41	Phosphorus, ICP, Dry ash (%)	8	**8**	0.1277	0.0144	**0.1277**	0.0163	0.0072	12.78%	0.0032	5.45%
031.42	Phosphorus, ICP, Open vessel (%)	4	4	0.1527	0.0264	0.1527	0.0264	0.0132	17.27%	0.0130	5.31%
031.53	Phosphorus, ICP-MS, Microwave (%)	4	4	0.1191	0.0254	0.1191	0.0254	0.0127	21.28%	0.0036	5.51%
031.01	Phosphorus, Photometric (%)	1	1	0.1200							
031.03	Phosphorus, Autoanalyzer (%)	1	1	0.1095							
032.44	Potassium, ICP, Dry ash (%)	25	**24**	2.350	0.0791	**2.349**	0.0845	0.0216	3.60%	0.0566	3.52%
032.43	Potassium, ICP, Microwave (%)	13	**13**	2.282	0.0633	**2.282**	0.0610	0.0212	2.67%	0.0873	3.53%
032.41	Potassium, ICP, Dry ash (%)	8	**8**	2.121	0.5818	**2.283**	0.1824	0.0806	7.99%	0.0953	3.53%

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032.42	Potassium, ICP, Open vessel (%)	4	4	2.403	0.1586	2.403	0.1586	0.0793	6.60%	0.1018	3.51%
032.53	Potassium, ICP-MS, Microwave (%)	4	3	2.332	0.2090	2.332	0.2090	0.1207	8.96%	0.0083	3.52%
032.31	Potassium, AAS, Dry ash (%)	2	2	2.378	0.1591						
032.99	Potassium, Miscellaneous (%)	1	1	2.432							
033.01	Salt as chloride, Poten Cl (%)	8	**7**	5.279	0.3821	**5.366**	0.2020	0.0954	3.76%	0.0659	3.11%
033.00	Salt as chloride, Sol Cl (%)	2	2	5.113	0.2027						
033.99	Salt, Miscellaneous (%)	2	2	4.820	0.6859						
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	5	4	0.0830	0.0260	0.0830	0.0260	0.0130	31.27%	0.0041	22.00%
034.41	Selenium, Total (Se), ICP, Dry ash (ppm)	1	1	0.0290							
035.41	Sodium, ICP, Dry ash (%)	32	**31**	3.287	0.2106	**3.274**	0.1853	0.0416	5.66%	0.1022	3.35%
035.43	Sodium, ICP, Microwave (%)	12	**12**	3.256	0.1494	**3.256**	0.1694	0.0611	5.20%	0.1012	3.35%
035.53	Sodium, ICP-MS, Microwave (%)	4	3	3.238	0.0155	3.238	0.0155	0.0090	0.48%	0.0418	3.35%
035.31	Sodium, AAS, Dry ash (%)	2	2	3.263	0.2082						
035.42	Sodium, ICP, Open vessel (%)	2	2	3.521	0.1633						
035.99	Sodium, Miscellaneous (%)	1	1	8.301							
036.43	Sulfur, ICP, Microwave (%)	9	**9**	2.554	0.1153	**2.554**	0.1307	0.0545	5.12%	0.0850	3.47%
036.42	Sulfur, ICP, Open vessel (%)	5	4	2.461	0.3683	2.461	0.3683	0.2126	14.96%	0.0954	3.49%
036.04	Sulfur, LECO (%)	1	1	2.434							
036.53	Sulfur, ICP-MS, Microwave (%)	1	1	3.263							
037.43	Zinc, ICP, Microwave (ppm)	10	**10**	8.293	2.975	**7.649**	1.437	0.5680	18.78%	0.6007	11.78%
037.41	Zinc, ICP, Dry ash (ppm)	6	**6**	8.318	2.928	**8.318**	3.321	1.695	39.92%	0.8745	11.63%
037.53	Zinc, ICP-MS, Microwave (ppm)	4	3	6.991	0.1885	6.991	0.1885	0.1088	2.70%	0.1168	11.94%
037.31	Zinc, AAS, Dry ash (ppm)	2	2	7.703	3.822						
037.42	Zinc, ICP, Open vessel (ppm)	2	2	5.622	0.5346						
037.33	Zinc, AAS, Microwave (ppm)	1	1	8.935							
038.43	Molybdenum, ICP, Microwave (ppm)	3	3	0.7647	0.1127	0.7647	0.1127	0.0651	14.74%	0.0812	16.66%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	3	3	0.8755	0.0474	0.8755	0.0474	0.0274	5.42%	0.0179	16.32%
038.41	Molybdenum, ICP, Dry ash (ppm)	2	2	0.6063	0.1608						
040.53	Barium, ICP-MS, Microwave (ppm)	1	1	5.369							
041.53	Vanadium, ICP-MS, Microwave (ppm)	2	2	2.071	0.1432						
042.00	Chloride, Titrimetric (%)	1	1	2.705							
101.99	Choline Chloride, Miscellaneous (ppm)	1	1	39.00							
102.01	Niacin, Microbiological (ppm)	1	1	18.90							
103.01	Pantothenic Acid, Microbiological (ppm)	1	1	1.190							
104.00	Riboflavin, Fluorometric (ppm)	1	1	0.9355							
104.03	Riboflavin, LC (ppm)	1	1	0.3750							
105.00	Thiamine, LC (ppm)	2	2	0.2238	0.2493						
105.01	Thiamine, Fluorometer (ppm)	1		0.5000							
106.02	Vitamin A, LC (KU / kg)	1		0.3000							
107.00	Vitamin B12, Microbiological (ppb)	1	1	9.905							

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108.02	Vitamin D3, LC (KU / kg)	1		0.0400							
109.02	Vitamin E, LC (IU / kg)	1	1	66.80							
111.00	Vitamin C, Phosphorylated, LC (ppm)	1	1	367.5							
112.01	Pyridoxine, LC (µg / g)	2	1	0.1550							
113.01	Folic Acid, Micro (ppm)	1	1	1.355							
114.01	Biotin, Microbiological (ppm)	1	1	0.0582							
120.00	Alanine, Post-col Ninhydrin Der (%)	4	4	0.4036	0.0262	0.4036	0.0262	0.0131	6.49%	0.0240	4.58%
120.05	Alanine, Pre-col AQC Der (%)	2	2	0.3943	0.0541						
120.99	Alanine, Miscellaneous (%)	2	2	0.3750	0.0636						
120.02	Alanine, Post-col OPA Der (%)	1	1	0.3700							
121.00	Arginine, Post-col Ninhydrin Der (%)	4	3	0.2329	0.0271	0.2329	0.0271	0.0156	11.63%	0.0034	4.98%
121.05	Arginine, Pre-col AQC Der (%)	2	2	0.2225	0.0219						
121.99	Arginine, Miscellaneous (%)	2	2	0.1775	0.0743						
121.02	Arginine, Post-col OPA Der (%)	1	1	0.2400							
122.00	Aspartic, Post-col Ninhydrin Der (%)	4	3	0.6974	0.0483	0.6974	0.0483	0.0279	6.93%	0.0097	4.22%
122.05	Aspartic, Pre-col AQC Der (%)	2	2	0.6323	0.1397						
122.99	Aspartic, Miscellaneous (%)	2	2	0.4575	0.3642						
122.02	Aspartic, Post-col OPA Der (%)	1	1	0.6500							
124.00	Cysteine/Cystine, PAO Post-col Ninhydri (%)	4	4	0.1260	0.0192	0.1260	0.0192	0.0096	15.21%	0.0061	5.46%
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	2	2	0.0724	0.0122						
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	1	1	0.1400							
124.99	Cysteine/Cystine, Miscellaneous (%)	1	1	0.0800							
125.00	Glutamic, Post-col Ninhydrin Der (%)	4	3	1.259	0.0240	1.259	0.0240	0.0139	1.91%	0.0165	3.86%
125.05	Glutamic, Pre-col AQC Der (%)	2	2	1.175	0.2022						
125.99	Glutamic, Miscellaneous (%)	2	2	0.9175	0.4773						
125.02	Glutamic, Post-col OPA Der (%)	1	1	0.4900							
126.00	Glycine, Post-col Ninhydrin Der (%)	4	3	0.2982	0.0105	0.2982	0.0105	0.0061	3.52%	0.0042	4.80%
126.05	Glycine, Pre-col AQC Der (%)	2	2	0.3080	0.0325						
126.99	Glycine, Miscellaneous (%)	2	2	0.2050	0.1344						
126.02	Glycine, Post-col OPA Der (%)	1	1	0.2750							
127.00	Histidine, Post-col Ninhydrin Der (%)	4	3	0.0975	0.0348	0.0975	0.0348	0.0201	35.74%	0.0095	5.68%
127.05	Histidine, Pre-col AQC Der (%)	2	2	0.0728	0.0060						
127.99	Histidine, Miscellaneous (%)	2	2	0.0875	0.0035						
127.02	Histidine, Post-col OPA Der (%)	1	1	0.0900							
128.00	Isoleucine, Post-col Ninhydrin Der (%)	4	3	0.2352	0.0167	0.2352	0.0167	0.0097	7.12%	0.0032	4.97%
128.05	Isoleucine, Pre-col AQC Der (%)	2	2	0.2163	0.0117						
128.99	Isoleucine, Miscellaneous (%)	2	2	0.1875	0.0530						
128.02	Isoleucine, Post-col OPA Der (%)	1	1	0.1950							
129.00	Leucine, Post-col Ninhydrin Der (%)	4	4	0.3775	0.0177	0.3775	0.0177	0.0089	4.69%	0.0143	4.63%
129.05	Leucine, Pre-col AQC Der (%)	2	2	0.3538	0.0371						

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO ffp Robust SD	Uncertainty (U) - Robust	% RSD - Robust	Average Range (R-bar)	Thompson Horwitz %RSD
129.99	Leucine, Miscellaneous (%)	2	2	0.3125	0.0884						
129.02	Leucine, Post-col OPA Der (%)	1	1	0.3400							
130.00	L-Lysine, Post-col Ninhydrin Der (%)	4	3	0.2757	0.0060	0.2757	0.0060	0.0035	2.19%	0.0207	4.86%
130.05	L-Lysine, Pre-col AQC Der (%)	2	2	0.2450	0.0382						
130.99	L-Lysine, Miscellaneous (%)	2	2	0.2125	0.0884						
130.02	L-Lysine, Post-col OPA Der (%)	1	1	0.2500							
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	4	4	0.1297	0.0124	0.1297	0.0124	0.0062	9.56%	0.0069	5.44%
131.05	Methionine, PAO Pre-col AQC Der (%)	2	2	0.1082	0.0273						
131.99	Methionine, Miscellaneous (%)	2	2	0.1125	0.0106						
131.02	Methionine, PAO Post-col OPA Der (%)	1	1	0.1200							
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	4	4	0.2513	0.0109	0.2513	0.0109	0.0054	4.32%	0.0140	4.92%
132.05	Phenylalanine, Pre-col AQC Der (%)	2	2	0.2470	0.0262						
132.99	Phenylalanine, Miscellaneous (%)	2	2	0.2025	0.0743						
132.02	Phenylalanine, Post-col OPA Der (%)	1	1	0.2100							
133.00	Proline, Post-col Ninhydrin Der (%)	4	4	0.2093	0.0315	0.2093	0.0315	0.0158	15.06%	0.0158	5.06%
133.99	Proline, Miscellaneous (%)	3	3	0.2150	0.0627	0.2150	0.0627	0.0362	29.14%	0.0167	5.04%
133.05	Proline, Pre-col AQC Der (%)	2	2	0.2058	0.0209						
134.00	Serine, Post-col Ninhydrin Der (%)	4	4	0.2295	0.0306	0.2295	0.0306	0.0153	13.35%	0.0061	4.99%
134.05	Serine, Pre-col AQC Der (%)	2	2	0.2135	0.0827						
134.99	Serine, Miscellaneous (%)	2	2	0.2075	0.0601						
134.02	Serine, Post-col OPA Der (%)	1	1	0.2400							
135.00	Threonine, Post-col Ninhydrin Der (%)	4	4	0.2660	0.0102	0.2660	0.0102	0.0051	3.82%	0.0119	4.88%
135.05	Threonine, Pre-col AQC Der (%)	2	2	0.2260	0.0608						
135.99	Threonine, Miscellaneous (%)	2	2	0.2200	0.0778						
135.02	Threonine, Post-col OPA Der (%)	1	1	0.2500							
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	3	3	0.0802	0.0032	0.0802	0.0032	0.0023	3.99%	0.0050	5.85%
136.05	Tryptophan, Pre-col AQC Der (%)	2	2	0.0705	0.0000						
136.02	Tryptophan, Alka-Hydrol Post-col OPA De (%)	1	1	0.0550							
136.03	Tryptophan, Alka-Hydrol + IS RP LC Fl (%)	1	1	0.0731							
136.99	Tryptophan, Miscellaneous (%)	1	1	0.0600							
137.00	Tyrosine, Post-col Ninhydrin Der (%)	3	3	0.1257	0.0357	0.1257	0.0357	0.0206	28.44%	0.0058	5.47%
137.05	Tyrosine, Pre-col AQC Der (%)	2	2	0.1088	0.0032						
137.99	Tyrosine, Miscellaneous (%)	2	2	0.1050	0.0354						
137.02	Tyrosine, Post-col OPA Der (%)	1	1	0.1150							
138.00	Valine, Post-col Ninhydrin Der (%)	4	4	0.2910	0.0248	0.2910	0.0248	0.0124	8.51%	0.0220	4.82%
138.05	Valine, Pre-col AQC Der (%)	2	2	0.2793	0.0152						
138.99	Valine, Miscellaneous (%)	2	2	0.2450	0.0919						
138.02	Valine, Post-col OPA Der (%)	1	1	0.2700							
139.00	Taurine, Post-col Ninhydrin Der (%)	1	1	0.1750							
139.05	Taurine, Pre-col AQC Der (%)	1	1	0.0185							

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO ffp Robust SD	Uncertainty (U) - Robust	% RSD - Robust	Average Range (R-bar)	Thompson Horwitz %RSD
139.99	Taurine, Miscellaneous (%)	2	1	0.0200							
160.99	Fructose, Miscellaneous (%)	1		0.1500							
162.99	Glucose, Miscellaneous (%)	1		0.1500							
163.99	Lactose, Miscellaneous (%)	1		0.1500							
164.99	Maltose, Miscellaneous (%)	1	1	1.370							
165.99	Sucrose, Miscellaneous (%)	1		0.1500							
166.99	Raffinose, Miscellaneous (%)	1	1	0.5850							
167.99	Stachyose, Miscellaneous (%)	1		0.0500							
400.01	Water Activity, Aqualab chilled mirror (Units)	2	2	0.3799	0.0197						
400.99	Water Activity, Miscellaneous (Units)	1	1	0.3840							
516.53	Arsenic, Total (As), ICP-MS, Microwave (ppm)	3	3	25.38	1.439	25.38	1.439	0.8305	5.67%	0.4208	9.83%
516.43	Arsenic, Total (As), ICP, Microwave (ppm)	1	1	3.855							
518.53	Cadmium, ICP-MS, Microwave (ppm)	3	3	0.6007	0.0264	0.6007	0.0264	0.0187	4.39%	0.0113	17.27%
518.41	Cadmium, ICP, Dry ash (ppm)	2	2	0.3161	0.1046						
518.43	Cadmium, ICP, Microwave (ppm)	1	1	0.4733							
518.99	Cadmium, Miscellaneous (ppm)	1	1	0.5148							
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	3	3	2.628	0.0602	2.628	0.0602	0.0347	2.29%	0.1738	13.83%
520.41	Chromium, Total (Cr), ICP, Dry ash (ppm)	2	2	1.332	0.0615						
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	2	2	2.838	0.4407						
526.53	Lead, ICP-MS, Microwave (ppm)	3	3	0.0356	0.0022	0.0356	0.0022	0.0013	6.24%	0.0008	22.00%
526.41	Lead, ICP, Dry ash (ppm)	1	1	0.0667							
526.43	Lead, ICP, Microwave (ppm)	1	1	0.2913							
529.99	Mercury, Miscellaneous (ppb)	2	2	26.57	2.932						
539.41	Nickel, ICP, Dry ash (ppm)	2	2	1.553	0.0674						
539.53	Nickel, ICP-MS, Microwave (ppm)	2	2	1.860	0.2477						
539.43	Nickel, ICP, Microwave (ppm)	1	1	2.085							
710.99	Lauric Acid (12:0), Miscellaneous (% (w/w))	2	1	0.0300							
714.99	Myristic Acid (14:0), Miscellaneous (% (w/w))	1	1	0.3200							
716.99	Palmitic Acid (16:0), Miscellaneous (% (w/w))	1	1	0.5800							
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (% (w/w))	2	2	0.0403	0.0067						
724.99	Oleic Acid (9c-18:1), Miscellaneous (% (w/w))	1	1	0.9150							
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (% (w/w))	2	2	0.2325	0.0177						
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (% (w/w))	2	2	0.1065	0.0191						
736.99	Arachidonic Acid (5c,8c,11c,14c-20:4), Miscellaneous (% (w/w))	1	1	0.2740							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (% (w/w	1	1	0.1470							
742.99	Behenic Acid (22:0), Miscellaneous (% (w/w))	1		0.0200							
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (%	1		0.0100							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (%	1		0.0100							
754.99	Total n-3 Polyunsaturated (Omega-3) Fatty Acids, Miscellaneous (% (w/w))	2	2	0.3425	0.1167						
756.99	Total n-6 Polyunsaturated (Omega-6) Fatty Acids, Miscellaneous (% (w/w))	2	2	0.5950	0.0424						

Test Material Code # 202244 **(Precision Report Follows)** **Issue Date : 12/31/2022**

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO ffp Robust SD	Uncertainty (U) - Robust	% RSD - Robust	Average Range (R-bar)	Thompson Horwitz %RSD
758.99	Total Saturated Fatty Acids, Miscellaneous (% (w/w))	2	2	0.8125	0.3076						
762.99	Total Monounsaturated Fatty Acids, Miscellaneous (% (w/w))	2	2	0.9275	0.2015						
766.99	Total Polyunsaturated Fatty Acids, Miscellaneous (% (w/w))	2	2	0.6700	0.5445						
770.99	Total Fat (equivalent to NLEA), Miscellaneous (% (w/w))	1	1	3.330							
772.99	Total Fatty Acids, Miscellaneous (% (w/w))	1	1	3.180							

Notes: Robust statistics not used if < 6 labs reporting. In this case Means and SD's may be reported based on Raw Data with obvious blunders removed. Robust Assigned Values indicated in bold font.

Association of American Feed Control Officials

ANAB ACCREDITED ISO/IEC 17043 PROFICIENCY TESTING PROVIDER

AAFCO PTP Pet Food Ingredient Scheme

Pet Food Ingredient Scheme

Dried Kelp

Test Material Code # 202244

Method Precision Report

 # Methods Reported: 41

 # Labs Reporting: 80

Issue Date : 12/31/2022

Method Code	Analyte and Method	Total # Labs Submitting	# Labs used in Precision Calcs	Precision Mean	Precision SD	Between Labs sL	Within Labs sr	Reproducibility sR	Between Labs %RSD	Within Labs %rsd	Reproducibility %RSD	sR/sr
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	40	36	10.30	0.2425	0.2099	0.0812	0.2251	2.03%	0.79%	2.18%	2.771
001.99	Loss on Drying, Miscellaneous (%)	9	8	9.732	1.399	0.5964	0.1397	0.6126	5.87%	1.38%	6.03%	4.385
002.01	Protein, Crude, Auto Kjel-Foss (%)	6	6	7.081	0.3601	0.3573	0.0626	0.3628	5.05%	0.88%	5.12%	5.797
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	67	61	6.934	0.2972	0.2093	0.1527	0.2591	3.00%	2.19%	3.71%	1.696
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	6	6	2.233	0.5393	0.5240	0.1801	0.5541	23.46%	8.06%	24.81%	3.077
003.10	Fat, Crude, Randall, Pet Ether (%)	6	6	1.751	0.1273	0.1148	0.0778	0.1387	6.55%	4.44%	7.92%	1.782
003.14	Fat, Crude, Ankom (%)	14	12	2.128	0.6650	0.2008	0.1290	0.2386	10.07%	6.47%	11.97%	1.850
004.00	Fiber, Crude, Asbestos Free (%)	8	7	3.180	0.6078	0.1920	0.1430	0.2394	6.45%	4.80%	8.04%	1.675
004.07	Fiber, Crude, ANKOM (%)	16	13	3.557	0.8878	0.4551	0.2288	0.5094	13.77%	6.93%	15.42%	2.226
005.00	Ash, 2h @ 600°C (%)	43	39	24.43	2.059	1.926	0.4793	1.984	7.84%	1.95%	8.07%	4.140
005.05	Ash, 3h @ 550°C (%)	18	15	24.25	1.924	1.549	0.1960	1.562	6.33%	0.80%	6.38%	7.967
005.99	Ash, Miscellaneous (%)	5	5	20.72	1.386	1.366	0.3354	1.407	6.59%	1.62%	6.79%	4.194
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	10	9	19.45	6.719	6.841	1.468	6.997	36.13%	7.75%	36.95%	4.767
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	9	9	27.61	10.18	10.03	2.491	10.33	36.33%	9.02%	37.43%	4.149
011.01	Loss on Drying, HT, 135°C 2hr (%)	16	15	11.21	0.3317	0.2291	0.1463	0.2718	2.03%	1.30%	2.41%	1.858
013.00	Fat, Acid Pretreat, Acid hydrolysis (%)	16	15	2.710	0.4548	0.1629	0.3057	0.3465	6.23%	11.68%	13.24%	1.133
013.02	Fat, Acid Pretreat, Mojonnier, Bak Ext (%)	24	22	2.522	0.4389	0.4344	0.1224	0.4513	17.12%	4.82%	17.78%	3.687
019.41	Calcium, ICP, Dry ash (%)	8	8	1.241	0.1153	0.1119	0.0393	0.1186	9.02%	3.17%	9.56%	3.020
019.43	Calcium, ICP, Microwave (%)	13	13	1.294	0.0550	0.0524	0.0238	0.0575	4.05%	1.84%	4.45%	2.415
019.44	Calcium, ICP, Dry ash (%)	25	21	1.257	0.1397	0.0493	0.0407	0.0640	4.01%	3.31%	5.19%	1.571
022.43	Copper, ICP, Microwave (ppm)	10	8	3.504	2.610	1.025	0.2025	1.045	35.37%	6.99%	36.05%	5.160
025.41	Iron, ICP, Dry ash (ppm)	7	7	310.8	26.13	25.42	8.517	26.81	8.18%	2.74%	8.63%	3.148
025.43	Iron, ICP, Microwave (ppm)	10	10	353.8	20.27	19.08	9.697	21.40	5.39%	2.74%	6.05%	2.207
027.41	Magnesium, ICP, Dry ash (%)	8	7	0.6986	0.0464	0.0212	0.0196	0.0289	2.98%	2.75%	4.05%	1.473
027.43	Magnesium, ICP, Microwave (%)	12	11	0.7184	0.0414	0.0406	0.0121	0.0424	5.63%	1.68%	5.88%	3.500
027.44	Magnesium, ICP, Dry ash (%)	25	23	0.7272	0.0388	0.0214	0.0125	0.0248	2.97%	1.73%	3.44%	1.990
028.41	Manganese, ICP, Dry ash (ppm)	9	9	25.58	2.159	2.114	0.6142	2.202	8.26%	2.40%	8.61%	3.585
028.43	Manganese, ICP, Microwave (ppm)	10	8	26.67	1.392	0.8203	0.3805	0.9043	3.12%	1.45%	3.44%	2.377
028.44	Manganese, ICP, Dry ash (ppm)	15	14	26.89	1.111	1.000	0.6845	1.212	3.72%	2.55%	4.51%	1.771
031.41	Phosphorus, ICP, Dry ash (%)	8	8	0.1277	0.0144	0.0142	0.0035	0.0146	11.10%	2.75%	11.43%	4.151
031.43	Phosphorus, ICP, Microwave (%)	14	14	0.1366	0.0109	0.0106	0.0034	0.0112	7.78%	2.49%	8.16%	3.282
031.44	Phosphorus, ICP, Dry ash (%)	24	22	0.1495	0.0140	0.0126	0.0086	0.0152	8.41%	5.75%	10.19%	1.773
032.41	Potassium, ICP, Dry ash (%)	8	7	2.121	0.5818	0.1089	0.0903	0.1414	4.69%	3.89%	6.09%	1.567
032.43	Potassium, ICP, Microwave (%)	13	13	2.282	0.0633	0.0361	0.0734	0.0818	1.58%	3.22%	3.58%	1.115
032.44	Potassium, ICP, Dry ash (%)	25	22	2.350	0.0791	0.0720	0.0399	0.0823	3.06%	1.70%	3.50%	2.064
033.01	Salt as chloride, Poten Cl (%)	8	6	5.279	0.3821	0.1236	0.0524	0.1343	2.28%	0.97%	2.48%	2.562

Test Material Code # 202244 **Issue Date : 12/31/2022**

Method Code	Analyte and Method	Total # Labs Submitting	# Labs used in Precision Calcs	Precision Mean	Precision SD	Between Labs sL	Within Labs sr	Reproducibility sR	Between Labs %RSD	Within Labs %rsd	Reproducibility %RSD	sR/sr
035.41	Sodium, ICP, Dry ash (%)	32	28	3.287	0.2106	0.1542	0.0628	0.1665	4.72%	1.92%	5.10%	2.652
035.43	Sodium, ICP, Microwave (%)	12	12	3.256	0.1494	0.1330	0.0960	0.1641	4.09%	2.95%	5.04%	1.709
036.43	Sulfur, ICP, Microwave (%)	9	8	2.554	0.1153	0.1133	0.0541	0.1256	4.42%	2.11%	4.90%	2.321
037.41	Zinc, ICP, Dry ash (ppm)	6	6	8.318	2.928	2.881	0.7429	2.975	34.63%	8.93%	35.77%	4.005
037.43	Zinc, ICP, Microwave (ppm)	10	9	8.293	2.975	0.9626	0.6847	1.181	12.99%	9.24%	15.94%	1.725

Notes: Precision Calculations provided for methods with 5 or more labs contributing to calculations.