Animal Feed Scheme

Cattle Mineral

Test Material Code # 202398

Method Summary Report

(Precision Report Follows)

 # Labs Reporting: 151

 # Methods Reported: 367

Issue Date : 09/30/2023

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 (Rob R-bar)	Thompson Horwitz %RSD
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	34	**33**	2.416	0.3707	**2.418**	0.3384	0.0736	14.00%	0.1180	3.50%
001.99	Loss on Drying, Miscellaneous (%)	16	**16**	2.441	0.4614	**2.435**	0.3840	0.1200	15.77%	0.1138	3.50%
001.00	Loss on Drying, Vac 95°C 5 hr (%)	3	3	2.406	0.1043	2.406	0.1043	0.0602	4.33%	0.0245	3.50%
001.03	Loss on Drying, Low temp. methods (%)	2	2	2.910	0.2475						
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	39	**38**	2.432	0.4387	**2.401**	0.2491	0.0505	10.37%	0.1230	3.51%
002.01	Protein, Crude, Auto Kjel-Foss (%)	4	4	3.011	0.6384	3.011	0.6384	0.3192	21.20%	0.1340	3.39%
002.05	Protein, Crude, Copper, Boric Acid (%)	4	4	2.465	0.0854	2.465	0.0854	0.0427	3.46%	0.1236	3.49%
002.11	Protein, Crude, NIR (%)	2	2	10.44	3.843						
002.00	Protein, Crude, Crude (%)	1	1	2.055							
002.08	Protein, Crude, Cu/Ti (%)	2	1	2.570							
003.14	Fat, Crude, Ankom (%)	16	**16**	2.612	0.2025	**2.600**	0.2002	0.0626	7.70%	0.0933	3.46%
003.10	Fat, Crude, Randall, Pet Ether (%)	9	**9**	2.355	0.2035	**2.355**	0.2308	0.0962	9.80%	0.1608	3.52%
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	3	3	2.667	0.0142	2.667	0.0142	0.0082	0.53%	0.0444	3.45%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	3	3	2.963	0.6540	2.963	0.6540	0.3776	22.07%	0.1800	3.40%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	4	3	2.520	0.1176	2.520	0.1176	0.0679	4.67%	0.0368	3.48%
003.11	Fat, Crude, NIR (%)	2	2	6.578	1.602						
003.99	Fat, Crude, Miscellaneous (%)	2	2	3.730	3.790						
003.06	Fat, Crude, Pet Ether (%)	1	1	2.800							
004.07	Fiber, Crude, ANKOM (%)	13	**12**	3.797	1.091	**3.818**	1.165	0.4205	30.53%	0.3586	3.27%
004.06	Fiber, Crude, Fibertec (%)	5	4	2.808	0.1638	2.808	0.1638	0.0819	5.83%	0.2100	3.42%
004.00	Fiber, Crude, Asbestos Free (%)	3	3	3.316	0.8357	3.316	0.8357	0.4825	25.20%	0.3130	3.34%
004.11	Fiber, Crude, NIR (%)	2	2	14.26	9.125						
005.00	Ash, 2h @ 600°C (%)	75	**73**	73.19	1.614	**73.35**	0.9630	0.1409	1.31%	0.3789	1.17%
005.05	Ash, 3h @ 550°C (%)	21	**20**	73.95	0.9130	**73.96**	0.8305	0.2321	1.12%	0.4825	1.16%
005.99	Ash, Miscellaneous (%)	6	5	73.87	0.4560	73.87	0.4560	0.2549	0.62%	0.1988	1.16%
005.11	Ash, NIR (%)	2	2	30.83	11.71						
005.03	Ash, Microwave furnace (%)	1	1	67.60							
006.00	Total Sugars, As sucrose (%)	1	1	5.520							
006.99	Total Sugars, Miscellaneous (%)	1	1	6.250							

Test Material Code # 202398 **(Precision Report Follows)** **Issue Date : 09/30/2023**

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008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	12	**11**	4.036	0.7056	**4.036**	0.8002	0.3016	19.82%	0.3203	3.24%
008.02	Fiber, Acid Detergent, Crucible (%)	3	3	9.505	8.024	9.505	8.024	5.674	84.42%	0.2893	2.85%
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	12	**12**	11.90	5.520	**10.99**	3.685	1.330	33.53%	0.5604	2.79%
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	2	2	26.93	2.573						
009.99	Fiber, Neutral Detergent, Miscellaneous (%)	1	1	10.70							
010.99	Moisture, Miscellaneous (%)	12	**12**	2.429	0.4549	**2.385**	0.4049	0.1461	16.98%	0.1144	3.51%
010.03	Moisture, Karl-Fischer (%)	2	2	3.018	0.1025						
010.11	Moisture, NIR (%)	2	2	5.038	2.464						
011.01	Loss on Drying, HT, 135°C 2hr (%)	49	**47**	3.544	0.5081	**3.580**	0.4068	0.0742	11.36%	0.1158	3.30%
011.02	Loss on Drying, HT, 130°C for 2 hours (%)	3	3	4.127	1.213	4.127	1.213	0.8574	29.38%	0.4067	3.23%
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	1	1	3.515							
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	5	4	0.6388	0.3976	0.6388	0.3976	0.1988	62.24%	0.0535	4.28%
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	2	2	1.001	0.6277						
012.00	Starch, Polarimetric (Ewers) (%)	2	1	1.555							
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	1	1	0.7300							
013.02	Fat, Pretreat, Mojonnier, Bak Ext, Acid hydrolysis (%)	7	**7**	3.440	0.6344	**3.378**	0.5702	0.2694	16.88%	0.2151	3.33%
013.00	Fat, Pretreat, Acid hydrolysis (%)	4	4	3.214	0.7354	3.214	0.7354	0.3677	22.88%	0.3900	3.36%
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	3	3	2.577	1.677	2.577	1.677	0.9680	65.06%	0.2399	3.47%
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	1	1	2.620							
015.43	Aluminum, ICP, Microwave (ppm)	6	**6**	877.0	405.5	**803.6**	276.0	140.8	34.34%	16.89	5.85%
015.41	Aluminum, ICP, Dry ash (ppm)	5	5	723.0	191.8	723.0	191.8	85.77	26.52%	57.49	5.94%
015.42	Aluminum, ICP, Open vessel (ppm)	3	2	969.3	443.7	969.3	443.7			5.900	5.68%
015.53	Aluminum, ICP-MS, Microwave (ppm)	2	2	1,015	111.0						
015.52	Aluminum, ICP-MS, Open vessel (ppm)	1	1	926.5							
015.99	Aluminum, Miscellaneous (ppm)	1	1	702.0							
017.43	Boron, ICP, Microwave (ppm)	8	**7**	17.02	2.640	**16.77**	2.391	1.130	14.25%	0.6359	10.46%
017.41	Boron, ICP, Dry ash (ppm)	3	3	13.90	1.486	13.90	1.486	0.8579	10.69%	0.8104	10.76%
017.42	Boron, ICP, Open vessel (ppm)	3	3	14.17	1.467	14.17	1.467	0.8469	10.35%	0.3423	10.73%
017.53	Boron, ICP-MS, Microwave (ppm)	1	1	12.61							
017.99	Boron, Miscellaneous (ppm)	1	1	13.80							
019.43	Calcium, ICP, Microwave (%)	33	**32**	12.02	3.000	**12.20**	1.018	0.2250	8.35%	0.2026	2.75%
019.41	Calcium, ICP, Dry ash (%)	20	**19**	12.16	0.7605	**12.17**	0.6921	0.1985	5.69%	0.4431	2.75%
019.42	Calcium, ICP, Open vessel (%)	19	**19**	12.77	1.017	**12.76**	1.121	0.3214	8.78%	0.5331	2.73%
019.31	Calcium, AAS, Dry ash (%)	17	**17**	12.78	1.239	**12.67**	0.8928	0.2707	7.04%	0.2583	2.73%
019.08	Calcium, EDTA (%)	10	**10**	13.49	2.608	**12.96**	1.470	0.5810	11.34%	0.1998	2.72%
019.99	Calcium, Miscellaneous (%)	6	**6**	12.37	0.7028	**12.37**	0.7970	0.4067	6.45%	0.3483	2.74%
019.00	Calcium, Ox-Mn04 Vol. (%)	4	4	12.73	0.2835	12.73	0.2835	0.1418	2.23%	0.1081	2.73%
019.44	Calcium, ICP, Dry ash (%)	4	3	12.71	0.2005	12.71	0.2005	0.1158	1.58%	0.1485	2.73%
019.09	Calcium, Ion-selective electrode (%)	2	2	12.93	0.4649						
019.32	Calcium, AAS, Open vessel (%)	2	2	12.45	0.2086						

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019.52	Calcium, ICP-MS, Open vessel (%)	2	2	12.31	0.3712						
019.53	Calcium, ICP-MS, Microwave (%)	2	2	12.05	0.6685						
019.33	Calcium, AAS, Microwave (%)	1	1	12.47							
021.43	Cobalt, ICP, Microwave (ppm)	14	**13**	97.31	32.62	**101.5**	25.05	8.686	24.67%	1.151	7.98%
021.41	Cobalt, ICP, Dry ash (ppm)	7	**7**	84.82	38.99	**88.28**	35.88	16.95	40.64%	2.643	8.15%
021.42	Cobalt, ICP, Open vessel (ppm)	5	4	88.96	7.661	88.96	7.661	4.423	8.61%	2.302	8.14%
021.31	Cobalt, AAS, Dry ash (ppm)	3	3	257.3	257.9	257.3	257.9	182.3	100.23%	20.74	6.94%
021.52	Cobalt, ICP-MS, Open vessel (ppm)	3	3	84.77	28.86	84.77	28.86	16.66	34.05%	2.267	8.20%
021.53	Cobalt, ICP-MS, Microwave (ppm)	3	3	115.2	22.44	115.2	22.44	12.95	19.48%	5.076	7.83%
021.99	Cobalt, Miscellaneous (ppm)	1	1	79.55							
022.43	Copper, ICP, Microwave (ppm)	34	**33**	1,305	122.6	**1,315**	94.46	20.56	7.18%	53.97	5.43%
022.42	Copper, ICP, Open vessel (ppm)	19	**18**	1,320	108.8	**1,318**	119.3	35.14	9.05%	42.29	5.43%
022.41	Copper, ICP, Dry ash (ppm)	16	**16**	1,276	103.8	**1,280**	109.5	34.21	8.55%	34.49	5.45%
022.31	Copper, AAS, Dry ash (ppm)	10	**9**	1,358	74.54	**1,358**	84.53	35.22	6.22%	22.16	5.40%
022.44	Copper, ICP, Dry ash (ppm)	4	4	1,333	56.57	1,333	56.57	28.28	4.24%	61.70	5.42%
022.99	Copper, Miscellaneous (ppm)	4	4	1,331	91.12	1,331	91.12	45.56	6.84%	32.25	5.42%
022.52	Copper, ICP-MS, Open vessel (ppm)	3	3	1,301	17.59	1,301	17.59	10.15	1.35%	54.33	5.44%
022.53	Copper, ICP-MS, Microwave (ppm)	3	3	1,453	223.3	1,453	223.3	128.9	15.37%	79.93	5.35%
022.32	Copper, AAS, Open vessel (ppm)	2	2	1,348	2.475						
022.33	Copper, AAS, Microwave (ppm)	2	2	1,392	14.51						
024.52	Iodine, ICP-MS, Open vessel (ppm)	4	4	42.78	5.348	42.78	5.348	2.674	12.50%	8.573	9.09%
025.43	Iron, ICP, Microwave (ppm)	28	**28**	4,033	860.7	**4,193**	451.6	106.7	10.77%	142.3	4.56%
025.41	Iron, ICP, Dry ash (ppm)	19	**19**	4,040	1,015	**4,280**	428.2	122.8	10.00%	119.7	4.54%
025.42	Iron, ICP, Open vessel (ppm)	19	**18**	4,277	702.9	**4,185**	465.6	137.2	11.12%	145.8	4.56%
025.31	Iron, AAS, Dry ash (ppm)	9	**9**	4,043	649.0	**4,132**	506.0	210.8	12.25%	75.28	4.57%
025.53	Iron, ICP-MS, Microwave (ppm)	3	3	4,706	559.4	4,706	559.4	395.5	11.89%	144.1	4.48%
025.99	Iron, Miscellaneous (ppm)	3	3	4,275	263.4	4,275	263.4	152.1	6.16%	74.00	4.55%
025.33	Iron, AAS, Microwave (ppm)	2	2	4,229	885.2						
025.52	Iron, ICP-MS, Open vessel (ppm)	2	2	3,968	309.0						
025.32	Iron, AAS, Open vessel (ppm)	1	1	3,964							
027.43	Magnesium, ICP, Microwave (%)	34	**33**	10.57	2.179	**10.94**	0.8862	0.1928	8.10%	0.3484	2.79%
027.42	Magnesium, ICP, Open vessel (%)	20	**20**	11.38	1.002	**11.35**	1.071	0.2993	9.44%	0.4213	2.77%
027.41	Magnesium, ICP, Dry ash (%)	18	**18**	9.825	3.355	**10.90**	1.098	0.3236	10.07%	0.5136	2.79%
027.31	Magnesium, AAS, Dry ash (%)	9	**9**	10.92	0.6995	**10.96**	0.6880	0.2867	6.27%	0.6226	2.79%
027.99	Magnesium, Miscellaneous (%)	5	4	11.08	0.5108	11.08	0.5108	0.2554	4.61%	0.3600	2.79%
027.44	Magnesium, ICP, Dry ash (%)	3	3	10.51	1.323	10.51	1.323	0.7637	12.58%	0.3620	2.81%
027.32	Magnesium, AAS, Open vessel (%)	2	2	10.73	0.6824						
027.52	Magnesium, ICP-MS, Open vessel (%)	2	2	11.22	0.3253						
027.53	Magnesium, ICP-MS, Microwave (%)	2	2	10.33	0.7892						
027.33	Magnesium, AAS, Microwave (%)	1	1	11.88							

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028.43	Manganese, ICP, Microwave (ppm)	29	**28**	1,543	168.9	**1,559**	135.2	31.93	8.67%	33.85	5.29%
028.42	Manganese, ICP, Open vessel (ppm)	20	**19**	1,638	134.7	**1,624**	116.2	33.33	7.16%	53.56	5.26%
028.41	Manganese, ICP, Dry ash (ppm)	16	**15**	1,517	431.0	**1,606**	175.1	56.52	10.91%	21.52	5.27%
028.31	Manganese, AAS, Dry ash (ppm)	10	**10**	1,620	173.6	**1,649**	115.2	45.54	6.99%	43.35	5.25%
028.44	Manganese, ICP, Dry ash (ppm)	4	4	1,619	189.3	1,619	189.3	94.66	11.70%	39.85	5.26%
028.53	Manganese, ICP-MS, Microwave (ppm)	3	3	1,874	142.0	1,874	142.0	81.95	7.57%	60.60	5.15%
028.99	Manganese, Miscellaneous (ppm)	4	3	1,678	5.408	1,678	5.408	3.122	0.32%	31.33	5.23%
028.32	Manganese, AAS, Open vessel (ppm)	2	2	1,562	80.61						
028.33	Manganese, AAS, Microwave (ppm)	2	2	1,695	103.0						
028.52	Manganese, ICP-MS, Open vessel (ppm)	2	2	1,635	7.425						
028.00	Manganese, Color (ppm)	1	1	1,710							
031.43	Phosphorus, ICP, Microwave (%)	33	**33**	2.600	0.3734	**2.638**	0.1867	0.0406	7.08%	0.1172	3.46%
031.01	Phosphorus, Photometric (%)	30	**29**	2.606	0.5670	**2.606**	0.1632	0.0379	6.26%	0.0503	3.46%
031.42	Phosphorus, ICP, Open vessel (%)	21	**20**	2.657	0.2116	**2.630**	0.1432	0.0400	5.44%	0.1078	3.46%
031.41	Phosphorus, ICP, Dry ash (%)	19	**19**	2.547	0.3578	**2.599**	0.1885	0.0541	7.25%	0.0865	3.46%
031.99	Phosphorus, Miscellaneous (%)	5	5	2.407	0.3149	2.407	0.3149	0.1408	13.08%	0.1060	3.50%
031.44	Phosphorus, ICP, Dry ash (%)	5	4	2.507	0.0703	2.507	0.0703	0.0352	2.81%	0.0773	3.48%
031.03	Phosphorus, Autoanalyzer (%)	2	2	2.683	0.0750						
031.53	Phosphorus, ICP-MS, Microwave (%)	2	2	2.847	0.0049						
031.52	Phosphorus, ICP-MS, Open vessel (%)	1	1	2.690							
032.43	Potassium, ICP, Microwave (%)	32	**32**	0.8063	0.1998	**0.7726**	0.0797	0.0176	10.31%	0.0204	4.16%
032.41	Potassium, ICP, Dry ash (%)	18	**18**	0.8527	0.2590	**0.8035**	0.1234	0.0364	15.36%	0.0466	4.13%
032.42	Potassium, ICP, Open vessel (%)	18	**17**	0.8230	0.1751	**0.7769**	0.0673	0.0204	8.66%	0.0398	4.15%
032.31	Potassium, AAS, Dry ash (%)	7	**7**	0.7254	0.1286	**0.7365**	0.1190	0.0562	16.16%	0.0198	4.19%
032.99	Potassium, Miscellaneous (%)	6	**6**	0.7860	0.0687	**0.7810**	0.0659	0.0336	8.44%	0.0325	4.15%
032.44	Potassium, ICP, Dry ash (%)	3	3	0.7855	0.0767	0.7855	0.0767	0.0443	9.77%	0.0219	4.15%
032.32	Potassium, AAS, Open vessel (%)	2	2	0.7975	0.0035						
032.53	Potassium, ICP-MS, Microwave (%)	2	2	0.7598	0.0634						
032.08	Potassium, Ion-selective electrode (%)	1	1	1.110							
032.52	Potassium, ICP-MS, Open vessel (%)	1	1	0.7850							
033.01	Salt as chloride, Poten Cl (%)	20	**20**	16.89	0.8091	**16.86**	0.6410	0.1792	3.80%	0.3032	2.44%
033.00	Salt as chloride, Sol Cl (%)	12	**12**	15.99	2.002	**16.33**	1.042	0.3759	6.38%	0.2248	2.47%
033.99	Salt, Miscellaneous (%)	9	**9**	17.03	1.063	**16.89**	0.8642	0.3601	5.12%	0.4524	2.43%
033.05	Salt as chloride, Ion Sel Electrode (%)	4	4	14.65	3.232	14.65	3.232	1.616	22.06%	0.0507	2.61%
033.03	Salt as chloride, Quantab (%)	3	3	15.16	4.416	15.16	4.416	3.122	29.13%	0.8300	2.57%
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	12	**12**	19.81	3.518	**20.08**	3.294	1.189	16.40%	0.5863	10.18%
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	7	**7**	21.59	2.823	**21.59**	3.202	1.513	14.83%	0.8711	10.07%
034.52	Selenium, Total (Se), ICP-MS, Open vessel (ppm)	4	4	19.17	2.194	19.17	2.194	1.097	11.44%	1.083	10.26%
034.04	Selenium, Total (Se), AA, Hydride (ppm)	4	3	13.58	5.839	13.58	5.839	4.129	43.01%	0.4000	10.80%
034.41	Selenium, Total (Se), ICP, Dry ash (ppm)	3	3	17.31	1.185	17.31	1.185	0.6843	6.85%	2.537	10.41%

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034.42	Selenium, Total (Se), ICP, Open vessel (ppm)	3	3	19.12	1.022	19.12	1.022	0.5903	5.35%	0.7400	10.26%
034.01	Selenium, Total (Se), Fluor (ppm)	1	1	20.10							
034.34	Selenium, Total (Se), AAS, Graphite furnace (ppm)	1	1	19.25							
035.43	Sodium, ICP, Microwave (%)	24	**24**	6.120	1.409	**6.392**	0.5955	0.1519	9.32%	0.1445	3.03%
035.42	Sodium, ICP, Open vessel (%)	17	**17**	6.562	0.5082	**6.527**	0.4900	0.1486	7.51%	0.2879	3.02%
035.41	Sodium, ICP, Dry ash (%)	17	**16**	6.576	0.3638	**6.575**	0.4114	0.1286	6.26%	0.2295	3.01%
035.31	Sodium, AAS, Dry ash (%)	7	**7**	6.531	1.698	**6.236**	1.171	0.5534	18.78%	0.1394	3.04%
035.99	Sodium, Miscellaneous (%)	5	3	6.678	0.3938	6.678	0.3938	0.2274	5.90%	0.1350	3.01%
035.32	Sodium, AAS, Open vessel (%)	2	2	6.090	0.0283						
035.53	Sodium, ICP-MS, Microwave (%)	2	2	6.199	0.5457						
035.05	Sodium, Flame Emission (%)	1	1	0.2750							
035.52	Sodium, ICP-MS, Open vessel (%)	1	1	6.215							
036.43	Sulfur, ICP, Microwave (%)	23	**23**	0.6890	0.0978	**0.6951**	0.0616	0.0161	8.86%	0.0268	4.22%
036.42	Sulfur, ICP, Open vessel (%)	16	**16**	0.6417	0.0867	**0.6437**	0.0939	0.0293	14.59%	0.0249	4.27%
036.04	Sulfur, LECO (%)	4	3	0.5620	0.0184	0.5620	0.0184	0.0106	3.27%	0.0140	4.36%
036.99	Sulfur, Miscellaneous (%)	3	3	0.5567	0.0666	0.5567	0.0666	0.0384	11.96%	0.0233	4.37%
036.00	Sulfur, Gravimetric (%)	1	1	0.7070							
036.52	Sulfur, ICP-MS, Open vessel (%)	1	1	0.6643							
036.53	Sulfur, ICP-MS, Microwave (%)	1	1	0.7320							
037.43	Zinc, ICP, Microwave (ppm)	33	**32**	2,371	546.8	**2,427**	302.4	66.81	12.46%	87.23	4.95%
037.42	Zinc, ICP, Open vessel (ppm)	19	**19**	2,624	292.1	**2,630**	318.9	91.44	12.12%	218.8	4.89%
037.41	Zinc, ICP, Dry ash (ppm)	18	**17**	2,385	646.0	**2,519**	271.5	82.30	10.78%	111.3	4.92%
037.31	Zinc, AAS, Dry ash (ppm)	10	**10**	2,717	130.2	**2,721**	140.2	55.41	5.15%	49.75	4.87%
037.99	Zinc, Miscellaneous (ppm)	5	5	2,372	336.9	2,372	336.9	150.7	14.20%	102.4	4.97%
037.44	Zinc, ICP, Dry ash (ppm)	5	4	2,532	230.7	2,532	230.7	115.3	9.11%	55.76	4.92%
037.32	Zinc, AAS, Open vessel (ppm)	3	3	1,767	1,531	1,767	1,531	884.0	86.63%	257.5	5.19%
037.53	Zinc, ICP-MS, Microwave (ppm)	3	3	2,681	148.1	2,681	148.1	104.7	5.52%	56.37	4.88%
037.33	Zinc, AAS, Microwave (ppm)	2	2	2,718	134.2						
037.52	Zinc, ICP-MS, Open vessel (ppm)	2	2	2,703	92.28						
037.34	Zinc, AAS, Dry ash (ppm)	1	1	2,940							
038.43	Molybdenum, ICP, Microwave (ppm)	7	**7**	4.109	1.818	**4.109**	2.062	0.9743	50.19%	0.4011	12.93%
038.41	Molybdenum, ICP, Dry ash (ppm)	4	4	5.318	2.844	5.318	2.844	1.422	53.48%	0.2356	12.44%
038.42	Molybdenum, ICP, Open vessel (ppm)	5	4	8.782	5.108	8.782	5.108	2.554	58.16%	0.6970	11.54%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	3	3	6.645	2.189	6.645	2.189	1.264	32.94%	0.3067	12.03%
038.52	Molybdenum, ICP-MS, Open vessel (ppm)	1	1	9.355							
038.99	Molybdenum, Miscellaneous (ppm)	1	1	6.045							
040.43	Barium, ICP, Microwave (ppm)	1	1	7.550							
040.53	Barium, ICP-MS, Microwave (ppm)	1	1	9.948							
041.53	Vanadium, ICP-MS, Microwave (ppm)	1	1	7.079							
042.00	Chloride, Titrimetric (%)	4	4	10.26	0.4596	10.26	0.4596	0.2298	4.48%	0.1075	2.82%

Test Material Code # 202398 **(Precision Report Follows)** **Issue Date : 09/30/2023**

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 (Rob R-bar)	Thompson Horwitz %RSD
042.99	Chloride, Miscellaneous (%)	3	3	10.47	0.6943	10.47	0.6943	0.4909	6.63%	0.4350	2.81%
042.01	Chloride, Ion-selective electrode (%)	2	2	9.456	1.197						
102.01	Niacin, Microbiological (ppm)	1	1	5.940							
103.01	Pantothenic Acid, Microbiological (ppm)	1	1	5.260							
104.00	Riboflavin, Fluorometric (ppm)	1		0.5000							
105.01	Thiamine, Fluorometer (ppm)	1	1	1.170							
106.02	Vitamin A, LC (KU / kg)	13	**12**	171.8	52.47	**180.6**	33.12	11.95	18.34%	6.352	
106.00	Vitamin A, Color (KU / kg)	1	1	165.5							
106.01	Vitamin A, UV (KU / kg)	1	1	199.0							
107.00	Vitamin B12, Microbiological (ppb)	1		4.400							
108.02	Vitamin D3, LC (KU / kg)	6	3	0.6959	0.4021	0.6959	0.4021	0.2902	57.77%	0.1556	
108.99	Vitamin D3, Miscellaneous (KU / kg)	1	1	1.250							
109.02	Vitamin E, LC (IU / kg)	15	**15**	325.9	65.34	**318.9**	54.66	17.64	17.14%	22.90	
109.99	Vitamin E, Miscellaneous (IU / kg)	1	1	268.5							
111.00	Vitamin C, Phosphorylated, LC (ppm)	1		4.400							
113.01	Folic Acid, Micro (ppm)	1	1	0.2025							
114.01	Biotin, Microbiological (ppm)	1	1	0.1595							
114.99	Biotin, Miscellaneous (ppm)	1	1	0.1290							
115.00	Non Protein N (NPN), Urea + Am, Urease method (%)	1	1	0.1112							
120.05	Alanine, Pre-col AQC Der (%)	2	2	0.0893	0.0088						
120.00	Alanine, Post-col Ninhydrin Der (%)	1	1	0.1040							
120.02	Alanine, Post-col OPA Der (%)	1	1	0.1030							
120.99	Alanine, Miscellaneous (%)	1	1	0.0850							
121.05	Arginine, Pre-col AQC Der (%)	2	2	0.0973	0.0279						
121.00	Arginine, Post-col Ninhydrin Der (%)	1	1	0.0810							
121.02	Arginine, Post-col OPA Der (%)	1	1	0.0790							
121.99	Arginine, Miscellaneous (%)	1	1	0.0750							
122.05	Aspartic, Pre-col AQC Der (%)	2	2	0.2505	0.0064						
122.00	Aspartic, Post-col Ninhydrin Der (%)	1	1	0.2590							
122.02	Aspartic, Post-col OPA Der (%)	1	1	0.2735							
122.99	Aspartic, Miscellaneous (%)	1	1	0.2400							
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	2	2	0.0249	0.0129						
124.00	Cysteine/Cystine, PAO Post-col Ninhydri (%)	1	1	0.0200							
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	1	1	0.0205							
124.99	Cysteine/Cystine, Miscellaneous (%)	1	1	0.0200							
125.05	Glutamic, Pre-col AQC Der (%)	2	2	0.2828	0.0011						
125.00	Glutamic, Post-col Ninhydrin Der (%)	1	1	0.2860							
125.02	Glutamic, Post-col OPA Der (%)	1	1	0.2935							
125.99	Glutamic, Miscellaneous (%)	1	1	0.2550							
126.05	Glycine, Pre-col AQC Der (%)	2	2	0.1488	0.0343						

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126.00	Glycine, Post-col Ninhydrin Der (%)	1	1	0.1220							
126.02	Glycine, Post-col OPA Der (%)	1	1	0.1310							
126.99	Glycine, Miscellaneous (%)	1	1	0.1150							
127.00	Histidine, Post-col Ninhydrin Der (%)	1	1	0.0490							
127.02	Histidine, Post-col OPA Der (%)	1	1	0.0315							
127.05	Histidine, Pre-col AQC Der (%)	2	1	0.0295							
127.99	Histidine, Miscellaneous (%)	1	1	0.0300							
128.05	Isoleucine, Pre-col AQC Der (%)	2	2	0.0685	0.0021						
128.00	Isoleucine, Post-col Ninhydrin Der (%)	1	1	0.0700							
128.02	Isoleucine, Post-col OPA Der (%)	1	1	0.0650							
128.99	Isoleucine, Miscellaneous (%)	1	1	0.0650							
129.05	Leucine, Pre-col AQC Der (%)	2	2	0.1113	0.0081						
129.00	Leucine, Post-col Ninhydrin Der (%)	1	1	0.1030							
129.02	Leucine, Post-col OPA Der (%)	1	1	0.1100							
129.99	Leucine, Miscellaneous (%)	1	1	0.0850							
130.05	L-Lysine, Pre-col AQC Der (%)	2	2	0.0808	0.0117						
130.00	L-Lysine, Post-col Ninhydrin Der (%)	1	1	0.0830							
130.02	L-Lysine, Post-col OPA Der (%)	1	1	0.0850							
130.99	L-Lysine, Miscellaneous (%)	1	1	0.0750							
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	1	1	0.0140							
131.02	Methionine, PAO Post-col OPA Der (%)	1	1	0.0120							
131.05	Methionine, PAO Pre-col AQC Der (%)	2	1	0.0091							
131.99	Methionine, Miscellaneous (%)	1		0.0100							
132.05	Phenylalanine, Pre-col AQC Der (%)	2	2	0.0615	0.0106						
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	1	1	0.0660							
132.02	Phenylalanine, Post-col OPA Der (%)	1	1	0.0670							
132.99	Phenylalanine, Miscellaneous (%)	1	1	0.0650							
133.05	Proline, Pre-col AQC Der (%)	2	2	0.0870	0.0028						
133.00	Proline, Post-col Ninhydrin Der (%)	1	1	0.0830							
133.99	Proline, Miscellaneous (%)	1	1	0.0700							
134.05	Serine, Pre-col AQC Der (%)	2	2	0.0935	0.0233						
134.00	Serine, Post-col Ninhydrin Der (%)	1	1	0.0970							
134.02	Serine, Post-col OPA Der (%)	1	1	0.0915							
134.99	Serine, Miscellaneous (%)	1	1	0.0850							
135.05	Threonine, Pre-col AQC Der (%)	2	2	0.0558	0.0018						
135.00	Threonine, Post-col Ninhydrin Der (%)	1	1	0.0600							
135.02	Threonine, Post-col OPA Der (%)	1	1	0.0640							
135.99	Threonine, Miscellaneous (%)	1	1	0.0600							
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	2	2	0.0220	0.0028						
136.02	Tryptophan, Alka-Hydrol Post-col OPA De (%)	1	1	0.0165							

Test Material Code # 202398 **(Precision Report Follows)** **Issue Date : 09/30/2023**

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136.03	Tryptophan, Alka-Hydrol + IS RP LC Fl (%)	1	1	0.0165							
136.05	Tryptophan, Pre-col AQC Der (%)	2	1	0.0155							
137.00	Tyrosine, Post-col Ninhydrin Der (%)	2	2	0.0493	0.0301						
137.02	Tyrosine, Post-col OPA Der (%)	1	1	0.0565							
137.05	Tyrosine, Pre-col AQC Der (%)	2	1	0.0505							
137.99	Tyrosine, Miscellaneous (%)	1	1	0.0450							
138.05	Valine, Pre-col AQC Der (%)	2	2	0.1060	0.0283						
138.00	Valine, Post-col Ninhydrin Der (%)	1	1	0.0940							
138.02	Valine, Post-col OPA Der (%)	1	1	0.0935							
138.99	Valine, Miscellaneous (%)	1	1	0.0850							
139.00	Taurine, Post-col Ninhydrin Der (%)	1	1	0.0130							
139.05	Taurine, Pre-col AQC Der (%)	1	1	0.0060							
139.02	Taurine, Post-col OPA Der (%)	1		0.0100							
139.99	Taurine, Miscellaneous (%)	1		0.0100							
160.10	Fructose, HPAEC PAD (%)	1	1	0.5000							
160.99	Fructose, Miscellaneous (%)	1	1	0.5600							
161.10	Galactose, HPAEC PAD (%)	1		0.0000							
162.10	Glucose, HPAEC PAD (%)	1	1	0.1400							
162.99	Glucose, Miscellaneous (%)	1		0.1500							
163.10	Lactose, HPAEC PAD (%)	1		0.0000							
163.99	Lactose, Miscellaneous (%)	1		0.1500							
164.10	Maltose, HPAEC PAD (%)	1		0.0000							
164.99	Maltose, Miscellaneous (%)	1		0.1500							
165.10	Sucrose, HPAEC PAD (%)	1	1	3.685							
165.99	Sucrose, Miscellaneous (%)	1	1	3.730							
166.10	Raffinose, HPAEC PAD (%)	1		0.0000							
166.99	Raffinose, Miscellaneous (%)	1		0.0500							
167.99	Stachyose, Miscellaneous (%)	1	1	0.1000							
167.10	Stachyose, HPAEC PAD (%)	1		0.0000							
351.03	Chlortetracycline, LC (UV or FL) (ppm)	1		15.00							
354.01	Decoquinate, LC (UV or FL) (ppm)	1		0.1000							
361.02	Lasalocid Sodium, LC (ppm)	1		1.000							
365.02	Monensin, LC (ppm)	1		2.000							
367.99	Nicarbazin, Miscellaneous (ppm)	1		3.000							
386.99	Tiamulin, Miscellaneous (ppm)	1		1.000							
388.03	Tylosin, LC (ppm)	1		10.00							
392.99	Fenbendazole, Miscellaneous (ppm)	1		1.000							
400.01	Water Activity, Aqualab chilled mirror (Units)	6	**6**	0.3562	0.1274	**0.3999**	0.0267	0.0136	6.67%	0.0031	
400.99	Water Activity, Miscellaneous (Units)	1	1	0.4030							
516.43	Arsenic, Total (As), ICP, Microwave (ppm)	4	3	0.8266	1.049	0.8266	1.049	0.7417	126.89%	0.0472	16.46%

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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 (Rob R-bar)	Thompson Horwitz %RSD
516.53	Arsenic, Total (As), ICP-MS, Microwave (ppm)	3	3	0.5696	0.0555	0.5696	0.0555	0.0320	9.74%	0.0345	17.41%
516.00	Arsenic, Total (As), AA, Hydride (ppm)	2	2	0.4736	0.1536						
516.42	Arsenic, Total (As), ICP, Open vessel (ppm)	1	1	6.010							
516.52	Arsenic, Total (As), ICP-MS, Open vessel (ppm)	1	1	0.4838							
518.43	Cadmium, ICP, Microwave (ppm)	4	4	0.6142	0.1876	0.6142	0.1876	0.0938	30.55%	0.0133	17.21%
518.53	Cadmium, ICP-MS, Microwave (ppm)	4	4	0.6637	0.0742	0.6637	0.0742	0.0371	11.17%	0.0136	17.01%
518.41	Cadmium, ICP, Dry ash (ppm)	2	2	0.4967	0.0554						
518.34	Cadmium, AAS, Graphite furnace (ppm)	1	1	0.7043							
518.42	Cadmium, ICP, Open vessel (ppm)	2	1	0.5535							
518.52	Cadmium, ICP-MS, Open vessel (ppm)	1	1	0.6897							
518.99	Cadmium, Miscellaneous (ppm)	1	1	0.6098							
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	8	**8**	104.3	41.33	**110.2**	31.68	14.00	28.74%	2.608	7.88%
520.41	Chromium, Total (Cr), ICP, Dry ash (ppm)	3	3	114.8	19.97	114.8	19.97	11.53	17.40%	7.994	7.83%
520.42	Chromium, Total (Cr), ICP, Open vessel (ppm)	3	3	85.83	14.08	85.83	14.08	8.127	16.40%	8.251	8.18%
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	3	3	120.0	22.57	120.0	22.57	13.03	18.81%	6.086	7.78%
520.52	Chromium, Total (Cr), ICP-MS, Open vessel (ppm)	1	1	152.4							
526.53	Lead, ICP-MS, Microwave (ppm)	4	3	0.6962	0.1077	0.6962	0.1077	0.0622	15.46%	0.0104	16.89%
526.41	Lead, ICP, Dry ash (ppm)	2	2	0.7538	0.3695						
526.42	Lead, ICP, Open vessel (ppm)	2	2	2.296	2.204						
526.43	Lead, ICP, Microwave (ppm)	3	2	0.8030	0.2864	0.8030	0.2864			0.0693	16.53%
526.52	Lead, ICP-MS, Open vessel (ppm)	1	1	1.172							
526.99	Lead, Miscellaneous (ppm)	1	1	0.7314							
529.99	Mercury, Miscellaneous (ppb)	5	1								
539.43	Nickel, ICP, Microwave (ppm)	6	**6**	34.18	18.04	**34.18**	20.45	10.44	59.84%	1.437	9.40%
539.42	Nickel, ICP, Open vessel (ppm)	2	2	26.80	8.985						
539.53	Nickel, ICP-MS, Microwave (ppm)	2	2	32.73	10.51						
539.41	Nickel, ICP, Dry ash (ppm)	1	1	34.57							
539.52	Nickel, ICP-MS, Open vessel (ppm)	1	1	50.32							
702.00	Butyric Acid (4:0), Miscellaneous GC (%)	1		0.0200							
704.00	Caproic Acid (6:0) , Miscellaneous GC (%)	1		0.0200							
706.99	Caprylic acid (8:0), Miscellaneous (% (w/w))	1		0.0200							
708.99	Capric acid (10:0), Miscellaneous (% (w/w))	1		0.0200							
710.99	Lauric Acid (12:0), Miscellaneous (% (w/w))	1		0.0200							
714.99	Myristic Acid (14:0), Miscellaneous (% (w/w))	1	1	0.0350							
716.99	Palmitic Acid (16:0), Miscellaneous (% (w/w))	1	1	0.5960							
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (% (w/w))	1	1	0.0275							
720.99	Margaric acid (17:0), Miscellaneous (% (w/w))	1		0.0200							
722.99	Stearic Acid (18:0), Miscellaneous (% (w/w))	1	1	0.3045							
724.99	Oleic Acid (9c-18:1), Miscellaneous (% (w/w))	1	1	0.4885							
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (% (w/w))	1	1	0.0705							

Test Material Code # 202398 **(Precision Report Follows)** **Issue Date : 09/30/2023**

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 (Rob R-bar)	Thompson Horwitz %RSD
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (% (w/w))	1		0.0200							
730.99	Arachidic Acid (20:0), Miscellaneous (% (w/w))	1		0.0200							
732.99	Gondoic Acid (11c-20:1), Miscellaneous (% (w/w))	1		0.0200							
736.99	Arachidonic Acid (5c,8c,11c,14c-20:4), Miscellaneous (% (w/w))	1		0.0200							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (% (w/w	1		0.0200							
742.99	Behenic Acid (22:0), Miscellaneous (% (w/w))	1		0.0200							
744.99	Erucic Acid (13c-22:1), Miscellaneous (% (w/w))	1		0.0200							
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (%	1		0.0200							
748.99	Lignoceric Acid (24:0), Miscellaneous (% (w/w))	1		0.0200							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (%	1		0.0200							
752.99	Nervonic Acid (24:1) isomers, Miscellaneous (% (w/w))	1		0.0200							
754.99	Total n-3 Polyunsaturated (Omega-3) Fatty Acids, Miscellaneous (% (w/w))	1		0.0200							
756.99	Total n-6 Polyunsaturated (Omega-6) Fatty Acids, Miscellaneous (% (w/w))	1	1	0.0750							
758.99	Total Saturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.9815							
764.99	Total cis Monounsaturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.5765							
768.99	Total cis Polyunsaturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.0885							
770.99	Total Fat (equivalent to NLEA), Miscellaneous (% (w/w))	1	1	1.743							
772.99	Total Fatty Acids, Miscellaneous (% (w/w))	1	1	1.664							

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 Animal Feed Scheme

Animal Feed Scheme

Cattle Mineral

Test Material Code # 202398

Method Precision Report

 # Methods Reported: 73

 # Labs Reporting: 151

Issue Date : 09/30/2023

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 (%)	34	30	2.416	0.3707	0.2628	0.1168	0.2876	10.82%	4.81%	11.84%	2.462
001.99	Loss on Drying, Miscellaneous (%)	16	15	2.441	0.4614	0.4734	0.0854	0.4811	19.43%	3.51%	19.74%	5.630
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	39	36	2.432	0.4387	0.2791	0.1192	0.3035	11.81%	5.04%	12.84%	2.546
003.10	Fat, Crude, Randall, Pet Ether (%)	9	9	2.355	0.2035	0.1761	0.1444	0.2277	7.48%	6.13%	9.67%	1.577
003.14	Fat, Crude, Ankom (%)	16	15	2.612	0.2025	0.1448	0.1054	0.1791	5.61%	4.09%	6.94%	1.699
004.07	Fiber, Crude, ANKOM (%)	13	12	3.797	1.091	1.070	0.3025	1.112	28.17%	7.97%	29.28%	3.676
005.00	Ash, 2h @ 600°C (%)	75	68	73.19	1.614	1.047	0.3428	1.101	1.43%	0.47%	1.50%	3.212
005.05	Ash, 3h @ 550°C (%)	21	19	73.95	0.9130	0.7215	0.4028	0.8263	0.97%	0.54%	1.12%	2.052
005.99	Ash, Miscellaneous (%)	6	5	73.87	0.4560	0.4438	0.1480	0.4678	0.60%	0.20%	0.63%	3.161
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	12	11	4.036	0.7056	0.6716	0.3062	0.7381	16.64%	7.59%	18.29%	2.411
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	12	11	11.90	5.520	2.970	0.5727	3.024	28.18%	5.43%	28.70%	5.281
010.99	Moisture, Miscellaneous (%)	12	11	2.429	0.4549	0.2993	0.1444	0.3323	12.85%	6.20%	14.26%	2.302
011.01	Loss on Drying, HT, 135°C 2hr (%)	49	42	3.544	0.5081	0.3538	0.1315	0.3774	9.87%	3.67%	10.53%	2.870
013.02	Fat, Pretreat, Mojonnier, Bak Ext, Acid hydrolysis (%)	7	7	3.440	0.6344	0.6265	0.1418	0.6423	18.21%	4.12%	18.67%	4.529
015.41	Aluminum, ICP, Dry ash (ppm)	5	5	723.0	191.8	187.1	59.76	196.4	25.87%	8.26%	27.16%	3.286
015.43	Aluminum, ICP, Microwave (ppm)	6	5	877.0	405.5	149.9	18.30	151.0	20.79%	2.54%	20.94%	8.251
017.43	Boron, ICP, Microwave (ppm)	8	7	17.02	2.640	2.620	0.4522	2.659	15.39%	2.66%	15.62%	5.879
019.08	Calcium, EDTA (%)	10	9	13.49	2.608	1.165	0.1751	1.178	9.15%	1.37%	9.25%	6.730
019.31	Calcium, AAS, Dry ash (%)	17	16	12.78	1.239	0.7891	0.2723	0.8348	6.29%	2.17%	6.65%	3.066
019.41	Calcium, ICP, Dry ash (%)	20	19	12.16	0.7605	0.7059	0.4001	0.8114	5.80%	3.29%	6.67%	2.028
019.42	Calcium, ICP, Open vessel (%)	19	18	12.77	1.017	0.8791	0.4142	0.9718	6.94%	3.27%	7.67%	2.346
019.43	Calcium, ICP, Microwave (%)	33	29	12.02	3.000	1.251	0.2169	1.270	10.38%	1.80%	10.53%	5.856
019.99	Calcium, Miscellaneous (%)	6	6	12.37	0.7028	0.6707	0.2971	0.7336	5.42%	2.40%	5.93%	2.469
021.41	Cobalt, ICP, Dry ash (ppm)	7	7	84.82	38.99	38.93	2.907	39.04	45.90%	3.43%	46.03%	13.43
021.43	Cobalt, ICP, Microwave (ppm)	14	11	97.31	32.62	18.96	0.7553	18.98	18.53%	0.74%	18.55%	25.13
022.31	Copper, AAS, Dry ash (ppm)	10	8	1,358	74.54	68.08	13.22	69.35	5.06%	0.98%	5.15%	5.246
022.41	Copper, ICP, Dry ash (ppm)	16	15	1,276	103.8	104.2	26.06	107.4	8.19%	2.05%	8.44%	4.120
022.42	Copper, ICP, Open vessel (ppm)	19	18	1,320	108.8	104.8	40.87	112.5	7.94%	3.10%	8.52%	2.753
022.43	Copper, ICP, Microwave (ppm)	34	31	1,305	122.6	73.26	46.83	86.95	5.56%	3.56%	6.60%	1.857
025.31	Iron, AAS, Dry ash (ppm)	9	8	4,043	649.0	365.1	57.19	369.6	8.64%	1.35%	8.74%	6.462
025.41	Iron, ICP, Dry ash (ppm)	19	18	4,040	1,015	532.2	101.3	541.8	12.56%	2.39%	12.78%	5.348
025.42	Iron, ICP, Open vessel (ppm)	19	16	4,277	702.9	468.4	105.2	480.1	11.28%	2.53%	11.56%	4.563
025.43	Iron, ICP, Microwave (ppm)	28	26	4,033	860.7	505.9	158.1	530.0	12.15%	3.80%	12.73%	3.352
027.31	Magnesium, AAS, Dry ash (%)	9	8	10.92	0.6995	0.6621	0.4092	0.7783	6.10%	3.77%	7.17%	1.902
027.41	Magnesium, ICP, Dry ash (%)	18	17	9.825	3.355	2.513	0.4926	2.560	24.25%	4.75%	24.71%	5.198
027.42	Magnesium, ICP, Open vessel (%)	20	19	11.38	1.002	0.9827	0.4040	1.062	8.62%	3.54%	9.32%	2.630

Test Material Code # 202398 **Issue Date : 09/30/2023**

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
027.43	Magnesium, ICP, Microwave (%)	34	32	10.57	2.179	1.256	0.3216	1.296	11.55%	2.96%	11.92%	4.031
028.31	Manganese, AAS, Dry ash (ppm)	10	8	1,620	173.6	87.45	30.56	92.64	5.22%	1.82%	5.53%	3.032
028.41	Manganese, ICP, Dry ash (ppm)	16	14	1,517	431.0	145.7	19.37	147.0	8.98%	1.19%	9.06%	7.590
028.42	Manganese, ICP, Open vessel (ppm)	20	17	1,638	134.7	109.9	50.62	121.0	6.78%	3.12%	7.46%	2.391
028.43	Manganese, ICP, Microwave (ppm)	29	27	1,543	168.9	130.3	35.76	135.1	8.33%	2.29%	8.64%	3.778
031.01	Phosphorus, Photometric (%)	30	25	2.606	0.5670	0.2221	0.0376	0.2252	8.65%	1.47%	8.78%	5.985
031.41	Phosphorus, ICP, Dry ash (%)	19	18	2.547	0.3578	0.1680	0.0748	0.1839	6.41%	2.86%	7.02%	2.458
031.42	Phosphorus, ICP, Open vessel (%)	21	19	2.657	0.2116	0.1473	0.0850	0.1701	5.61%	3.24%	6.48%	2.001
031.43	Phosphorus, ICP, Microwave (%)	33	31	2.600	0.3734	0.2105	0.1321	0.2485	7.88%	4.94%	9.30%	1.882
031.99	Phosphorus, Miscellaneous (%)	5	5	2.407	0.3149	0.3082	0.0914	0.3215	12.81%	3.80%	13.36%	3.518
032.31	Potassium, AAS, Dry ash (%)	7	6	0.7254	0.1286	0.1404	0.0068	0.1406	19.27%	0.93%	19.29%	20.79
032.41	Potassium, ICP, Dry ash (%)	18	16	0.8527	0.2590	0.1148	0.0470	0.1240	14.51%	5.94%	15.68%	2.639
032.42	Potassium, ICP, Open vessel (%)	18	15	0.8230	0.1751	0.1270	0.0298	0.1304	16.07%	3.77%	16.51%	4.374
032.43	Potassium, ICP, Microwave (%)	32	30	0.8063	0.1998	0.1189	0.0178	0.1202	15.22%	2.28%	15.39%	6.762
032.99	Potassium, Miscellaneous (%)	6	5	0.7860	0.0687	0.0351	0.0105	0.0367	4.62%	1.38%	4.82%	3.496
033.00	Salt as chloride, Sol Cl (%)	12	10	15.99	2.002	0.8831	0.1624	0.8979	5.32%	0.98%	5.41%	5.529
033.01	Salt as chloride, Poten Cl (%)	20	19	16.89	0.8091	0.5878	0.2686	0.6463	3.51%	1.60%	3.86%	2.406
033.99	Salt, Miscellaneous (%)	9	8	17.03	1.063	0.5850	0.3208	0.6672	3.50%	1.92%	3.99%	2.080
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	12	11	19.81	3.518	2.531	0.6501	2.613	12.33%	3.17%	12.73%	4.020
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	7	7	21.59	2.823	2.775	0.7352	2.871	12.86%	3.41%	13.30%	3.905
035.31	Sodium, AAS, Dry ash (%)	7	6	6.531	1.698	0.7461	0.0826	0.7506	12.55%	1.39%	12.63%	9.083
035.41	Sodium, ICP, Dry ash (%)	17	14	6.576	0.3638	0.3546	0.1749	0.3954	5.38%	2.65%	6.00%	2.261
035.42	Sodium, ICP, Open vessel (%)	17	16	6.562	0.5082	0.3668	0.2509	0.4444	5.66%	3.87%	6.85%	1.771
035.43	Sodium, ICP, Microwave (%)	24	23	6.120	1.409	0.6447	0.1373	0.6592	10.11%	2.15%	10.34%	4.801
036.42	Sulfur, ICP, Open vessel (%)	16	15	0.6417	0.0867	0.0814	0.0412	0.0913	12.58%	6.36%	14.10%	2.215
036.43	Sulfur, ICP, Microwave (%)	23	20	0.6890	0.0978	0.0651	0.0216	0.0686	9.49%	3.16%	10.00%	3.168
037.31	Zinc, AAS, Dry ash (ppm)	10	9	2,717	130.2	136.0	33.81	140.1	5.00%	1.24%	5.15%	4.144
037.41	Zinc, ICP, Dry ash (ppm)	18	16	2,385	646.0	248.4	109.6	271.5	9.82%	4.34%	10.74%	2.476
037.42	Zinc, ICP, Open vessel (ppm)	19	19	2,624	292.1	246.3	222.0	331.6	9.39%	8.46%	12.64%	1.494
037.43	Zinc, ICP, Microwave (ppm)	33	31	2,371	546.8	333.8	90.83	346.0	13.64%	3.71%	14.14%	3.809
037.99	Zinc, Miscellaneous (ppm)	5	5	2,372	336.9	330.9	89.46	342.8	13.95%	3.77%	14.45%	3.832
038.43	Molybdenum, ICP, Microwave (ppm)	7	7	4.109	1.818	1.800	0.3659	1.837	43.81%	8.90%	44.70%	5.020
106.02	Vitamin A, LC (KU / kg)	13	11	171.8	52.47	25.54	5.791	26.19	13.80%	3.13%	14.15%	4.522
109.02	Vitamin E, LC (IU / kg)	15	14	325.9	65.34	41.58	20.92	46.55	13.28%	6.68%	14.87%	2.225
400.01	Water Activity, Aqualab chilled mirror (Units)	6	5	0.3562	0.1274	0.0145	0.0019	0.0146	3.55%	0.47%	3.58%	7.685
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	8	6	104.3	41.33	11.69	1.754	11.82	9.41%	1.41%	9.52%	6.738
539.43	Nickel, ICP, Microwave (ppm)	6	6	34.18	18.04	18.02	1.078	18.05	52.73%	3.15%	52.82%	16.74

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