



AAFCO
Association of American Feed Control Officials



Animal Feed Scheme
Equine Feed
Test Material Code # 202322

Method Summary Report
(Precision Report Follows)

Labs Reporting: 154
Methods Reported: 357
Issue Date : 03/31/2023

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO #fp Robust SD	Uncertainty (U) Robust	% RSD - Robust	Average Range (R-bar)	Thompson Horwitz %RSD
000.02	Urea, As protein, Colorimetric (%)	1	1	0.6000							
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	41	40	9.262	0.2907	9.272	0.2957	0.0584	3.19%	0.0850	2.86%
001.99	Loss on Drying, Miscellaneous (%)	16	15	9.187	0.3595	9.193	0.3934	0.1270	4.28%	0.1199	2.86%
001.00	Loss on Drying, Vac 95°C 5 hr (%)	4	4	9.156	0.3460	9.156	0.3460	0.1730	3.78%	0.0499	2.87%
001.03	Loss on Drying, Low temp. methods (%)	2	2	9.523	0.3359						
001.05	Loss on Drying, LECO (%)	1	1	9.315							
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	103	102	15.77	0.3440	15.76	0.3352	0.0415	2.13%	0.1770	2.52%
002.01	Protein, Crude, Auto Kjeh-Foss (%)	19	18	15.61	0.2671	15.60	0.2487	0.0733	1.59%	0.0808	2.53%
002.05	Protein, Crude, Copper, Boric Acid (%)	18	17	15.42	0.3663	15.48	0.2275	0.0690	1.47%	0.1053	2.54%
002.00	Protein, Crude, Crude (%)	2	2	15.22	1.184						
002.02	Protein, Crude, Semiauto Autoanalyzer (%)	2	2	15.34	0.1450						
002.08	Protein, Crude, Cu/Ti (%)	2	2	15.37	0.4766						
002.11	Protein, Crude, NIR (%)	2	2	15.97	0.1131						
002.04	Protein, Crude, Copper Catalyst (%)	1	1	15.63							
002.10	Protein, Crude, Block dig/distillation (%)	1	1	15.58							
003.14	Fat, Crude, Ankom (%)	48	46	6.830	0.3627	6.851	0.2968	0.0547	4.33%	0.1363	2.99%
003.10	Fat, Crude, Randall, Pet Ether (%)	25	25	6.583	0.2566	6.574	0.2127	0.0532	3.23%	0.0772	3.01%
003.06	Fat, Crude, Pet Ether (%)	15	15	6.788	0.3678	6.788	0.3976	0.1283	5.86%	0.1946	3.00%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	10	10	6.815	0.2178	6.815	0.2470	0.0976	3.62%	0.1836	3.00%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	8	8	6.799	0.3360	6.799	0.3811	0.1684	5.60%	0.1387	3.00%
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	8	7	7.060	0.4874	7.060	0.5527	0.2611	7.83%	0.0771	2.98%
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	3	3	6.745	0.4345	6.745	0.4345	0.2508	6.44%	0.2158	3.00%
003.99	Fat, Crude, Miscellaneous (%)	3	3	7.050	1.238	7.050	1.238	0.7149	17.56%	0.0400	2.98%
003.11	Fat, Crude, NIR (%)	2	2	7.140	0.5798						
003.12	Fat, Crude, Hexane Ext (%)	2	2	7.043	0.0601						
004.07	Fiber, Crude, ANKOM (%)	69	69	10.18	0.9911	10.10	0.7819	0.1177	7.74%	0.3068	2.82%
004.06	Fiber, Crude, Fibertec (%)	18	18	10.04	0.6195	9.973	0.4857	0.1431	4.87%	0.2250	2.83%
004.00	Fiber, Crude, Asbestos Free (%)	11	11	10.35	0.8828	10.30	0.8260	0.3113	8.02%	0.4859	2.82%
004.03	Fiber, Crude, Fritted Glass (%)	4	4	10.48	0.8622	10.48	0.8622	0.4311	8.22%	0.3525	2.81%

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004.11	Fiber, Crude, NIR (%)	2	2	10.53	1.089						
004.99	Fiber, Crude, Miscellaneous (%)	2	2	9.773	0.3217						
005.00	Ash, 2h @ 600°C (%)	82	81	8.989	0.2694	8.982	0.2272	0.0316	2.53%	0.0909	2.87%
005.05	Ash, 3h @ 550°C (%)	21	21	9.356	0.6822	9.216	0.1899	0.0518	2.06%	0.1537	2.86%
005.99	Ash, Miscellaneous (%)	10	10	9.079	0.2907	9.085	0.3161	0.1249	3.48%	0.1040	2.87%
005.11	Ash, NIR (%)	2	2	9.308	0.9864						
005.02	Ash, LECO (%)	1	1	9.382							
005.03	Ash, Microwave furnace (%)	1	1	8.450							
006.99	Total Sugars, Miscellaneous (%)	2	2	5.263	1.043						
006.00	Total Sugars, As sucrose (%)	1	1	6.120							
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	43	42	13.34	0.9426	13.25	0.7486	0.1444	5.65%	0.3656	2.71%
008.02	Fiber, Acid Detergent, Crucible (%)	14	13	13.56	1.367	13.33	0.7855	0.2723	5.89%	0.2793	2.71%
008.99	Fiber, Acid Detergent, Miscellaneous (%)	4	4	12.90	0.3131	12.90	0.3131	0.1566	2.43%	0.3967	2.72%
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	42	41	30.71	1.340	30.57	1.011	0.1974	3.31%	0.2350	1.81%
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	13	12	32.01	2.576	31.53	1.435	0.5178	4.55%	0.6179	1.78%
009.99	Fiber, Neutral Detergent, Miscellaneous (%)	4	4	31.30	2.827	31.30	2.827	1.414	9.03%	0.2625	1.79%
010.99	Moisture, Miscellaneous (%)	15	15	9.313	0.4248	9.340	0.3208	0.1035	3.43%	0.1783	2.86%
010.03	Moisture, Karl-Fischer (%)	2	2	9.883	0.3430						
010.11	Moisture, NIR (%)	2	2	8.885	0.2616						
011.01	Loss on Drying, HT, 135°C 2hr (%)	58	56	10.27	0.3914	10.27	0.3989	0.0666	3.88%	0.1147	2.82%
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	3	3	9.980	0.1198	9.980	0.1198	0.0692	1.20%	0.2027	2.83%
011.02	Loss on Drying, HT, 130°C for 2 hours (%)	2	2	10.18	0.1626						
012.00	Starch, Polarimetric (Ewers) (%)	11	11	15.60	0.7183	15.64	0.7004	0.2640	4.48%	0.2187	2.53%
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	11	11	14.18	0.9853	14.12	0.9567	0.3606	6.78%	0.7654	2.66%
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	6	6	14.90	2.614	14.18	1.070	0.5459	7.55%	0.1775	2.66%
012.99	Starch, Miscellaneous (%)	2	2	14.36	3.104						
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	1	1	15.55							
012.11	Starch, NIR (%)	1	1	16.03							
012.20	Starch, Dietary, Enzymatic-Colorimetric (%)	1	1	14.08							
013.02	Fat, Pretreat, Mojonier, Bak Ext, Acid hydrolysis (%)	15	15	8.393	0.4892	8.446	0.3516	0.1135	4.16%	0.2425	2.90%
013.00	Fat, Pretreat, Acid hydrolysis (%)	12	12	7.810	0.8628	7.767	0.8762	0.3162	11.28%	0.2056	2.94%
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	7	7	7.655	0.4379	7.655	0.4965	0.2346	6.49%	0.2076	2.94%
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	7	6	9.436	3.338	8.267	0.6272	0.3201	7.59%	0.1050	2.91%
015.43	Aluminum, ICP, Microwave (ppm)	6	6	312.1	32.47	312.1	36.82	18.79	11.79%	8.290	6.74%
015.41	Aluminum, ICP, Dry ash (ppm)	4	4	236.9	60.96	236.9	60.96	30.48	25.74%	8.789	7.03%
015.53	Aluminum, ICP-MS, Microwave (ppm)	2	2	241.2	39.29						
015.42	Aluminum, ICP, Open vessel (ppm)	1	1	136.0							
017.41	Boron, ICP, Dry ash (ppm)	5	5	9.725	1.006	9.725	1.006	0.4500	10.35%	1.103	11.36%
017.42	Boron, ICP, Open vessel (ppm)	4	4	9.514	1.408	9.514	1.408	0.7040	14.80%	0.3125	11.40%
017.43	Boron, ICP, Microwave (ppm)	5	4	9.929	0.9267	9.929	0.9267	0.4634	9.33%	0.1636	11.32%

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017.52	Boron, ICP-MS, Open vessel (ppm)	1	1	8.849							
017.53	Boron, ICP-MS, Microwave (ppm)	1	1	5.627							
017.99	Boron, Miscellaneous (ppm)	1	1	11.60							
019.43	Calcium, ICP, Microwave (%)	29	28	1.291	0.1358	1.305	0.0847	0.0200	6.49%	0.0457	3.84%
019.41	Calcium, ICP, Dry ash (%)	21	21	1.304	0.0609	1.304	0.0609	0.0166	4.67%	0.0369	3.84%
019.31	Calcium, AAS, Dry ash (%)	17	16	1.266	0.0624	1.271	0.0575	0.0180	4.53%	0.0269	3.86%
019.42	Calcium, ICP, Open vessel (%)	16	16	1.317	0.1242	1.304	0.1110	0.0347	8.51%	0.0463	3.84%
019.08	Calcium, EDTA (%)	10	10	1.328	0.0814	1.323	0.0820	0.0324	6.19%	0.0214	3.83%
019.99	Calcium, Miscellaneous (%)	6	6	1.348	0.1584	1.305	0.0652	0.0333	5.00%	0.0533	3.84%
019.52	Calcium, ICP-MS, Open vessel (%)	4	4	1.329	0.0700	1.329	0.0700	0.0350	5.26%	0.0938	3.83%
019.00	Calcium, Ox-Mn04 Vol. (%)	4	3	1.271	0.0868	1.271	0.0868	0.0614	6.83%	0.0058	3.86%
019.44	Calcium, ICP, Dry ash (%)	2	2	1.245	0.0141						
019.53	Calcium, ICP-MS, Microwave (%)	2	2	1.088	0.3066						
019.09	Calcium, Ion-selective electrode (%)	1	1	1.208							
019.32	Calcium, AAS, Open vessel (%)	1	1	1.380							
021.43	Cobalt, ICP, Microwave (ppm)	10	9	4.497	0.4274	4.468	0.4174	0.1739	9.34%	0.2773	12.77%
021.41	Cobalt, ICP, Dry ash (ppm)	5	5	3.840	0.8366	3.840	0.8366	0.3741	21.79%	0.1243	13.06%
021.52	Cobalt, ICP-MS, Open vessel (ppm)	3	3	3.636	1.180	3.636	1.180	0.8344	32.46%	0.2717	13.17%
021.53	Cobalt, ICP-MS, Microwave (ppm)	3	3	3.654	0.8240	3.654	0.8240	0.4757	22.55%	0.2588	13.16%
021.31	Cobalt, AAS, Dry ash (ppm)	1	1	4.545							
021.42	Cobalt, ICP, Open vessel (ppm)	1	1	3.855							
022.43	Copper, ICP, Microwave (ppm)	29	29	111.1	8.738	110.8	7.963	1.848	7.19%	5.345	7.88%
022.42	Copper, ICP, Open vessel (ppm)	17	17	110.5	10.59	110.1	10.85	3.290	9.86%	3.965	7.88%
022.41	Copper, ICP, Dry ash (ppm)	16	16	98.74	11.51	99.60	11.13	3.477	11.17%	3.110	8.00%
022.31	Copper, AAS, Dry ash (ppm)	13	13	99.30	5.215	99.46	5.539	1.920	5.57%	1.490	8.01%
022.52	Copper, ICP-MS, Open vessel (ppm)	3	3	110.2	1.211	110.2	1.211	0.6993	1.10%	7.999	7.88%
022.33	Copper, AAS, Microwave (ppm)	2	2	108.0	11.89						
022.44	Copper, ICP, Dry ash (ppm)	2	2	101.5	7.074						
022.53	Copper, ICP-MS, Microwave (ppm)	2	2	85.01	24.74						
022.99	Copper, Miscellaneous (ppm)	2	2	97.10	0.5657						
022.32	Copper, AAS, Open vessel (ppm)	1	1	119.0							
025.43	Iron, ICP, Microwave (ppm)	26	25	483.1	87.86	498.7	32.67	8.167	6.55%	14.77	6.28%
025.41	Iron, ICP, Dry ash (ppm)	17	17	432.1	120.2	458.7	46.26	14.02	10.09%	16.02	6.36%
025.31	Iron, AAS, Dry ash (ppm)	15	15	454.1	68.63	457.0	60.00	19.36	13.13%	14.10	6.36%
025.42	Iron, ICP, Open vessel (ppm)	15	15	399.6	100.3	405.3	100.8	32.55	24.88%	18.00	6.48%
025.52	Iron, ICP-MS, Open vessel (ppm)	2	2	481.9	9.567						
025.99	Iron, Miscellaneous (ppm)	2	2	506.0	41.05						
025.33	Iron, AAS, Microwave (ppm)	1	1	483.9							
025.53	Iron, ICP-MS, Microwave (ppm)	1	1	332.8							
027.43	Magnesium, ICP, Microwave (%)	26	26	0.4207	0.0247	0.4203	0.0261	0.0064	6.21%	0.0094	4.56%

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027.42	Magnesium, ICP, Open vessel (%)	17	17	0.4224	0.0300	0.4205	0.0272	0.0083	6.47%	0.0161	4.56%
027.41	Magnesium, ICP, Dry ash (%)	16	16	0.4102	0.0229	0.4102	0.0259	0.0081	6.32%	0.0148	4.57%
027.31	Magnesium, AAS, Dry ash (%)	11	11	0.4063	0.0255	0.4093	0.0212	0.0080	5.17%	0.0078	4.58%
027.99	Magnesium, Miscellaneous (%)	5	5	0.4110	0.0082	0.4110	0.0082	0.0037	2.00%	0.0100	4.57%
027.52	Magnesium, ICP-MS, Open vessel (%)	4	4	0.4526	0.0782	0.4526	0.0782	0.0391	17.28%	0.0115	4.51%
027.33	Magnesium, AAS, Microwave (%)	2	2	0.4460	0.0297						
027.32	Magnesium, AAS, Open vessel (%)	1	1	0.4350							
027.44	Magnesium, ICP, Dry ash (%)	1	1	0.3900							
027.53	Magnesium, ICP-MS, Microwave (%)	1	1	0.2754							
028.43	Manganese, ICP, Microwave (ppm)	26	24	257.6	13.89	257.6	13.09	3.341	5.08%	6.966	6.94%
028.42	Manganese, ICP, Open vessel (ppm)	17	17	256.4	24.17	255.0	24.18	7.330	9.48%	8.805	6.95%
028.41	Manganese, ICP, Dry ash (ppm)	15	15	246.0	8.539	246.0	9.683	3.125	3.94%	9.099	6.99%
028.31	Manganese, AAS, Dry ash (ppm)	14	13	243.6	22.40	243.2	22.10	7.663	9.09%	5.867	7.00%
028.52	Manganese, ICP-MS, Open vessel (ppm)	3	3	306.4	72.80	306.4	72.80	42.03	23.76%	8.851	6.76%
028.99	Manganese, Miscellaneous (ppm)	3	3	258.9	2.287	258.9	2.287	1.320	0.88%	9.133	6.93%
028.44	Manganese, ICP, Dry ash (ppm)	2	2	224.1	42.27						
028.53	Manganese, ICP-MS, Microwave (ppm)	2	2	208.3	56.82						
028.32	Manganese, AAS, Open vessel (ppm)	1	1	280.0							
028.33	Manganese, AAS, Microwave (ppm)	1	1	239.0							
030.01	Nitrate, Ion-selective electrode (%)	1	1	0.0099							
031.01	Phosphorus, Photometric (%)	28	28	0.9470	0.0260	0.9476	0.0262	0.0062	2.76%	0.0140	4.03%
031.43	Phosphorus, ICP, Microwave (%)	29	28	0.9739	0.0511	0.9715	0.0525	0.0124	5.41%	0.0197	4.02%
031.41	Phosphorus, ICP, Dry ash (%)	20	19	0.9491	0.0449	0.9491	0.0509	0.0146	5.37%	0.0248	4.03%
031.42	Phosphorus, ICP, Open vessel (%)	17	17	0.9587	0.0818	0.9549	0.0756	0.0229	7.92%	0.0264	4.03%
031.99	Phosphorus, Miscellaneous (%)	4	4	0.9800	0.1123	0.9800	0.1123	0.0562	11.46%	0.0267	4.01%
031.44	Phosphorus, ICP, Dry ash (%)	3	3	0.9290	0.0515	0.9290	0.0515	0.0297	5.54%	0.0147	4.04%
031.03	Phosphorus, Autoanalyzer (%)	2	2	0.9508	0.0152						
031.52	Phosphorus, ICP-MS, Open vessel (%)	2	2	0.9640	0.0169						
031.53	Phosphorus, ICP-MS, Microwave (%)	2	2	0.7936	0.1858						
031.00	Phosphorus, Vol (%)	1	1	1.010							
031.02	Phosphorus, GQMP (AOAC 935.13-Extraction) (%)	1	1	0.9650							
031.06	Phosphorus, Hach Method (%)	1	1	1.125							
032.43	Potassium, ICP, Microwave (%)	28	27	1.072	0.0506	1.071	0.0502	0.0121	4.69%	0.0197	3.96%
032.41	Potassium, ICP, Dry ash (%)	17	17	1.039	0.0478	1.040	0.0489	0.0148	4.70%	0.0385	3.98%
032.42	Potassium, ICP, Open vessel (%)	16	16	1.075	0.0848	1.069	0.0780	0.0244	7.30%	0.0402	3.96%
032.31	Potassium, AAS, Dry ash (%)	9	8	0.9932	0.0599	0.9903	0.0610	0.0269	6.16%	0.0121	4.01%
032.52	Potassium, ICP-MS, Open vessel (%)	3	3	1.010	0.1074	1.010	0.1074	0.0759	10.63%	0.0352	3.99%
032.99	Potassium, Miscellaneous (%)	4	3	1.055	0.0328	1.055	0.0328	0.0189	3.11%	0.0150	3.97%
032.53	Potassium, ICP-MS, Microwave (%)	2	2	0.8495	0.1916						
032.02	Potassium, Flame Emission (%)	1	1	2.090							

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032.08	Potassium, Ion-selective electrode (%)	1	1	0.7795							
032.32	Potassium, AAS, Open vessel (%)	1	1	1.145							
032.44	Potassium, ICP, Dry ash (%)	1	1	1.035							
033.01	Salt as chloride, Poten Cl (%)	25	25	1.233	0.2716	1.211	0.0270	0.0067	2.23%	0.0227	3.89%
033.00	Salt as chloride, Sol Cl (%)	18	18	1.163	0.1036	1.165	0.1124	0.0331	9.65%	0.0437	3.91%
033.99	Salt, Miscellaneous (%)	9	9	1.184	0.1430	1.192	0.1433	0.0597	12.02%	0.0399	3.90%
033.03	Salt as chloride, Quantab (%)	4	4	0.6213	0.2014	0.6213	0.2014	0.1007	32.42%	0.1025	4.30%
033.05	Salt as chloride, Ion Sel Electrode (%)	4	3	1.197	0.0110	1.197	0.0110	0.0064	0.92%	0.0165	3.89%
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	7	7	1.534	0.3247	1.507	0.3046	0.1439	20.21%	0.1726	15.04%
034.04	Selenium, Total (Se), AA, Hydride (ppm)	4	4	1.230	0.2997	1.230	0.2997	0.1499	24.37%	0.0740	15.51%
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	4	3	1.447	0.5166	1.447	0.5166	0.2983	35.71%	0.0650	15.13%
034.52	Selenium, Total (Se), ICP-MS, Open vessel (ppm)	4	3	1.980	0.4058	1.980	0.4058	0.2343	20.50%	0.0300	14.43%
034.01	Selenium, Total (Se), Fluor (ppm)	1	1	1.430							
034.41	Selenium, Total (Se), ICP, Dry ash (ppm)	1	1	1.400							
034.99	Selenium, Total (Se), Miscellaneous (ppm)	1	1	1.730							
034.42	Selenium, Total (Se), ICP, Open vessel (ppm)	1		20.00							
035.43	Sodium, ICP, Microwave (%)	24	23	0.5565	0.0302	0.5565	0.0294	0.0077	5.28%	0.0144	4.37%
035.41	Sodium, ICP, Dry ash (%)	19	19	0.5312	0.0238	0.5298	0.0236	0.0068	4.46%	0.0161	4.40%
035.42	Sodium, ICP, Open vessel (%)	15	15	0.5336	0.0252	0.5313	0.0232	0.0075	4.36%	0.0168	4.40%
035.31	Sodium, AAS, Dry ash (%)	11	11	0.5187	0.0420	0.5217	0.0407	0.0153	7.80%	0.0127	4.41%
035.99	Sodium, Miscellaneous (%)	4	4	0.5125	0.0758	0.5125	0.0758	0.0379	14.78%	0.0200	4.42%
035.52	Sodium, ICP-MS, Open vessel (%)	3	3	0.5511	0.0452	0.5511	0.0452	0.0261	8.19%	0.0201	4.38%
035.01	Sodium, Ion-selective electrode (%)	2	2	0.5770	0.0099						
035.53	Sodium, ICP-MS, Microwave (%)	2	2	0.4348	0.1135						
035.02	Sodium, Em Spect (%)	1	1	0.5250							
035.32	Sodium, AAS, Open vessel (%)	1	1	0.5450							
036.42	Sulfur, ICP, Open vessel (%)	16	15	0.3927	0.0532	0.3986	0.0352	0.0114	8.83%	0.0116	4.59%
036.43	Sulfur, ICP, Microwave (%)	14	14	0.4251	0.0305	0.4297	0.0220	0.0073	5.12%	0.0146	4.54%
036.04	Sulfur, LECO (%)	4	3	0.4155	0.0006	0.4155	0.0006	0.0003	0.13%	0.0135	4.56%
036.99	Sulfur, Miscellaneous (%)	2	2	0.3900	0.0849						
036.52	Sulfur, ICP-MS, Open vessel (%)	1	1	0.4260							
037.43	Zinc, ICP, Microwave (ppm)	28	28	335.7	22.95	335.5	22.85	5.399	6.81%	11.24	6.67%
037.41	Zinc, ICP, Dry ash (ppm)	16	16	321.0	24.23	320.0	25.20	7.876	7.88%	12.13	6.71%
037.42	Zinc, ICP, Open vessel (ppm)	16	15	297.0	87.09	312.4	30.06	9.702	9.62%	11.07	6.74%
037.31	Zinc, AAS, Dry ash (ppm)	14	14	314.1	19.00	314.1	21.55	7.198	6.86%	10.54	6.73%
037.99	Zinc, Miscellaneous (ppm)	4	4	331.2	18.62	331.2	18.62	9.309	5.62%	34.39	6.68%
037.52	Zinc, ICP-MS, Open vessel (ppm)	3	3	334.3	16.11	334.3	16.11	9.299	4.82%	18.80	6.67%
037.33	Zinc, AAS, Microwave (ppm)	2	2	327.7	20.37						
037.44	Zinc, ICP, Dry ash (ppm)	2	2	259.4	51.84						
037.32	Zinc, AAS, Open vessel (ppm)	1	1	343.0							

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037.34	Zinc, AAS, Dry ash (ppm)	1	1	316.4							
037.53	Zinc, ICP-MS, Microwave (ppm)	1	1	196.9							
038.43	Molybdenum, ICP, Microwave (ppm)	8	8	2.695	0.5436	2.709	0.5848	0.2584	21.59%	0.1862	13.77%
038.41	Molybdenum, ICP, Dry ash (ppm)	3	3	2.682	0.2061	2.682	0.2061	0.1457	7.68%	0.0568	13.79%
038.42	Molybdenum, ICP, Open vessel (ppm)	3	3	3.079	0.1045	3.079	0.1045	0.0603	3.39%	0.1590	13.51%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	3	3	2.569	0.5862	2.569	0.5862	0.4145	22.82%	0.2141	13.88%
038.52	Molybdenum, ICP-MS, Open vessel (ppm)	2	2	2.858	0.4641						
038.99	Molybdenum, Miscellaneous (ppm)	1	1	3.045							
040.52	Barium, ICP-MS, Open vessel (ppm)	1	1	20.80							
040.53	Barium, ICP-MS, Microwave (ppm)	1	1	15.07							
041.53	Vanadium, ICP-MS, Microwave (ppm)	1	1	1.328							
042.00	Chloride, Titrimetric (%)	4	3	0.7300	0.0100	0.7300	0.0100			0.0000	4.19%
042.01	Chloride, Ion-selective electrode (%)	1	1	0.7310							
101.99	Choline Chloride, Miscellaneous (ppm)	1	1	1,120							
102.01	Niacin, Microbiological (ppm)	1	1	102.0							
103.01	Pantothenic Acid, Microbiological (ppm)	1	1	17.95							
104.00	Riboflavin, Fluorometric (ppm)	1	1	3.700							
104.03	Riboflavin, LC (ppm)	1	1	3.430							
105.00	Thiamine, LC (ppm)	2	2	9.228	4.812						
105.01	Thiamine, Fluorometer (ppm)	1	1	12.10							
106.02	Vitamin A, LC (KU / kg)	11	10	13.35	3.621	13.35	4.106	1.623	30.77%	1.557	
106.00	Vitamin A, Color (KU / kg)	1	1	14.90							
106.01	Vitamin A, UV (KU / kg)	1	1	11.74							
108.02	Vitamin D3, LC (KU / kg)	4	4	2.206	0.5442	2.206	0.5442	0.2721	24.67%	0.7665	
108.99	Vitamin D3, Miscellaneous (KU / kg)	2	2	1.760	0.6081						
109.02	Vitamin E, LC (IU / kg)	13	13	298.9	138.1	282.1	114.3	39.64	40.53%	29.31	
109.99	Vitamin E, Miscellaneous (IU / kg)	3	3	338.9	97.34	338.9	97.34	56.20	28.72%	9.489	
111.00	Vitamin C, Phosphorylated, LC (ppm)	1	1	55.70							
112.01	Pyridoxine, LC (µg / g)	1	1	5.435							
113.01	Folic Acid, Micro (ppm)	1	1	1.995							
114.01	Biotin, Microbiological (ppm)	1	1	2.740							
115.00	Non Protein N (NPN), Urea + Am, Urease method (%)	2	2	0.5000	0.4313						
120.00	Alanine, Post-col Ninhydrin Der (%)	14	13	0.7061	0.0192	0.7083	0.0107	0.0037	1.51%	0.0113	4.21%
120.05	Alanine, Pre-col AQC Der (%)	9	9	0.6958	0.0286	0.6953	0.0239	0.0099	3.43%	0.0160	4.22%
120.99	Alanine, Miscellaneous (%)	4	3	0.6900	0.0436	0.6900	0.0436			0.0000	4.23%
120.02	Alanine, Post-col OPA Der (%)	1	1	0.7175							
121.00	Arginine, Post-col Ninhydrin Der (%)	14	14	0.9823	0.0444	0.9794	0.0433	0.0145	4.42%	0.0138	4.01%
121.05	Arginine, Pre-col AQC Der (%)	9	9	0.9883	0.0672	0.9900	0.0693	0.0289	7.00%	0.0708	4.01%
121.99	Arginine, Miscellaneous (%)	4	3	0.9183	0.1025	0.9183	0.1025	0.0592	11.16%	0.0150	4.05%
121.02	Arginine, Post-col OPA Der (%)	1	1	0.9665							

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122.00	Aspartic, Post-col Ninhydrin Der (%)	14	14	1.150	0.0376	1.150	0.0417	0.0139	3.62%	0.0217	3.92%
122.05	Aspartic, Pre-col AQC Der (%)	9	9	1.108	0.0831	1.108	0.0926	0.0386	8.36%	0.0400	3.94%
122.99	Aspartic, Miscellaneous (%)	4	4	1.089	0.1353	1.089	0.1353	0.0677	12.43%	0.0167	3.95%
122.02	Aspartic, Post-col OPA Der (%)	1	1	1.172							
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin Der (%)	15	15	0.2830	0.0386	0.2753	0.0156	0.0050	5.65%	0.0085	4.86%
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	8	0.2519	0.0792	0.2554	0.0818	0.0362	32.04%	0.0189	4.91%
124.99	Cysteine/Cystine, Miscellaneous (%)	4	4	0.2224	0.0120	0.2224	0.0120	0.0060	5.41%	0.0065	5.02%
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	1	1	0.2940							
125.00	Glutamic, Post-col Ninhydrin Der (%)	14	14	2.476	0.0869	2.477	0.0941	0.0314	3.80%	0.0278	3.49%
125.05	Glutamic, Pre-col AQC Der (%)	9	8	2.408	0.1701	2.413	0.1820	0.0804	7.54%	0.0248	3.50%
125.99	Glutamic, Miscellaneous (%)	4	3	2.517	0.1239	2.517	0.1239	0.0716	4.92%	0.0200	3.48%
125.02	Glutamic, Post-col OPA Der (%)	1	1	2.491							
126.00	Glycine, Post-col Ninhydrin Der (%)	15	14	0.7803	0.0693	0.7650	0.0198	0.0066	2.59%	0.0157	4.16%
126.05	Glycine, Pre-col AQC Der (%)	9	9	0.8057	0.0356	0.8057	0.0403	0.0168	5.01%	0.0296	4.13%
126.99	Glycine, Miscellaneous (%)	4	2	0.8050	0.0212	0.8050	0.0212			0.0000	4.13%
126.02	Glycine, Post-col OPA Der (%)	1	1	0.7845							
127.00	Histidine, Post-col Ninhydrin Der (%)	15	15	0.3679	0.0247	0.3642	0.0187	0.0060	5.13%	0.0091	4.66%
127.05	Histidine, Pre-col AQC Der (%)	9	9	0.3644	0.0593	0.3534	0.0366	0.0152	10.35%	0.0153	4.68%
127.99	Histidine, Miscellaneous (%)	4	4	0.3410	0.0452	0.3410	0.0452			0.0000	4.70%
127.02	Histidine, Post-col OPA Der (%)	1	1	0.3480							
128.00	Isoleucine, Post-col Ninhydrin Der (%)	15	15	0.4793	0.0291	0.4792	0.0300	0.0097	6.27%	0.0104	4.47%
128.05	Isoleucine, Pre-col AQC Der (%)	9	9	0.4857	0.0397	0.4899	0.0343	0.0143	7.01%	0.0112	4.45%
128.99	Isoleucine, Miscellaneous (%)	4	4	0.4964	0.0787	0.4964	0.0787	0.0394	15.86%	0.0125	4.44%
128.02	Isoleucine, Post-col OPA Der (%)	1	1	0.4780							
129.00	Leucine, Post-col Ninhydrin Der (%)	14	14	0.8914	0.0270	0.8931	0.0265	0.0088	2.97%	0.0169	4.07%
129.05	Leucine, Pre-col AQC Der (%)	9	9	0.8747	0.0314	0.8759	0.0330	0.0137	3.77%	0.0162	4.08%
129.99	Leucine, Miscellaneous (%)	4	3	0.9220	0.0072	0.9220	0.0072	0.0051	0.78%	0.0280	4.05%
129.02	Leucine, Post-col OPA Der (%)	1	1	0.8855							
130.00	L-Lysine, Post-col Ninhydrin Der (%)	18	17	0.7519	0.0342	0.7538	0.0312	0.0095	4.14%	0.0160	4.17%
130.05	L-Lysine, Pre-col AQC Der (%)	9	9	0.7338	0.0540	0.7338	0.0612	0.0255	8.35%	0.0320	4.19%
130.99	L-Lysine, Miscellaneous (%)	5	5	0.7747	0.0980	0.7747	0.0980	0.0438	12.65%	0.0632	4.16%
130.02	L-Lysine, Post-col OPA Der (%)	1	1	0.8030							
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	16	16	0.2153	0.0145	0.2158	0.0111	0.0035	5.14%	0.0061	5.04%
131.05	Methionine, PAO Pre-col AQC Der (%)	8	8	0.2150	0.0301	0.2150	0.0341	0.0151	15.88%	0.0129	5.04%
131.99	Methionine, Miscellaneous (%)	4	3	0.2450	0.0229	0.2450	0.0229	0.0162	9.35%	0.0100	4.94%
131.02	Methionine, PAO Post-col OPA Der (%)	1	1	0.2165							
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	14	14	0.5964	0.0369	0.5987	0.0230	0.0077	3.85%	0.0136	4.32%
132.05	Phenylalanine, Pre-col AQC Der (%)	9	9	0.5985	0.0446	0.5985	0.0506	0.0211	8.45%	0.0182	4.32%
132.99	Phenylalanine, Miscellaneous (%)	4	4	0.5701	0.0419	0.5701	0.0419	0.0209	7.34%	0.0195	4.35%
132.02	Phenylalanine, Post-col OPA Der (%)	1	1	0.5800							

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133.00	Proline, Post-col Ninhydrin Der (%)	15	15	0.7959	0.0465	0.7997	0.0416	0.0134	5.20%	0.0165	4.14%
133.05	Proline, Pre-col AQC Der (%)	9	9	0.8524	0.1119	0.8508	0.1234	0.0514	14.51%	0.0205	4.10%
133.99	Proline, Miscellaneous (%)	4	4	0.8203	0.0121	0.8203	0.0121	0.0061	1.48%	0.0270	4.12%
134.00	Serine, Post-col Ninhydrin Der (%)	15	15	0.6316	0.0488	0.6272	0.0349	0.0113	5.56%	0.0132	4.29%
134.05	Serine, Pre-col AQC Der (%)	9	9	0.6055	0.0840	0.6129	0.0772	0.0321	12.59%	0.0186	4.31%
134.99	Serine, Miscellaneous (%)	4	3	0.7050	0.0776	0.7050	0.0776	0.0549	11.01%	0.0100	4.22%
134.02	Serine, Post-col OPA Der (%)	1	1	0.5715							
135.00	Threonine, Post-col Ninhydrin Der (%)	15	15	0.5011	0.0202	0.5028	0.0182	0.0059	3.62%	0.0103	4.44%
135.05	Threonine, Pre-col AQC Der (%)	9	9	0.4884	0.0634	0.4948	0.0563	0.0235	11.38%	0.0257	4.45%
135.99	Threonine, Miscellaneous (%)	5	5	0.4951	0.0681	0.4951	0.0681	0.0304	13.75%	0.0329	4.45%
135.02	Threonine, Post-col OPA Der (%)	1	1	0.4935							
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	7	7	0.2338	0.0242	0.2290	0.0150	0.0071	6.56%	0.0055	4.99%
136.05	Tryptophan, Pre-col AQC Der (%)	4	4	0.2608	0.1162	0.2608	0.1162	0.0581	44.57%	0.0100	4.90%
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	4	3	0.2422	0.0417	0.2422	0.0417			0.0000	4.95%
136.99	Tryptophan, Miscellaneous (%)	3	3	0.2119	0.1010	0.2119	0.1010	0.0714	47.66%	0.0009	5.05%
136.01	Tryptophan, Alka-Hydrol Rev Phase LC UV (%)	1	1	0.2230							
136.02	Tryptophan, Alka-Hydrol Post-col OPA De (%)	1	1	0.2190							
137.00	Tyrosine, Post-col Ninhydrin Der (%)	11	11	0.3948	0.0513	0.3983	0.0496	0.0187	12.44%	0.0123	4.59%
137.05	Tyrosine, Pre-col AQC Der (%)	8	7	0.3827	0.0435	0.3827	0.0493	0.0233	12.88%	0.0080	4.62%
137.99	Tyrosine, Miscellaneous (%)	4	3	0.3867	0.0833	0.3867	0.0833			0.0000	4.61%
137.02	Tyrosine, Post-col OPA Der (%)	1	1	0.3570							
138.00	Valine, Post-col Ninhydrin Der (%)	14	13	0.6786	0.0228	0.6792	0.0246	0.0085	3.62%	0.0070	4.24%
138.05	Valine, Pre-col AQC Der (%)	9	8	0.6805	0.0226	0.6802	0.0249	0.0110	3.66%	0.0120	4.24%
138.99	Valine, Miscellaneous (%)	4	3	0.6817	0.0679	0.6817	0.0679	0.0480	9.96%	0.0100	4.24%
138.02	Valine, Post-col OPA Der (%)	1	1	0.7180							
139.00	Taurine, Post-col Ninhydrin Der (%)	2	2	0.1135	0.1082						
139.05	Taurine, Pre-col AQC Der (%)	1	1	0.0085							
139.99	Taurine, Miscellaneous (%)	2	1	0.0300							
139.02	Taurine, Post-col OPA Der (%)	1		0.0100							
160.99	Fructose, Miscellaneous (%)	1	1	0.4700							
162.99	Glucose, Miscellaneous (%)	2	2	3.108	3.879						
163.99	Lactose, Miscellaneous (%)	1		0.1500							
164.99	Maltose, Miscellaneous (%)	1		0.1500							
165.99	Sucrose, Miscellaneous (%)	1	1	3.265							
166.99	Raffinose, Miscellaneous (%)	1	1	0.6200							
167.99	Stachyose, Miscellaneous (%)	1	1	0.2500							
354.04	Decoquinatate, LC-MS/MS (ppm)	1		0.2500							
361.05	Lasalocid Sodium, LC-MS/MS (ppm)	1		0.2500							
365.05	Monensin, LC-MS/MS (ppm)	10	9	4.416	0.6513	4.453	0.6509	0.2712	14.62%	0.5075	12.78%
365.02	Monensin, LC (ppm)	2	2	4.728	0.1025						

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365.03	Monensin, LC-PCD (ppm)	2	2	4.353	0.1096						
365.04	Monensin, LC-MS (ppm)	1	1	6.212							
379.05	Salinomycin, LC-MS/MS (ppm)	1		0.2500							
391.03	Narasin, LC-MS/MS (ppm)	1		0.2500							
400.01	Water Activity, Aqualab chilled mirror (Units)	11	11	0.5308	0.0139	0.5300	0.0125	0.0047	2.36%	0.0069	
516.52	Arsenic, Total (As), ICP-MS, Open vessel (ppm)	2	2	0.1664	0.0079						
516.53	Arsenic, Total (As), ICP-MS, Microwave (ppm)	2	2	0.1308	0.0392						
516.00	Arsenic, Total (As), AA, Hydride (ppm)	1	1	0.1750							
516.43	Arsenic, Total (As), ICP, Microwave (ppm)	2		1.420							
518.43	Cadmium, ICP, Microwave (ppm)	3	3	0.2087	0.0205	0.2087	0.0205	0.0118	9.81%	0.0105	20.25%
518.53	Cadmium, ICP-MS, Microwave (ppm)	3	3	0.1882	0.0452	0.1882	0.0452	0.0320	24.02%	0.0180	20.57%
518.41	Cadmium, ICP, Dry ash (ppm)	2	2	0.1892	0.0011						
518.52	Cadmium, ICP-MS, Open vessel (ppm)	2	2	0.2219	0.0086						
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	4	3	8.210	0.0400	8.210	0.0400	0.0231	0.49%	0.4100	11.65%
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	3	3	6.360	1.167	6.360	1.167	0.6740	18.36%	1.259	12.11%
520.41	Chromium, Total (Cr), ICP, Dry ash (ppm)	2	2	4.061	0.6941						
520.42	Chromium, Total (Cr), ICP, Open vessel (ppm)	2	2	7.278	0.0823						
520.52	Chromium, Total (Cr), ICP-MS, Open vessel (ppm)	2	2	4.434	1.427						
526.53	Lead, ICP-MS, Microwave (ppm)	3	3	0.2023	0.0468	0.2023	0.0468	0.0270	23.14%	0.0415	20.35%
526.41	Lead, ICP, Dry ash (ppm)	2	2	0.1616	0.0235						
526.52	Lead, ICP-MS, Open vessel (ppm)	2	2	0.2113	0.0067						
526.43	Lead, ICP, Microwave (ppm)	3	1								
529.99	Mercury, Miscellaneous (ppb)	3	1								
539.41	Nickel, ICP, Dry ash (ppm)	2	2	3.352	0.3145						
539.43	Nickel, ICP, Microwave (ppm)	2	2	4.097	0.7257						
539.52	Nickel, ICP-MS, Open vessel (ppm)	2	2	2.891	0.9486						
539.53	Nickel, ICP-MS, Microwave (ppm)	2	2	3.092	0.8746						
710.99	Lauric Acid (12:0), Miscellaneous (% (w/w))	2	1	0.0052							
714.99	Myristic Acid (14:0), Miscellaneous (% (w/w))	1	1	0.0222							
716.99	Palmitic Acid (16:0), Miscellaneous (% (w/w))	1	1	1.910							
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (% (w/w))	2	2	0.0098	0.0019						
722.99	Stearic Acid (18:0), Miscellaneous (% (w/w))	1	1	0.3182							
724.99	Oleic Acid (9c-18:1), Miscellaneous (% (w/w))	1	1	1.235							
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (% (w/w))	2	2	1.988	0.0470						
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (% (w/w))	2	2	1.518	0.0750						
730.99	Arachidic Acid (20:0), Miscellaneous (% (w/w))	1	1	0.0178							
732.99	Gondoic Acid (11c-20:1), Miscellaneous (% (w/w))	1	1	0.0295							
736.99	Arachidonic Acid (5c,8c,11c,14c-20:4), Miscellaneous (% (w/w))	1		0.0000							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (% (w/w))	2		0.0000							
742.99	Behenic Acid (22:0), Miscellaneous (% (w/w))	1	1	0.0157							

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
744.99	Erucic Acid (13c-22:1), Miscellaneous (% (w/w))	1	1	0.0076							
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (%)	2		0.0000							
748.99	Lignoceric Acid (24:0), Miscellaneous (% (w/w))	1	1	0.0185							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (%)	2		0.0000							
752.99	Nervonic Acid (24:1) isomers, Miscellaneous (% (w/w))	1		0.0050							
754.99	Total n-3 Polyunsaturated (Omega-3) Fatty Acids, Miscellaneous (% (w/w))	1	1	1.575							
756.99	Total n-6 Polyunsaturated (Omega-6) Fatty Acids, Miscellaneous (% (w/w))	1	1	2.025							
772.99	Total Fatty Acids, Miscellaneous (% (w/w))	1	1	7.020							

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.



Animal Feed Scheme

Methods Reported: 120

Equine Feed

Method Precision Report

Labs Reporting: 154

Test Material Code # 202322

Issue Date : 03/31/2023

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 (%)	41	38	9.262	0.2907	0.2917	0.0600	0.2978	3.15%	0.65%	3.21%	4.963
001.99	Loss on Drying, Miscellaneous (%)	16	15	9.187	0.3595	0.3528	0.0979	0.3662	3.84%	1.07%	3.99%	3.739
002.01	Protein, Crude, Auto Kjel-Foss (%)	19	17	15.61	0.2671	0.2260	0.0508	0.2316	1.45%	0.33%	1.49%	4.558
002.05	Protein, Crude, Copper, Boric Acid (%)	18	16	15.42	0.3663	0.2010	0.0958	0.2227	1.30%	0.62%	1.44%	2.323
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	103	100	15.77	0.3440	0.3106	0.1453	0.3429	1.97%	0.92%	2.18%	2.360
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	8	6	7.060	0.4874	0.3647	0.0417	0.3671	5.27%	0.60%	5.30%	8.796
003.06	Fat, Crude, Pet Ether (%)	15	15	6.788	0.3678	0.3541	0.1407	0.3811	5.22%	2.07%	5.61%	2.708
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	10	10	6.815	0.2178	0.1851	0.1624	0.2462	2.72%	2.38%	3.61%	1.516
003.10	Fat, Crude, Randall, Pet Ether (%)	25	24	6.583	0.2566	0.2138	0.0669	0.2240	3.26%	1.02%	3.42%	3.350
003.13	Fat, Crude, Randall, Hexane Ext. (%)	8	7	6.799	0.3360	0.3253	0.0820	0.3355	4.75%	1.20%	4.90%	4.092
003.14	Fat, Crude, Ankom (%)	48	43	6.830	0.3627	0.2643	0.1019	0.2833	3.86%	1.49%	4.14%	2.781
004.00	Fiber, Crude, Asbestos Free (%)	11	11	10.35	0.8828	0.8015	0.5231	0.9571	7.75%	5.06%	9.25%	1.830
004.06	Fiber, Crude, Fibertec (%)	18	16	10.04	0.6195	0.3857	0.1334	0.4081	3.87%	1.34%	4.10%	3.059
004.07	Fiber, Crude, ANKOM (%)	69	66	10.18	0.9911	0.7486	0.2479	0.7886	7.42%	2.46%	7.82%	3.181
005.00	Ash, 2h @ 600°C (%)	82	78	8.989	0.2694	0.2015	0.0702	0.2134	2.24%	0.78%	2.38%	3.039
005.05	Ash, 3h @ 550°C (%)	21	19	9.356	0.6822	0.2789	0.0994	0.2961	3.03%	1.08%	3.21%	2.979
005.99	Ash, Miscellaneous (%)	10	9	9.079	0.2907	0.2986	0.0605	0.3047	3.30%	0.67%	3.36%	5.034
008.02	Fiber, Acid Detergent, Crucible (%)	14	11	13.56	1.367	0.5304	0.1836	0.5613	3.98%	1.38%	4.21%	3.057
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	43	40	13.34	0.9426	0.7463	0.2898	0.8006	5.61%	2.18%	6.02%	2.763
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	13	10	32.01	2.576	1.143	0.3250	1.188	3.64%	1.04%	3.79%	3.657
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	42	39	30.71	1.340	1.065	0.2116	1.086	3.49%	0.69%	3.56%	5.131
010.99	Moisture, Miscellaneous (%)	15	14	9.313	0.4248	0.4266	0.1435	0.4501	4.59%	1.54%	4.84%	3.137
011.01	Loss on Drying, HT, 135°C 2hr (%)	58	53	10.27	0.3914	0.3796	0.0824	0.3884	3.70%	0.80%	3.78%	4.712
012.00	Starch, Polarimetric (Ewers) (%)	11	10	15.60	0.7183	0.7211	0.1308	0.7329	4.64%	0.84%	4.72%	5.602
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	11	10	14.18	0.9853	0.9456	0.5806	1.110	6.68%	4.10%	7.84%	1.911
013.00	Fat, Pretreat, Acid hydrolysis (%)	12	12	7.810	0.8628	0.8533	0.1806	0.8722	10.92%	2.31%	11.17%	4.830
013.02	Fat, Pretreat, Mojonier, Bak Ext, Acid hydrolysis (%)	15	13	8.393	0.4892	0.2963	0.1545	0.3342	3.49%	1.82%	3.93%	2.162
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	7	6	7.655	0.4379	0.3290	0.0713	0.3366	4.37%	0.95%	4.47%	4.719
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	7	5	9.436	3.338	0.3332	0.1078	0.3502	4.12%	1.33%	4.34%	3.248
015.43	Aluminum, ICP, Microwave (ppm)	6	6	312.1	32.47	32.11	6.761	32.82	10.29%	2.17%	10.51%	4.853
017.41	Boron, ICP, Dry ash (ppm)	5	5	9.725	1.006	0.5047	1.231	1.331	5.19%	12.66%	13.68%	1.081
019.08	Calcium, EDTA (%)	10	9	1.328	0.0814	0.0810	0.0097	0.0816	6.06%	0.73%	6.11%	8.396
019.31	Calcium, AAS, Dry ash (%)	17	15	1.266	0.0624	0.0629	0.0162	0.0649	4.97%	1.28%	5.14%	4.015
019.41	Calcium, ICP, Dry ash (%)	21	20	1.304	0.0609	0.0553	0.0264	0.0613	4.23%	2.01%	4.68%	2.326
019.42	Calcium, ICP, Open vessel (%)	16	15	1.317	0.1242	0.1256	0.0304	0.1292	9.50%	2.30%	9.78%	4.254
019.43	Calcium, ICP, Microwave (%)	29	26	1.291	0.1358	0.0711	0.0347	0.0791	5.40%	2.63%	6.01%	2.282

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
019.99	Calcium, Miscellaneous (%)	6	5	1.348	0.1584	0.0221	0.0394	0.0451	1.72%	3.06%	3.51%	1.147
021.41	Cobalt, ICP, Dry ash (ppm)	5	5	3.840	0.8366	0.8343	0.0863	0.8388	21.73%	2.25%	21.84%	9.724
021.43	Cobalt, ICP, Microwave (ppm)	10	9	4.497	0.4274	0.3936	0.2358	0.4588	8.75%	5.24%	10.20%	1.946
022.31	Copper, AAS, Dry ash (ppm)	13	13	99.30	5.215	5.145	1.209	5.285	5.18%	1.22%	5.32%	4.373
022.41	Copper, ICP, Dry ash (ppm)	16	16	98.74	11.51	11.34	2.722	11.67	11.49%	2.76%	11.81%	4.285
022.42	Copper, ICP, Open vessel (ppm)	17	16	110.5	10.59	10.42	2.989	10.84	9.38%	2.69%	9.76%	3.628
022.43	Copper, ICP, Microwave (ppm)	29	28	111.1	8.738	8.328	4.432	9.434	7.50%	3.99%	8.49%	2.129
025.31	Iron, AAS, Dry ash (ppm)	15	14	454.1	68.63	52.73	12.41	54.17	11.32%	2.66%	11.63%	4.367
025.41	Iron, ICP, Dry ash (ppm)	17	16	432.1	120.2	45.55	15.69	48.17	9.92%	3.42%	10.49%	3.071
025.42	Iron, ICP, Open vessel (ppm)	15	15	399.6	100.3	99.52	17.34	101.0	24.91%	4.34%	25.28%	5.825
025.43	Iron, ICP, Microwave (ppm)	26	23	483.1	87.86	34.40	13.57	36.98	6.94%	2.74%	7.47%	2.726
027.31	Magnesium, AAS, Dry ash (%)	11	9	0.4063	0.0255	0.0155	0.0040	0.0160	3.79%	0.96%	3.91%	4.057
027.41	Magnesium, ICP, Dry ash (%)	16	16	0.4102	0.0229	0.0213	0.0116	0.0243	5.20%	2.84%	5.93%	2.088
027.42	Magnesium, ICP, Open vessel (%)	17	16	0.4224	0.0300	0.0210	0.0135	0.0250	5.04%	3.23%	5.98%	1.853
027.43	Magnesium, ICP, Microwave (%)	26	25	0.4207	0.0247	0.0222	0.0059	0.0229	5.29%	1.42%	5.48%	3.866
027.99	Magnesium, Miscellaneous (%)	5	5	0.4110	0.0082	0.0072	0.0055	0.0091	1.76%	1.33%	2.21%	1.658
028.31	Manganese, AAS, Dry ash (ppm)	14	13	243.6	22.40	22.10	5.127	22.69	9.07%	2.10%	9.31%	4.425
028.41	Manganese, ICP, Dry ash (ppm)	15	14	246.0	8.539	7.504	6.585	9.984	3.05%	2.68%	4.06%	1.516
028.42	Manganese, ICP, Open vessel (ppm)	17	15	256.4	24.17	19.26	6.730	20.40	7.66%	2.68%	8.11%	3.031
028.43	Manganese, ICP, Microwave (ppm)	26	23	257.6	13.89	13.72	4.414	14.41	5.32%	1.71%	5.58%	3.264
031.01	Phosphorus, Photometric (%)	28	28	0.9470	0.0260	0.0252	0.0091	0.0268	2.66%	0.96%	2.83%	2.934
031.41	Phosphorus, ICP, Dry ash (%)	20	19	0.9491	0.0449	0.0427	0.0198	0.0470	4.50%	2.08%	4.96%	2.381
031.42	Phosphorus, ICP, Open vessel (%)	17	16	0.9587	0.0818	0.0633	0.0226	0.0672	6.69%	2.39%	7.11%	2.971
031.43	Phosphorus, ICP, Microwave (%)	29	27	0.9739	0.0511	0.0441	0.0163	0.0470	4.55%	1.68%	4.85%	2.885
032.31	Potassium, AAS, Dry ash (%)	9	8	0.9932	0.0599	0.0595	0.0089	0.0602	5.99%	0.90%	6.06%	6.765
032.41	Potassium, ICP, Dry ash (%)	17	17	1.039	0.0478	0.0423	0.0317	0.0528	4.07%	3.05%	5.08%	1.668
032.42	Potassium, ICP, Open vessel (%)	16	14	1.075	0.0848	0.0595	0.0281	0.0657	5.58%	2.63%	6.17%	2.343
032.43	Potassium, ICP, Microwave (%)	28	25	1.072	0.0506	0.0442	0.0138	0.0463	4.14%	1.29%	4.34%	3.355
033.00	Salt as chloride, Sol Cl (%)	18	18	1.163	0.1036	0.1012	0.0319	0.1061	8.70%	2.74%	9.12%	3.328
033.01	Salt as chloride, Poten Cl (%)	25	21	1.233	0.2716	0.0317	0.0134	0.0344	2.60%	1.10%	2.83%	2.565
033.99	Salt, Miscellaneous (%)	9	9	1.184	0.1430	0.1411	0.0322	0.1448	11.92%	2.72%	12.22%	4.493
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	7	7	1.534	0.3247	0.3072	0.1487	0.3413	20.03%	9.70%	22.26%	2.295
035.31	Sodium, AAS, Dry ash (%)	11	10	0.5187	0.0420	0.0430	0.0070	0.0436	8.33%	1.37%	8.45%	6.182
035.41	Sodium, ICP, Dry ash (%)	19	18	0.5312	0.0238	0.0229	0.0120	0.0258	4.31%	2.25%	4.86%	2.159
035.42	Sodium, ICP, Open vessel (%)	15	15	0.5336	0.0252	0.0237	0.0122	0.0266	4.44%	2.29%	4.99%	2.184
035.43	Sodium, ICP, Microwave (%)	24	22	0.5565	0.0302	0.0258	0.0107	0.0279	4.66%	1.94%	5.05%	2.604
036.42	Sulfur, ICP, Open vessel (%)	16	14	0.3927	0.0532	0.0311	0.0081	0.0322	7.71%	2.00%	7.96%	3.984
036.43	Sulfur, ICP, Microwave (%)	14	12	0.4251	0.0305	0.0189	0.0074	0.0203	4.37%	1.72%	4.70%	2.728
037.31	Zinc, AAS, Dry ash (ppm)	14	13	314.1	19.00	18.49	6.842	19.72	5.91%	2.19%	6.30%	2.882
037.41	Zinc, ICP, Dry ash (ppm)	16	14	321.0	24.23	24.70	6.157	25.45	7.72%	1.92%	7.95%	4.134
037.42	Zinc, ICP, Open vessel (ppm)	16	13	297.0	87.09	30.08	8.167	31.16	9.39%	2.55%	9.73%	3.816
037.43	Zinc, ICP, Microwave (ppm)	28	27	335.7	22.95	20.71	9.086	22.62	6.20%	2.72%	6.77%	2.490
038.43	Molybdenum, ICP, Microwave (ppm)	8	7	2.695	0.5436	0.5606	0.1141	0.5721	20.42%	4.16%	20.84%	5.013
106.02	Vitamin A, LC (KU / kg)	11	10	13.35	3.621	3.467	1.476	3.768	25.98%	11.06%	28.24%	2.553
109.02	Vitamin E, LC (IU / kg)	13	12	298.9	138.1	95.61	21.12	97.92	35.35%	7.81%	36.20%	4.636
120.00	Alanine, Post-col Ninhydrin Der (%)	14	12	0.7061	0.0192	0.0110	0.0067	0.0129	1.55%	0.95%	1.82%	1.913

Test Material Code # 202322

Issue Date : 03/31/2023

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
120.05	Alanine, Pre-col AQC Der (%)	9	9	0.6958	0.0286	0.0276	0.0104	0.0295	3.97%	1.49%	4.24%	2.842
121.00	Arginine, Post-col Ninhydrin Der (%)	14	13	0.9823	0.0444	0.0339	0.0099	0.0353	3.48%	1.01%	3.63%	3.574
121.05	Arginine, Pre-col AQC Der (%)	9	9	0.9883	0.0672	0.0615	0.0385	0.0725	6.22%	3.89%	7.34%	1.885
122.00	Aspartic, Post-col Ninhydrin Der (%)	14	14	1.150	0.0376	0.0358	0.0161	0.0392	3.11%	1.40%	3.41%	2.439
122.05	Aspartic, Pre-col AQC Der (%)	9	8	1.108	0.0831	0.0849	0.0166	0.0865	7.62%	1.49%	7.76%	5.218
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin Der (%)	15	14	0.2830	0.0386	0.0120	0.0063	0.0136	4.40%	2.31%	4.97%	2.152
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	8	0.2519	0.0792	0.0789	0.0087	0.0794	31.34%	3.45%	31.53%	9.145
125.00	Glutamic, Post-col Ninhydrin Der (%)	14	13	2.476	0.0869	0.0776	0.0162	0.0793	3.15%	0.66%	3.22%	4.895
125.05	Glutamic, Pre-col AQC Der (%)	9	8	2.408	0.1701	0.1697	0.0153	0.1704	7.05%	0.63%	7.08%	11.15
126.00	Glycine, Post-col Ninhydrin Der (%)	15	12	0.7803	0.0693	0.0165	0.0067	0.0178	2.17%	0.89%	2.34%	2.642
126.05	Glycine, Pre-col AQC Der (%)	9	8	0.8057	0.0356	0.0333	0.0132	0.0358	4.16%	1.64%	4.48%	2.724
127.00	Histidine, Post-col Ninhydrin Der (%)	15	14	0.3679	0.0247	0.0181	0.0051	0.0188	4.97%	1.39%	5.16%	3.715
127.05	Histidine, Pre-col AQC Der (%)	9	8	0.3644	0.0593	0.0255	0.0104	0.0275	7.36%	3.00%	7.95%	2.649
128.00	Isoleucine, Post-col Ninhydrin Der (%)	15	14	0.4793	0.0291	0.0290	0.0055	0.0295	6.07%	1.15%	6.18%	5.380
128.05	Isoleucine, Pre-col AQC Der (%)	9	8	0.4857	0.0397	0.0246	0.0057	0.0253	4.96%	1.16%	5.09%	4.405
129.00	Leucine, Post-col Ninhydrin Der (%)	14	14	0.8914	0.0270	0.0253	0.0133	0.0286	2.84%	1.49%	3.20%	2.148
129.05	Leucine, Pre-col AQC Der (%)	9	9	0.8747	0.0314	0.0305	0.0107	0.0323	3.49%	1.22%	3.69%	3.023
130.00	L-Lysine, Post-col Ninhydrin Der (%)	18	15	0.7519	0.0342	0.0249	0.0084	0.0263	3.30%	1.12%	3.48%	3.115
130.05	L-Lysine, Pre-col AQC Der (%)	9	9	0.7338	0.0540	0.0523	0.0188	0.0556	7.13%	2.56%	7.58%	2.961
130.99	L-Lysine, Miscellaneous (%)	5	5	0.7747	0.0980	0.0915	0.0498	0.1041	11.80%	6.43%	13.44%	2.091
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	16	15	0.2153	0.0145	0.0106	0.0039	0.0113	4.86%	1.79%	5.18%	2.889
131.05	Methionine, PAO Pre-col AQC Der (%)	8	8	0.2150	0.0301	0.0296	0.0079	0.0306	13.76%	3.69%	14.25%	3.864
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	14	12	0.5964	0.0369	0.0270	0.0077	0.0281	4.48%	1.27%	4.66%	3.658
132.05	Phenylalanine, Pre-col AQC Der (%)	9	8	0.5985	0.0446	0.0457	0.0072	0.0463	7.69%	1.21%	7.78%	6.415
133.00	Proline, Post-col Ninhydrin Der (%)	15	14	0.7959	0.0465	0.0472	0.0108	0.0484	5.92%	1.35%	6.07%	4.497
133.05	Proline, Pre-col AQC Der (%)	9	8	0.8524	0.1119	0.1142	0.0094	0.1146	13.22%	1.09%	13.27%	12.22
134.00	Serine, Post-col Ninhydrin Der (%)	15	14	0.6316	0.0488	0.0309	0.0080	0.0319	4.97%	1.29%	5.13%	3.972
134.05	Serine, Pre-col AQC Der (%)	9	8	0.6055	0.0840	0.0845	0.0075	0.0848	14.17%	1.25%	14.23%	11.38
135.00	Threonine, Post-col Ninhydrin Der (%)	15	14	0.5011	0.0202	0.0139	0.0069	0.0155	2.74%	1.36%	3.06%	2.251
135.05	Threonine, Pre-col AQC Der (%)	9	8	0.4884	0.0634	0.0392	0.0165	0.0425	7.75%	3.27%	8.41%	2.569
135.99	Threonine, Miscellaneous (%)	5	5	0.4951	0.0681	0.0672	0.0156	0.0690	13.57%	3.15%	13.93%	4.415
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	7	6	0.2338	0.0242	0.0094	0.0030	0.0098	4.16%	1.31%	4.36%	3.323
137.00	Tyrosine, Post-col Ninhydrin Der (%)	11	11	0.3948	0.0513	0.0508	0.0092	0.0517	12.88%	2.33%	13.09%	5.615
137.05	Tyrosine, Pre-col AQC Der (%)	8	7	0.3827	0.0435	0.0434	0.0038	0.0435	11.33%	0.99%	11.38%	11.52
138.00	Valine, Post-col Ninhydrin Der (%)	14	13	0.6786	0.0228	0.0226	0.0045	0.0230	3.32%	0.66%	3.39%	5.119
138.05	Valine, Pre-col AQC Der (%)	9	8	0.6805	0.0226	0.0221	0.0065	0.0230	3.25%	0.95%	3.38%	3.558
365.05	Monensin, LC-MS/MS (ppm)	10	8	4.416	0.6513	0.6045	0.3308	0.6891	13.94%	7.63%	15.89%	2.083
400.01	Water Activity, Aqualab chilled mirror (Units)	11	11	0.5308	0.0139	0.0134	0.0056	0.0145	2.52%	1.05%	2.73%	2.600

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