



AAFCO
Association of American Feed Control Officials



Animal Feed Scheme
Beef Feed, Medicated
Test Material Code # 202422

Method Summary Report
(Precision Report Follows)

Labs Reporting: 171
Methods Reported: 355
Issue Date : 03/31/2024

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 (Rob R-bar)	Thompson Horwitz %RSD
000.02	Urea, As protein, Colorimetric (%)	1	1	7.225							
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	46	44	7.434	0.2553	7.434	0.1923	0.0362	2.59%	0.0801	2.96%
001.99	Loss on Drying, Miscellaneous (%)	16	16	7.514	0.6344	7.482	0.6197	0.1936	8.28%	0.1310	2.95%
001.00	Loss on Drying, Vac 95°C 5 hr (%)	4	4	7.549	0.1615	7.549	0.1615	0.0808	2.14%	0.0633	2.95%
001.03	Loss on Drying, Low temp. methods (%)	3	3	7.490	0.3860	7.490	0.3860	0.2229	5.15%	0.0933	2.95%
001.05	Loss on Drying, LECO (%)	1	1	7.431							
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	107	104	13.65	0.5315	13.62	0.2721	0.0333	2.00%	0.1628	2.70%
002.05	Protein, Crude, Copper, Boric Acid (%)	26	26	13.46	0.2056	13.44	0.1747	0.0428	1.30%	0.0932	2.71%
002.01	Protein, Crude, Auto Kjeh-Foss (%)	18	17	13.51	0.1776	13.50	0.1549	0.0470	1.15%	0.1229	2.70%
002.11	Protein, Crude, NIR (%)	11	11	18.72	6.484	17.76	5.178	1.952	29.16%	0.3570	2.37%
002.00	Protein, Crude, Crude (%)	3	3	13.58	0.1811	13.58	0.1811	0.1046	1.33%	0.1500	2.70%
002.08	Protein, Crude, Cu/Ti (%)	2	2	13.38	0.0573						
002.02	Protein, Crude, Semiauto Autoanalyzer (%)	1	1	13.43							
002.04	Protein, Crude, Copper Catalyst (%)	1	1	13.27							
002.10	Protein, Crude, Block dig/distillation (%)	1	1	13.52							
003.14	Fat, Crude, Ankom (%)	56	55	4.037	0.3483	4.017	0.2317	0.0390	5.77%	0.0995	3.24%
003.10	Fat, Crude, Randall, Pet Ether (%)	24	24	4.059	0.2236	4.076	0.2030	0.0518	4.98%	0.0833	3.24%
003.06	Fat, Crude, Pet Ether (%)	16	16	4.111	0.2383	4.111	0.2693	0.0842	6.55%	0.0991	3.23%
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	14	14	3.994	0.5050	4.022	0.4927	0.1646	12.25%	0.0819	3.24%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	13	13	4.203	0.2299	4.194	0.2402	0.0833	5.73%	0.1606	3.22%
003.11	Fat, Crude, NIR (%)	10	10	5.773	2.111	5.773	2.394	0.9464	41.48%	0.1313	3.07%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	5	5	4.303	0.1177	4.303	0.1177	0.0527	2.74%	0.0830	3.21%
003.12	Fat, Crude, Hexane Ext (%)	4	4	4.115	0.2976	4.115	0.2976	0.1488	7.23%	0.2800	3.23%
003.99	Fat, Crude, Miscellaneous (%)	3	3	4.850	1.566	4.850	1.566	0.9043	32.29%	0.1100	3.15%
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	2	2	3.711	0.6595						
004.07	Fiber, Crude, ANKOM (%)	76	74	16.45	2.587	16.60	1.314	0.1910	7.92%	0.3183	2.45%
004.06	Fiber, Crude, Fibertec (%)	20	20	15.91	1.140	15.94	0.6799	0.1900	4.27%	0.1816	2.50%
004.00	Fiber, Crude, Asbestos Free (%)	10	10	15.54	3.718	16.24	1.563	0.6177	9.62%	0.4028	2.48%
004.11	Fiber, Crude, NIR (%)	10	9	12.64	3.189	12.68	3.529	1.470	27.83%	0.1626	2.73%

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004.03	Fiber, Crude, Fritted Glass (%)	4	4	16.38	1.668	16.38	1.668	0.8341	10.19%	0.2950	2.47%
004.99	Fiber, Crude, Miscellaneous (%)	3	3	17.64	1.888	17.64	1.888	1.090	10.70%	0.9700	2.38%
005.00	Ash, 2h @ 600°C (%)	94	92	14.61	0.7210	14.69	0.4221	0.0550	2.87%	0.1911	2.61%
005.05	Ash, 3h @ 550°C (%)	29	29	15.27	0.4971	15.30	0.4354	0.1011	2.85%	0.2023	2.56%
005.11	Ash, NIR (%)	10	9	8.103	2.486	7.976	2.524	1.051	31.64%	0.1595	2.93%
005.99	Ash, Miscellaneous (%)	8	8	15.10	0.6535	15.13	0.6677	0.2951	4.41%	0.1499	2.57%
005.02	Ash, LECO (%)	1	1	14.91							
005.03	Ash, Microwave furnace (%)	1	1	14.05							
006.99	Total Sugars, Miscellaneous (%)	2	2	3.990	0.9334						
006.00	Total Sugars, As sucrose (%)	1	1	4.241							
006.03	Total Sugars, Invert w/o Invrnsn (%)	1	1	4.170							
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	44	43	23.03	2.406	23.10	2.507	0.4780	10.85%	0.3049	2.08%
008.02	Fiber, Acid Detergent, Crucible (%)	13	12	22.66	5.260	23.94	1.711	0.6172	7.14%	0.2007	2.04%
008.99	Fiber, Acid Detergent, Miscellaneous (%)	4	4	20.77	0.5776	20.77	0.5776	0.2888	2.78%	0.3205	2.19%
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	41	40	34.64	1.632	34.54	1.623	0.3209	4.70%	0.4810	1.70%
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	12	12	34.75	5.713	36.09	1.343	0.4846	3.72%	0.6223	1.66%
009.99	Fiber, Neutral Detergent, Miscellaneous (%)	3	3	36.13	1.890	36.13	1.890	1.091	5.23%	0.3133	1.66%
010.99	Moisture, Miscellaneous (%)	20	20	7.599	0.6123	7.495	0.4217	0.1179	5.63%	0.0931	2.95%
010.11	Moisture, NIR (%)	10	10	7.702	1.565	7.702	1.774	0.7013	23.04%	0.1412	2.94%
010.03	Moisture, Karl-Fischer (%)	1	1	5.650							
011.01	Loss on Drying, HT, 135°C 2hr (%)	63	61	8.172	0.5449	8.198	0.3784	0.0606	4.62%	0.0882	2.91%
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	7	7	8.017	0.6858	7.944	0.5998	0.2834	7.55%	0.1783	2.93%
011.02	Loss on Drying, HT, 130°C for 2 hours (%)	3	3	8.608	0.6536	8.608	0.6536	0.3773	7.59%	0.1700	2.89%
012.00	Starch, Polarimetric (Ewers) (%)	13	13	12.88	0.5547	12.92	0.5279	0.1830	4.09%	0.1983	2.72%
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	9	9	12.55	1.278	12.55	1.433	0.5969	11.42%	0.5585	2.73%
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	9	9	12.74	1.126	12.74	1.277	0.5320	10.02%	0.5112	2.73%
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	4	4	13.01	2.911	13.01	2.911	1.456	22.37%	0.3653	2.72%
012.11	Starch, NIR (%)	2	2	13.10	0.0530						
012.99	Starch, Miscellaneous (%)	2	2	12.42	0.0389						
012.20	Starch, Dietary, Enzymatic-Colorimetric (%)	1	1	11.86							
013.02	Fat, Pretreat, Mojonier, Bak Ext, Acid hydrolysis (%)	15	15	5.299	0.4630	5.318	0.4825	0.1557	9.07%	0.0987	3.11%
013.00	Fat, Pretreat, Acid hydrolysis (%)	14	13	5.024	0.5140	5.024	0.5828	0.2021	11.60%	0.1127	3.14%
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	8	8	4.625	0.8252	4.625	0.9358	0.4136	20.23%	0.1616	3.18%
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	7	7	4.640	0.6267	4.581	0.5692	0.2689	12.43%	0.1289	3.18%
015.43	Aluminum, ICP, Microwave (ppm)	8	8	104.0	36.46	111.5	16.61	7.340	14.90%	4.175	7.87%
015.41	Aluminum, ICP, Dry ash (ppm)	3	3	93.13	9.183	93.13	9.183	5.302	9.86%	8.550	8.09%
015.42	Aluminum, ICP, Open vessel (ppm)	2	2	61.36	15.36						
015.53	Aluminum, ICP-MS, Microwave (ppm)	1	1	116.1							
017.43	Boron, ICP, Microwave (ppm)	8	6	5.173	1.344	5.173	1.524	0.7776	29.45%	0.1039	12.49%
017.41	Boron, ICP, Dry ash (ppm)	5	5	5.405	0.5597	5.405	0.5597	0.2503	10.35%	0.1899	12.41%

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017.42	Boron, ICP, Open vessel (ppm)	4	3	5.509	0.4261	5.509	0.4261	0.2460	7.74%	0.6793	12.37%
017.53	Boron, ICP-MS, Microwave (ppm)	1	1	4.934							
019.43	Calcium, ICP, Microwave (%)	34	34	2.545	0.1852	2.562	0.1402	0.0301	5.47%	0.0610	3.47%
019.41	Calcium, ICP, Dry ash (%)	20	20	2.467	0.0952	2.467	0.1046	0.0293	4.24%	0.0858	3.49%
019.42	Calcium, ICP, Open vessel (%)	20	20	2.548	0.1887	2.552	0.2065	0.0577	8.09%	0.0852	3.47%
019.31	Calcium, AAS, Dry ash (%)	16	16	2.480	0.1157	2.503	0.0719	0.0225	2.87%	0.0630	3.48%
019.08	Calcium, EDTA (%)	15	15	2.564	0.1406	2.568	0.1379	0.0445	5.37%	0.0699	3.47%
019.00	Calcium, Ox-Mn04 Vol. (%)	7	7	2.505	0.0447	2.503	0.0467	0.0220	1.86%	0.0472	3.48%
019.99	Calcium, Miscellaneous (%)	5	5	2.521	0.1355	2.521	0.1355	0.0606	5.38%	0.0780	3.48%
019.52	Calcium, ICP-MS, Open vessel (%)	2	2	2.742	0.1023						
019.53	Calcium, ICP-MS, Microwave (%)	2	2	2.628	0.0543						
019.09	Calcium, Ion-selective electrode (%)	1	1	2.146							
019.32	Calcium, AAS, Open vessel (%)	1	1	2.605							
019.33	Calcium, AAS, Microwave (%)	1	1	2.525							
019.44	Calcium, ICP, Dry ash (%)	1	1	2.458							
019.51	Calcium, ICP-MS, Dry ash (%)	1	1	2.560							
021.43	Cobalt, ICP, Microwave (ppm)	13	12	7.286	2.081	7.528	1.285	0.4635	17.06%	0.2552	11.81%
021.41	Cobalt, ICP, Dry ash (ppm)	5	5	7.138	1.039	7.138	1.039	0.4646	14.56%	0.2609	11.90%
021.42	Cobalt, ICP, Open vessel (ppm)	5	5	5.602	0.7056	5.602	0.7056	0.3155	12.59%	0.5160	12.34%
021.53	Cobalt, ICP-MS, Microwave (ppm)	4	3	7.794	0.1677	7.794	0.1677	0.0968	2.15%	0.1955	11.74%
021.31	Cobalt, AAS, Dry ash (ppm)	2	2	7.033	1.403						
021.00	Cobalt, Color (ppm)	1	1	6.815							
021.52	Cobalt, ICP-MS, Open vessel (ppm)	1	1	5.303							
022.43	Copper, ICP, Microwave (ppm)	32	31	77.34	7.199	77.17	6.111	1.372	7.92%	4.761	8.32%
022.42	Copper, ICP, Open vessel (ppm)	22	22	82.37	7.154	82.00	6.547	1.745	7.98%	8.081	8.24%
022.41	Copper, ICP, Dry ash (ppm)	15	14	44.15	12.44	43.18	11.63	3.884	26.93%	3.045	9.08%
022.31	Copper, AAS, Dry ash (ppm)	8	7	56.73	8.144	56.73	9.235	4.363	16.28%	2.403	8.71%
022.33	Copper, AAS, Microwave (ppm)	2	2	59.31	35.81						
022.44	Copper, ICP, Dry ash (ppm)	2	2	66.00	3.402						
022.53	Copper, ICP-MS, Microwave (ppm)	2	2	76.26	8.621						
022.32	Copper, AAS, Open vessel (ppm)	1	1	61.05							
022.35	Copper, AAS, Dry ash (ppm)	1	1	36.45							
022.52	Copper, ICP-MS, Open vessel (ppm)	1	1	80.16							
022.99	Copper, Miscellaneous (ppm)	1	1	73.50							
025.43	Iron, ICP, Microwave (ppm)	31	30	435.2	69.35	443.3	43.93	10.03	9.91%	15.42	6.39%
025.42	Iron, ICP, Open vessel (ppm)	20	19	358.2	92.49	358.2	104.9	30.08	29.28%	12.78	6.60%
025.41	Iron, ICP, Dry ash (ppm)	16	16	420.2	40.18	418.9	40.83	12.76	9.75%	15.69	6.45%
025.31	Iron, AAS, Dry ash (ppm)	9	8	400.5	74.75	414.0	48.79	21.56	11.78%	5.468	6.46%
025.33	Iron, AAS, Microwave (ppm)	2	2	460.7	102.8						
025.53	Iron, ICP-MS, Microwave (ppm)	2	2	443.7	32.75						

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025.52	Iron, ICP-MS, Open vessel (ppm)	1	1	496.0							
025.99	Iron, Miscellaneous (ppm)	1	1	413.0							
027.43	Magnesium, ICP, Microwave (%)	32	32	0.7832	0.0960	0.7914	0.0623	0.0138	7.87%	0.0362	4.14%
027.42	Magnesium, ICP, Open vessel (%)	21	20	0.7899	0.0530	0.7896	0.0561	0.0157	7.11%	0.0445	4.14%
027.41	Magnesium, ICP, Dry ash (%)	17	17	0.7497	0.0996	0.7559	0.0747	0.0226	9.88%	0.0359	4.17%
027.31	Magnesium, AAS, Dry ash (%)	9	9	0.7664	0.1471	0.7977	0.0775	0.0323	9.72%	0.0279	4.14%
027.99	Magnesium, Miscellaneous (%)	3	3	0.7670	0.0485	0.7670	0.0485	0.0280	6.32%	0.0350	4.16%
027.33	Magnesium, AAS, Microwave (%)	2	2	0.8415	0.0375						
027.52	Magnesium, ICP-MS, Open vessel (%)	2	2	0.7684	0.0691						
027.53	Magnesium, ICP-MS, Microwave (%)	2	2	0.8473	0.0533						
027.32	Magnesium, AAS, Open vessel (%)	1	1	0.7050							
027.44	Magnesium, ICP, Dry ash (%)	1	1	0.7716							
027.51	Magnesium, ICP-MS, Dry ash (%)	1	1	0.7800							
028.43	Manganese, ICP, Microwave (ppm)	31	30	232.4	13.12	231.9	13.90	3.173	5.99%	6.114	7.05%
028.42	Manganese, ICP, Open vessel (ppm)	22	21	236.4	18.20	236.3	15.24	4.157	6.45%	5.223	7.03%
028.41	Manganese, ICP, Dry ash (ppm)	14	14	200.6	11.56	199.9	11.16	3.727	5.58%	6.694	7.21%
028.31	Manganese, AAS, Dry ash (ppm)	9	9	206.9	10.55	207.1	11.39	4.744	5.50%	4.077	7.17%
028.33	Manganese, AAS, Microwave (ppm)	2	2	222.6	27.67						
028.44	Manganese, ICP, Dry ash (ppm)	2	2	194.0	20.61						
028.53	Manganese, ICP-MS, Microwave (ppm)	2	2	243.6	35.48						
028.00	Manganese, Color (ppm)	1	1	201.5							
028.32	Manganese, AAS, Open vessel (ppm)	1	1	228.5							
028.52	Manganese, ICP-MS, Open vessel (ppm)	1	1	245.9							
028.99	Manganese, Miscellaneous (ppm)	1	1	231.5							
030.01	Nitrate, Ion-selective electrode (%)	1	1	0.0016							
031.01	Phosphorus, Photometric (%)	35	34	0.7110	0.0539	0.7138	0.0315	0.0068	4.42%	0.0117	4.21%
031.43	Phosphorus, ICP, Microwave (%)	35	34	0.7292	0.0404	0.7271	0.0369	0.0079	5.07%	0.0147	4.20%
031.42	Phosphorus, ICP, Open vessel (%)	21	20	0.7163	0.0412	0.7166	0.0460	0.0129	6.43%	0.0192	4.21%
031.41	Phosphorus, ICP, Dry ash (%)	19	19	0.7045	0.0220	0.7043	0.0246	0.0071	3.50%	0.0188	4.22%
031.03	Phosphorus, Autoanalyzer (%)	2	2	0.7203	0.0208						
031.44	Phosphorus, ICP, Dry ash (%)	2	2	0.6998	0.0506						
031.52	Phosphorus, ICP-MS, Open vessel (%)	2	2	0.7158	0.0197						
031.53	Phosphorus, ICP-MS, Microwave (%)	2	2	0.7569	0.0522						
031.99	Phosphorus, Miscellaneous (%)	2	2	0.6800	0.0141						
031.06	Phosphorus, Hach Method (%)	1	1	0.6800							
031.51	Phosphorus, ICP-MS, Dry ash (%)	1	1	0.7000							
032.43	Potassium, ICP, Microwave (%)	31	31	0.8323	0.0597	0.8255	0.0464	0.0104	5.62%	0.0150	4.12%
032.42	Potassium, ICP, Open vessel (%)	19	19	0.8358	0.0656	0.8369	0.0683	0.0196	8.16%	0.0285	4.11%
032.41	Potassium, ICP, Dry ash (%)	17	16	0.6936	0.0784	0.6936	0.0889	0.0278	12.82%	0.0243	4.23%
032.31	Potassium, AAS, Dry ash (%)	7	7	0.9843	0.7270	0.7287	0.0747	0.0353	10.24%	0.0155	4.19%

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032.52	Potassium, ICP-MS, Open vessel (%)	3	3	0.8221	0.0766	0.8221	0.0766	0.0442	9.32%	0.0193	4.12%
032.02	Potassium, Flame Emission (%)	2	2	0.7078	0.0810						
032.53	Potassium, ICP-MS, Microwave (%)	2	2	0.8122	0.0243						
032.99	Potassium, Miscellaneous (%)	2	2	0.7915	0.0473						
032.32	Potassium, AAS, Open vessel (%)	1	1	0.8050							
032.33	Potassium, AAS, Microwave (%)	1	1	0.8200							
032.44	Potassium, ICP, Dry ash (%)	1	1	0.7598							
033.01	Salt as chloride, Poten Cl (%)	28	28	1.321	0.0525	1.326	0.0422	0.0100	3.18%	0.0324	3.83%
033.00	Salt as chloride, Sol Cl (%)	19	19	1.330	0.2169	1.326	0.1122	0.0322	8.47%	0.0387	3.83%
033.99	Salt, Miscellaneous (%)	13	13	1.263	0.1783	1.293	0.1316	0.0456	10.18%	0.0479	3.85%
033.03	Salt as chloride, Quantab (%)	5	4	1.135	0.0342	1.135	0.0342	0.0171	3.01%	0.0933	3.92%
033.05	Salt as chloride, Ion Sel Electrode (%)	2	2	1.170	0.1344						
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	7	7	1.431	0.2465	1.431	0.2795	0.1321	19.53%	0.0774	15.16%
034.04	Selenium, Total (Se), AA, Hydride (ppm)	4	4	1.150	0.0833	1.150	0.0833	0.0417	7.25%	0.0711	15.66%
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	6	4	1.689	0.6817	1.689	0.6817	0.0279	40.35%	0.0343	14.78%
034.42	Selenium, Total (Se), ICP, Open vessel (ppm)	3	3	1.686	0.6674	1.686	0.6674	0.3853	39.59%	0.1760	14.79%
034.41	Selenium, Total (Se), ICP, Dry ash (ppm)	2	2	1.258	0.1874						
034.01	Selenium, Total (Se), Fluor (ppm)	1	1	1.405							
034.52	Selenium, Total (Se), ICP-MS, Open vessel (ppm)	1	1	1.436							
034.99	Selenium, Total (Se), Miscellaneous (ppm)	1	1	1.600							
035.43	Sodium, ICP, Microwave (%)	30	29	0.5021	0.0342	0.5002	0.0258	0.0060	5.16%	0.0104	4.44%
035.41	Sodium, ICP, Dry ash (%)	19	19	0.4473	0.0487	0.4478	0.0541	0.0155	12.08%	0.0178	4.51%
035.42	Sodium, ICP, Open vessel (%)	19	18	0.5099	0.0401	0.5112	0.0370	0.0109	7.25%	0.0170	4.42%
035.31	Sodium, AAS, Dry ash (%)	7	7	0.3989	0.1759	0.4469	0.0674	0.0318	15.08%	0.0227	4.52%
035.05	Sodium, Flame Emission (%)	2	2	0.4725	0.0318						
035.52	Sodium, ICP-MS, Open vessel (%)	2	2	0.5410	0.0240						
035.53	Sodium, ICP-MS, Microwave (%)	2	2	0.5117	0.0047						
035.99	Sodium, Miscellaneous (%)	2	2	0.4825	0.0035						
035.01	Sodium, Ion-selective electrode (%)	1	1	0.6090							
035.02	Sodium, Em Spect (%)	1	1	0.4650							
035.32	Sodium, AAS, Open vessel (%)	1	1	0.4950							
035.33	Sodium, AAS, Microwave (%)	1	1	0.5200							
036.43	Sulfur, ICP, Microwave (%)	24	24	0.3084	0.0203	0.3079	0.0178	0.0045	5.78%	0.0112	4.78%
036.42	Sulfur, ICP, Open vessel (%)	17	17	0.2964	0.0179	0.2956	0.0186	0.0056	6.30%	0.0128	4.80%
036.04	Sulfur, LECO (%)	5	5	0.2996	0.0128	0.2996	0.0128	0.0057	4.28%	0.0096	4.80%
036.00	Sulfur, Gravimetric (%)	1	1	0.3260							
036.52	Sulfur, ICP-MS, Open vessel (%)	1	1	0.3208							
037.43	Zinc, ICP, Microwave (ppm)	33	31	214.2	15.49	213.7	15.32	3.440	7.17%	11.71	7.13%
037.42	Zinc, ICP, Open vessel (ppm)	21	20	216.6	17.07	216.1	18.22	5.092	8.43%	16.25	7.12%
037.41	Zinc, ICP, Dry ash (ppm)	15	15	173.7	35.03	170.1	29.37	9.480	17.27%	8.575	7.38%

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037.31	Zinc, AAS, Dry ash (ppm)	11	11	188.8	32.71	193.5	23.05	8.688	11.91%	3.048	7.24%
037.33	Zinc, AAS, Microwave (ppm)	2	2	188.1	50.68						
037.44	Zinc, ICP, Dry ash (ppm)	2	2	167.2	26.49						
037.53	Zinc, ICP-MS, Microwave (ppm)	2	2	208.0	12.07						
037.32	Zinc, AAS, Open vessel (ppm)	1	1	191.5							
037.52	Zinc, ICP-MS, Open vessel (ppm)	1	1	228.8							
037.99	Zinc, Miscellaneous (ppm)	1	1	196.0							
038.43	Molybdenum, ICP, Microwave (ppm)	11	11	2.945	0.6839	2.829	0.4168	0.1571	14.74%	0.1183	13.68%
038.42	Molybdenum, ICP, Open vessel (ppm)	7	7	2.674	0.3142	2.674	0.3563	0.1683	13.32%	0.1895	13.80%
038.41	Molybdenum, ICP, Dry ash (ppm)	4	3	2.547	0.0380	2.547	0.0380	0.0219	1.49%	0.0654	13.90%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	2	2	3.243	0.1448						
038.52	Molybdenum, ICP-MS, Open vessel (ppm)	1	1	0.9370							
040.43	Barium, ICP, Microwave (ppm)	1	1	13.05							
040.53	Barium, ICP-MS, Microwave (ppm)	1	1	12.82							
041.53	Vanadium, ICP-MS, Microwave (ppm)	1	1	0.8098							
042.00	Chloride, Titrimetric (%)	8	8	0.8402	0.0704	0.8417	0.0763	0.0337	9.07%	0.0319	4.10%
042.01	Chloride, Ion-selective electrode (%)	1	1	0.8612							
042.99	Chloride, Miscellaneous (%)	1	1	0.8600							
102.02	Niacin, LC (ppm)	1	1	17.30							
104.03	Riboflavin, LC (ppm)	1	1	0.0850							
105.00	Thiamine, LC (ppm)	1	1	0.2200							
106.02	Vitamin A, LC (KU / kg)	11	10	13.55	3.424	13.83	3.185	1.259	23.03%	1.370	
106.01	Vitamin A, UV (KU / kg)	1	1	13.15							
108.02	Vitamin D3, LC (KU / kg)	5	4	1.309	0.2760	1.309	0.2760	0.1380	21.09%	0.1975	
108.99	Vitamin D3, Miscellaneous (KU / kg)	1	1	1.175							
109.02	Vitamin E, LC (IU / kg)	8	8	27.43	12.31	29.54	8.007	3.539	27.11%	2.776	
109.99	Vitamin E, Miscellaneous (IU / kg)	1	1	40.50							
112.01	Pyridoxine, LC (µg / g)	1	1	0.2300							
113.02	Folic acid, LC (ppm)	1	1	0.1300							
115.00	Non Protein N (NPN), Urea + Am, Urease method (%)	2	2	0.3564	0.1466						
115.99	Non Protein N (NPN), Miscellaneous (%)	1	1	0.6750							
120.00	Alanine, Post-col Ninhydrin Der (%)	15	15	0.7052	0.0302	0.7065	0.0284	0.0092	4.02%	0.0123	4.21%
120.05	Alanine, Pre-col AQC Der (%)	8	8	0.6901	0.0282	0.6893	0.0302	0.0133	4.38%	0.0248	4.23%
120.99	Alanine, Miscellaneous (%)	2	2	0.7488	0.0265						
120.02	Alanine, Post-col OPA Der (%)	1	1	0.7250							
121.00	Arginine, Post-col Ninhydrin Der (%)	15	14	0.7590	0.0585	0.7514	0.0455	0.0152	6.06%	0.0120	4.18%
121.05	Arginine, Pre-col AQC Der (%)	8	8	0.7546	0.0483	0.7546	0.0548	0.0242	7.26%	0.0378	4.17%
121.99	Arginine, Miscellaneous (%)	2	2	0.6088	0.2775						
121.02	Arginine, Post-col OPA Der (%)	1	1	0.7220							
122.00	Aspartic, Post-col Ninhydrin Der (%)	15	15	0.9275	0.0392	0.9277	0.0420	0.0136	4.53%	0.0189	4.05%

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122.05	Aspartic, Pre-col AQC Der (%)	8	8	0.8978	0.0668	0.8978	0.0758	0.0335	8.44%	0.0183	4.07%
122.99	Aspartic, Miscellaneous (%)	2	2	0.9263	0.0760						
122.02	Aspartic, Post-col OPA Der (%)	1	1	0.9750							
124.00	Cysteine/Cystine, PAO Post-col Ninhydry (%)	15	15	0.2701	0.0192	0.2687	0.0169	0.0055	6.29%	0.0075	4.87%
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	7	0.2627	0.0270	0.2627	0.0306	0.0144	11.64%	0.0142	4.89%
124.99	Cysteine/Cystine, Miscellaneous (%)	3	3	0.2823	0.0087	0.2823	0.0087	0.0050	3.06%	0.0147	4.84%
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	1	1	0.2770							
125.00	Glutamic, Post-col Ninhydryn Der (%)	15	14	2.330	0.0670	2.328	0.0534	0.0178	2.29%	0.0300	3.52%
125.05	Glutamic, Pre-col AQC Der (%)	8	8	2.319	0.1849	2.321	0.1809	0.0800	7.79%	0.0503	3.52%
125.99	Glutamic, Miscellaneous (%)	2	2	2.364	0.0937						
125.02	Glutamic, Post-col OPA Der (%)	1	1	2.393							
126.00	Glycine, Post-col Ninhydryn Der (%)	15	15	0.6142	0.0444	0.6198	0.0314	0.0101	5.06%	0.0138	4.30%
126.05	Glycine, Pre-col AQC Der (%)	8	8	0.6232	0.0312	0.6249	0.0315	0.0139	5.04%	0.0171	4.29%
126.99	Glycine, Miscellaneous (%)	2	2	0.4963	0.2174						
126.02	Glycine, Post-col OPA Der (%)	1	1	0.6580							
127.00	Histidine, Post-col Ninhydryn Der (%)	15	15	0.3341	0.0291	0.3335	0.0302	0.0098	9.07%	0.0073	4.72%
127.05	Histidine, Pre-col AQC Der (%)	8	8	0.3400	0.0386	0.3400	0.0437	0.0193	12.86%	0.0249	4.70%
127.99	Histidine, Miscellaneous (%)	2	2	0.3313	0.0159						
127.02	Histidine, Post-col OPA Der (%)	1	1	0.3080							
128.00	Isoleucine, Post-col Ninhydryn Der (%)	15	15	0.4380	0.0340	0.4389	0.0334	0.0108	7.62%	0.0116	4.53%
128.05	Isoleucine, Pre-col AQC Der (%)	8	8	0.4628	0.0815	0.4462	0.0473	0.0209	10.59%	0.0221	4.52%
128.99	Isoleucine, Miscellaneous (%)	2	2	0.4875	0.0106						
128.02	Isoleucine, Post-col OPA Der (%)	1	1	0.4400							
129.00	Leucine, Post-col Ninhydryn Der (%)	15	15	0.9883	0.0469	0.9906	0.0416	0.0134	4.20%	0.0198	4.01%
129.05	Leucine, Pre-col AQC Der (%)	8	8	0.9860	0.0514	0.9865	0.0571	0.0253	5.79%	0.0438	4.01%
129.99	Leucine, Miscellaneous (%)	2	2	1.181	0.1856						
129.02	Leucine, Post-col OPA Der (%)	1	1	1.003							
130.00	L-Lysine, Post-col Ninhydryn Der (%)	15	15	0.5050	0.0313	0.5044	0.0340	0.0110	6.74%	0.0115	4.43%
130.05	L-Lysine, Pre-col AQC Der (%)	8	8	0.4986	0.0465	0.5036	0.0405	0.0179	8.04%	0.0336	4.43%
130.99	L-Lysine, Miscellaneous (%)	3	3	0.5343	0.1399	0.5343	0.1399	0.0808	26.18%	0.0361	4.40%
130.02	L-Lysine, Post-col OPA Der (%)	1	1	0.5680							
131.00	Methionine, PAO Post-col Ninhydryn Der (%)	15	15	0.2149	0.0105	0.2142	0.0103	0.0033	4.82%	0.0066	5.04%
131.05	Methionine, PAO Pre-col AQC Der (%)	8	8	0.2006	0.0403	0.2068	0.0300	0.0133	14.53%	0.0056	5.07%
131.99	Methionine, Miscellaneous (%)	3	3	0.1854	0.0470	0.1854	0.0470	0.0271	25.34%	0.0126	5.15%
131.02	Methionine, PAO Post-col OPA Der (%)	1	1	0.2180							
132.00	Phenylalanine, Post-col Ninhydryn Der (%)	15	15	0.5469	0.0308	0.5470	0.0348	0.0112	6.35%	0.0172	4.38%
132.05	Phenylalanine, Pre-col AQC Der (%)	8	8	0.5434	0.0340	0.5434	0.0385	0.0170	7.09%	0.0311	4.38%
132.99	Phenylalanine, Miscellaneous (%)	2	2	0.5975	0.0248						
132.02	Phenylalanine, Post-col OPA Der (%)	1	1	0.5515							
133.00	Proline, Post-col Ninhydryn Der (%)	15	15	0.8461	0.0634	0.8511	0.0600	0.0194	7.05%	0.0185	4.10%

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133.05	Proline, Pre-col AQC Der (%)	8	8	0.8251	0.0878	0.8251	0.0995	0.0440	12.06%	0.0292	4.12%
133.99	Proline, Miscellaneous (%)	2	2	0.9488	0.0195						
134.00	Serine, Post-col Ninhydrin Der (%)	15	15	0.5743	0.0297	0.5767	0.0275	0.0089	4.76%	0.0121	4.35%
134.05	Serine, Pre-col AQC Der (%)	8	8	0.5759	0.0426	0.5759	0.0483	0.0213	8.38%	0.0182	4.35%
134.99	Serine, Miscellaneous (%)	2	2	0.6650	0.0849						
134.02	Serine, Post-col OPA Der (%)	1	1	0.5150							
135.00	Threonine, Post-col Ninhydrin Der (%)	15	14	0.4625	0.0194	0.4638	0.0190	0.0064	4.10%	0.0089	4.49%
135.05	Threonine, Pre-col AQC Der (%)	8	8	0.4757	0.0340	0.4757	0.0385	0.0170	8.09%	0.0262	4.47%
135.99	Threonine, Miscellaneous (%)	3	3	0.5171	0.0233	0.5171	0.0233	0.0134	4.50%	0.0395	4.42%
135.02	Threonine, Post-col OPA Der (%)	1	1	0.4665							
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	8	8	0.1616	0.0086	0.1616	0.0098	0.0043	6.04%	0.0057	5.26%
136.05	Tryptophan, Pre-col AQC Der (%)	4	4	0.1312	0.0225	0.1312	0.0225	0.0113	17.16%	0.0101	5.43%
136.99	Tryptophan, Miscellaneous (%)	4	4	0.2101	0.1552	0.2101	0.1552	0.0776	73.88%	0.0084	5.06%
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	3	3	0.1407	0.0200	0.1407	0.0200	0.0116	14.24%	0.0070	5.37%
136.01	Tryptophan, Alka-Hydrol Rev Phase LC UV (%)	1	1	0.1615							
136.02	Tryptophan, Alka-Hydrol Post-col OPA De (%)	1	1	0.1595							
137.00	Tyrosine, Post-col Ninhydrin Der (%)	11	11	0.3559	0.0621	0.3514	0.0596	0.0225	16.95%	0.0127	4.68%
137.05	Tyrosine, Pre-col AQC Der (%)	8	8	0.3759	0.0479	0.3759	0.0543	0.0240	14.46%	0.0229	4.63%
137.99	Tyrosine, Miscellaneous (%)	2	2	0.4225	0.0248						
137.02	Tyrosine, Post-col OPA Der (%)	1	1	0.2920							
138.00	Valine, Post-col Ninhydrin Der (%)	15	15	0.6176	0.0490	0.6205	0.0421	0.0136	6.79%	0.0164	4.30%
138.05	Valine, Pre-col AQC Der (%)	8	8	0.5892	0.0327	0.5892	0.0370	0.0164	6.28%	0.0230	4.33%
138.99	Valine, Miscellaneous (%)	2	2	0.6575	0.0106						
138.02	Valine, Post-col OPA Der (%)	1	1	0.6745							
139.00	Taurine, Post-col Ninhydrin Der (%)	2	2	0.1075	0.0884						
139.05	Taurine, Pre-col AQC Der (%)	2	1	0.0775							
139.02	Taurine, Post-col OPA Der (%)	1		0.0100							
160.10	Fructose, HPAEC PAD (%)	1	1	0.1600							
161.10	Galactose, HPAEC PAD (%)	1		0.0000							
162.10	Glucose, HPAEC PAD (%)	1	1	0.1700							
162.99	Glucose, Miscellaneous (%)	1	1	4.300							
163.10	Lactose, HPAEC PAD (%)	1		0.0000							
164.10	Maltose, HPAEC PAD (%)	1	1	0.2250							
165.10	Sucrose, HPAEC PAD (%)	1	1	1.530							
166.10	Raffinose, HPAEC PAD (%)	1	1	0.4150							
167.10	Stachyose, HPAEC PAD (%)	1	1	0.3150							
365.05	Monensin, LC-MS/MS (ppm)	10	10	42.27	4.573	42.27	5.186	2.050	12.27%	1.500	9.11%
365.03	Monensin, LC-PCD (ppm)	8	8	41.70	5.992	42.89	3.591	1.587	8.37%	1.376	9.09%
365.02	Monensin, LC (ppm)	3	3	39.55	3.211	39.55	3.211	1.854	8.12%	0.2500	9.20%
365.99	Monensin, Miscellaneous (ppm)	3	3	41.94	4.831	41.94	4.831	2.789	11.52%	3.087	9.12%

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365.00	Monensin, Plate (ppm)	1	1	41.77							
365.04	Monensin, LC-MS (ppm)	1	1	42.32							
400.01	Water Activity, Aqualab chilled mirror (Units)	13	12	0.4646	0.0279	0.4641	0.0306	0.0110	6.59%	0.0096	
400.99	Water Activity, Miscellaneous (Units)	2	2	0.4585	0.0127						
516.53	Arsenic, Total (As), ICP-MS, Microwave (ppm)	2	2	0.2548	0.0681						
516.00	Arsenic, Total (As), AA, Hydride (ppm)	1	1	0.1700							
516.43	Arsenic, Total (As), ICP, Microwave (ppm)	2	1	0.1753							
516.52	Arsenic, Total (As), ICP-MS, Open vessel (ppm)	1	1	0.1757							
518.43	Cadmium, ICP, Microwave (ppm)	4	3	0.1156	0.0041	0.1156	0.0041	0.0024	3.55%	0.0044	22.00%
518.53	Cadmium, ICP-MS, Microwave (ppm)	2	2	0.1356	0.0062						
518.41	Cadmium, ICP, Dry ash (ppm)	1	1	0.1015							
518.52	Cadmium, ICP-MS, Open vessel (ppm)	1	1	0.1198							
518.99	Cadmium, Miscellaneous (ppm)	1	1	0.1178							
518.33	Cadmium, AAS, Microwave (ppm)	1		0.0000							
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	6	6	25.46	6.049	25.46	6.860	3.501	26.95%	0.4593	9.83%
520.42	Chromium, Total (Cr), ICP, Open vessel (ppm)	3	3	13.78	11.60	13.78	11.60	6.700	84.22%	0.5300	10.78%
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	2	2	28.00	1.425						
520.41	Chromium, Total (Cr), ICP, Dry ash (ppm)	1	1	14.54							
520.52	Chromium, Total (Cr), ICP-MS, Open vessel (ppm)	1	1	5.212							
526.53	Lead, ICP-MS, Microwave (ppm)	3	3	0.1563	0.0316	0.1563	0.0316	0.0182	20.21%	0.0236	21.15%
526.41	Lead, ICP, Dry ash (ppm)	1	1	0.1302							
526.43	Lead, ICP, Microwave (ppm)	2	1	0.1106							
526.52	Lead, ICP-MS, Open vessel (ppm)	1	1	0.1441							
529.99	Mercury, Miscellaneous (ppb)	2	1	1.465							
539.43	Nickel, ICP, Microwave (ppm)	3	3	14.07	1.975	14.07	1.975	1.396	14.03%		10.75%
539.41	Nickel, ICP, Dry ash (ppm)	1	1	11.20							
539.52	Nickel, ICP-MS, Open vessel (ppm)	1	1	2.612							
539.53	Nickel, ICP-MS, Microwave (ppm)	1	1	15.24							
710.99	Lauric Acid (12:0), Miscellaneous (% (w/w))	1		0.0050							
714.99	Myristic Acid (14:0), Miscellaneous (% (w/w))	1	1	0.0126							
716.99	Palmitic Acid (16:0), Miscellaneous (% (w/w))	1	1	0.7611							
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (% (w/w))	1	1	0.0163							
722.99	Stearic Acid (18:0), Miscellaneous (% (w/w))	1	1	0.1229							
724.99	Oleic Acid (9c-18:1), Miscellaneous (% (w/w))	1	1	1.122							
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (% (w/w))	1	1	2.123							
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (% (w/w))	1	1	0.1150							
730.99	Arachidic Acid (20:0), Miscellaneous (% (w/w))	1	1	0.0182							
732.99	Gondoic Acid (11c-20:1), Miscellaneous (% (w/w))	1	1	0.0228							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (% (w/w))	1		0.0050							
742.99	Behenic Acid (22:0), Miscellaneous (% (w/w))	1	1	0.0137							

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744.99	Erucic Acid (13c-22:1), Miscellaneous (% (w/w))	1		0.0050							
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (%)	1		0.0050							
748.99	Lignoceric Acid (24:0), Miscellaneous (% (w/w))	1	1	0.0225							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (%)	1		0.0050							
752.99	Nervonic Acid (24:1) isomers, Miscellaneous (% (w/w))	1		0.0050							
772.99	Total Fatty Acids, Miscellaneous (% (w/w))	1	1	4.350							

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

Beef Feed, Medicated

Test Material Code # 202422

Method Precision Report

Methods Reported: 132

Labs Reporting: 171

Issue Date : 03/31/2024

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 (%)	46	41	7.434	0.2553	0.1899	0.0762	0.2046	2.55%	1.02%	2.75%	2.686
001.99	Loss on Drying, Miscellaneous (%)	16	15	7.514	0.6344	0.6408	0.1044	0.6492	8.56%	1.39%	8.67%	6.221
002.01	Protein, Crude, Auto Kjeh-Foss (%)	18	16	13.51	0.1776	0.1144	0.0878	0.1442	0.85%	0.65%	1.07%	1.642
002.05	Protein, Crude, Copper, Boric Acid (%)	26	24	13.46	0.2056	0.1698	0.0747	0.1855	1.26%	0.56%	1.38%	2.484
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	107	98	13.65	0.5315	0.3182	0.1503	0.3519	2.33%	1.10%	2.58%	2.341
002.11	Protein, Crude, NIR (%)	11	11	18.72	6.484	6.481	0.2899	6.487	34.62%	1.55%	34.65%	22.38
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	14	13	3.994	0.5050	0.4636	0.0787	0.4703	11.79%	2.00%	11.96%	5.977
003.06	Fat, Crude, Pet Ether (%)	16	15	4.111	0.2383	0.2386	0.0694	0.2485	5.82%	1.69%	6.06%	3.578
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	13	13	4.203	0.2299	0.2017	0.1561	0.2551	4.80%	3.71%	6.07%	1.634
003.10	Fat, Crude, Randall, Pet Ether (%)	24	22	4.059	0.2236	0.1677	0.0717	0.1824	4.11%	1.76%	4.48%	2.543
003.11	Fat, Crude, NIR (%)	10	10	5.773	2.111	2.109	0.1304	2.113	36.54%	2.26%	36.61%	16.21
003.13	Fat, Crude, Randall, Hexane Ext. (%)	5	5	4.303	0.1177	0.1078	0.0669	0.1269	2.51%	1.55%	2.95%	1.897
003.14	Fat, Crude, Ankom (%)	56	50	4.037	0.3483	0.2716	0.0759	0.2820	6.78%	1.90%	7.04%	3.716
004.00	Fiber, Crude, Asbestos Free (%)	10	8	15.54	3.718	1.546	0.3322	1.582	9.29%	1.99%	9.50%	4.762
004.06	Fiber, Crude, Fibertec (%)	20	16	15.91	1.140	0.4838	0.1137	0.4970	3.03%	0.71%	3.11%	4.372
004.07	Fiber, Crude, ANKOM (%)	76	70	16.45	2.587	1.499	0.2992	1.529	8.94%	1.79%	9.12%	5.109
004.11	Fiber, Crude, NIR (%)	10	9	12.64	3.189	3.188	0.1281	3.190	25.22%	1.01%	25.24%	24.90
005.00	Ash, 2h @ 600°C (%)	94	88	14.61	0.7210	0.3902	0.1676	0.4246	2.65%	1.14%	2.89%	2.534
005.05	Ash, 3h @ 550°C (%)	29	28	15.27	0.4971	0.4920	0.1685	0.5201	3.22%	1.10%	3.41%	3.086
005.11	Ash, NIR (%)	10	9	8.103	2.486	2.484	0.1281	2.488	30.66%	1.58%	30.70%	19.42
005.99	Ash, Miscellaneous (%)	8	8	15.10	0.6535	0.6483	0.1167	0.6587	4.29%	0.77%	4.36%	5.642
008.02	Fiber, Acid Detergent, Crucible (%)	13	11	22.66	5.260	1.470	0.1707	1.480	6.09%	0.71%	6.13%	8.666
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	44	42	23.03	2.406	2.425	0.2857	2.442	10.52%	1.24%	10.60%	8.548
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	12	11	34.75	5.713	1.173	0.5592	1.299	3.22%	1.54%	3.57%	2.323
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	41	39	34.64	1.632	1.613	0.4375	1.671	4.66%	1.26%	4.83%	3.819
010.11	Moisture, NIR (%)	10	10	7.702	1.565	1.561	0.1390	1.568	20.27%	1.80%	20.35%	11.28
010.99	Moisture, Miscellaneous (%)	20	19	7.599	0.6123	0.4328	0.0698	0.4384	5.77%	0.93%	5.85%	6.283
011.01	Loss on Drying, HT, 135°C 2hr (%)	63	56	8.172	0.5449	0.3727	0.0786	0.3809	4.55%	0.96%	4.65%	4.848
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	7	6	8.017	0.6858	0.7447	0.1208	0.7544	9.31%	1.51%	9.43%	6.245
012.00	Starch, Polarimetric (Ewers) (%)	13	12	12.88	0.5547	0.4029	0.1569	0.4324	3.10%	1.21%	3.33%	2.756
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	9	9	12.55	1.278	1.231	0.4861	1.324	9.81%	3.87%	10.55%	2.723
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	9	9	12.74	1.126	1.089	0.4055	1.162	8.55%	3.18%	9.12%	2.865
013.00	Fat, Pretreat, Acid hydrolysis (%)	14	12	5.024	0.5140	0.4963	0.0733	0.5017	9.98%	1.47%	10.09%	6.843
013.02	Fat, Pretreat, Mojonner, Bak Ext, Acid hydrolysis (%)	15	14	5.299	0.4630	0.4730	0.0852	0.4806	8.90%	1.60%	9.05%	5.642
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	7	7	4.640	0.6267	0.6218	0.1099	0.6315	13.40%	2.37%	13.61%	5.745
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	8	8	4.625	0.8252	0.8154	0.1792	0.8349	17.63%	3.87%	18.05%	4.659

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015.43	Aluminum, ICP, Microwave (ppm)	8	7	104.0	36.46	13.57	3.985	14.14	11.69%	3.43%	12.19%	3.549
017.41	Boron, ICP, Dry ash (ppm)	5	5	5.405	0.5597	0.5513	0.1367	0.5680	10.20%	2.53%	10.51%	4.155
017.43	Boron, ICP, Microwave (ppm)	8	6	5.173	1.344	1.343	0.0799	1.345	25.95%	1.55%	26.00%	16.82
019.00	Calcium, Ox-Mn04 Vol. (%)	7	7	2.505	0.0447	0.0336	0.0418	0.0536	1.34%	1.67%	2.14%	1.282
019.08	Calcium, EDTA (%)	15	14	2.564	0.1406	0.1322	0.0528	0.1424	5.18%	2.07%	5.58%	2.695
019.31	Calcium, AAS, Dry ash (%)	16	15	2.480	0.1157	0.0838	0.0515	0.0984	3.36%	2.06%	3.94%	1.912
019.41	Calcium, ICP, Dry ash (%)	20	19	2.467	0.0952	0.0839	0.0673	0.1076	3.40%	2.72%	4.35%	1.598
019.42	Calcium, ICP, Open vessel (%)	20	20	2.548	0.1887	0.1810	0.0754	0.1961	7.10%	2.96%	7.69%	2.602
019.43	Calcium, ICP, Microwave (%)	34	32	2.545	0.1852	0.1145	0.0511	0.1254	4.47%	2.00%	4.90%	2.452
019.99	Calcium, Miscellaneous (%)	5	5	2.521	0.1355	0.1272	0.0663	0.1434	5.04%	2.63%	5.69%	2.164
021.41	Cobalt, ICP, Dry ash (ppm)	5	5	7.138	1.039	1.029	0.2027	1.049	14.42%	2.84%	14.69%	5.173
021.42	Cobalt, ICP, Open vessel (ppm)	5	5	5.602	0.7056	0.6307	0.4473	0.7732	11.26%	7.99%	13.80%	1.728
021.43	Cobalt, ICP, Microwave (ppm)	13	11	7.286	2.081	1.181	0.2267	1.202	15.16%	2.91%	15.43%	5.301
022.31	Copper, AAS, Dry ash (ppm)	8	7	56.73	8.144	8.018	2.016	8.268	14.13%	3.55%	14.57%	4.100
022.41	Copper, ICP, Dry ash (ppm)	15	13	44.15	12.44	9.116	2.646	9.492	21.79%	6.33%	22.69%	3.587
022.42	Copper, ICP, Open vessel (ppm)	22	21	82.37	7.154	4.824	7.799	9.171	5.85%	9.46%	11.13%	1.176
022.43	Copper, ICP, Microwave (ppm)	32	29	77.34	7.199	5.362	3.976	6.675	7.00%	5.19%	8.72%	1.679
025.31	Iron, AAS, Dry ash (ppm)	9	6	400.5	74.75	20.93	3.533	21.23	4.81%	0.81%	4.88%	6.009
025.41	Iron, ICP, Dry ash (ppm)	16	16	420.2	40.18	39.16	12.74	41.18	9.32%	3.03%	9.80%	3.232
025.42	Iron, ICP, Open vessel (ppm)	20	19	358.2	92.49	92.05	12.80	92.93	25.70%	3.57%	25.95%	7.260
025.43	Iron, ICP, Microwave (ppm)	31	28	435.2	69.35	47.44	13.21	49.24	10.58%	2.95%	10.98%	3.727
027.31	Magnesium, AAS, Dry ash (%)	9	8	0.7664	0.1471	0.0539	0.0228	0.0586	6.64%	2.81%	7.21%	2.563
027.41	Magnesium, ICP, Dry ash (%)	17	16	0.7497	0.0996	0.0764	0.0253	0.0805	9.98%	3.31%	10.51%	3.179
027.42	Magnesium, ICP, Open vessel (%)	21	20	0.7899	0.0530	0.0450	0.0397	0.0600	5.69%	5.02%	7.59%	1.511
027.43	Magnesium, ICP, Microwave (%)	32	31	0.7832	0.0960	0.0563	0.0291	0.0634	7.07%	3.65%	7.96%	2.182
028.31	Manganese, AAS, Dry ash (ppm)	9	8	206.9	10.55	8.010	2.888	8.515	3.83%	1.38%	4.07%	2.948
028.41	Manganese, ICP, Dry ash (ppm)	14	13	200.6	11.56	8.123	5.241	9.668	4.09%	2.64%	4.87%	1.844
028.42	Manganese, ICP, Open vessel (ppm)	22	20	236.4	18.20	14.83	4.146	15.40	6.34%	1.77%	6.58%	3.714
028.43	Manganese, ICP, Microwave (ppm)	31	29	232.4	13.12	12.86	5.062	13.82	5.53%	2.18%	5.95%	2.731
031.01	Phosphorus, Photometric (%)	35	33	0.7110	0.0539	0.0397	0.0095	0.0408	5.53%	1.33%	5.69%	4.291
031.41	Phosphorus, ICP, Dry ash (%)	19	18	0.7045	0.0220	0.0182	0.0148	0.0234	2.59%	2.11%	3.34%	1.585
031.42	Phosphorus, ICP, Open vessel (%)	21	20	0.7163	0.0412	0.0396	0.0162	0.0428	5.53%	2.26%	5.97%	2.643
031.43	Phosphorus, ICP, Microwave (%)	35	31	0.7292	0.0404	0.0306	0.0113	0.0326	4.22%	1.56%	4.50%	2.883
032.31	Potassium, AAS, Dry ash (%)	7	6	0.9843	0.7270	0.0475	0.0056	0.0479	6.69%	0.78%	6.74%	8.598
032.41	Potassium, ICP, Dry ash (%)	17	16	0.6936	0.0784	0.0769	0.0217	0.0799	11.09%	3.13%	11.52%	3.684
032.42	Potassium, ICP, Open vessel (%)	19	19	0.8358	0.0656	0.0629	0.0264	0.0682	7.53%	3.16%	8.16%	2.580
032.43	Potassium, ICP, Microwave (%)	31	30	0.8323	0.0597	0.0530	0.0129	0.0545	6.41%	1.56%	6.59%	4.237
033.00	Salt as chloride, Sol Cl (%)	19	16	1.330	0.2169	0.1577	0.0204	0.1590	12.24%	1.58%	12.34%	7.807
033.01	Salt as chloride, Poten Cl (%)	28	26	1.321	0.0525	0.0371	0.0248	0.0446	2.80%	1.87%	3.37%	1.800
033.99	Salt, Miscellaneous (%)	13	11	1.263	0.1783	0.1345	0.0322	0.1383	10.28%	2.46%	10.57%	4.298
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	7	6	1.431	0.2465	0.1906	0.0426	0.1953	12.74%	2.85%	13.05%	4.582
035.31	Sodium, AAS, Dry ash (%)	7	5	0.3989	0.1759	0.0444	0.0084	0.0452	9.70%	1.84%	9.88%	5.356
035.41	Sodium, ICP, Dry ash (%)	19	18	0.4473	0.0487	0.0452	0.0132	0.0471	10.02%	2.93%	10.44%	3.565
035.42	Sodium, ICP, Open vessel (%)	19	16	0.5099	0.0401	0.0333	0.0129	0.0357	6.46%	2.51%	6.93%	2.762
035.43	Sodium, ICP, Microwave (%)	30	27	0.5021	0.0342	0.0298	0.0076	0.0308	5.98%	1.51%	6.17%	4.071
036.04	Sulfur, LECO (%)	5	5	0.2996	0.0128	0.0115	0.0079	0.0140	3.85%	2.64%	4.67%	1.771

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036.42	Sulfur, ICP, Open vessel (%)	17	17	0.2964	0.0179	0.0163	0.0103	0.0193	5.50%	3.48%	6.51%	1.870
036.43	Sulfur, ICP, Microwave (%)	24	22	0.3084	0.0203	0.0161	0.0076	0.0178	5.26%	2.48%	5.81%	2.346
037.31	Zinc, AAS, Dry ash (ppm)	11	10	188.8	32.71	18.03	2.656	18.23	9.15%	1.35%	9.25%	6.863
037.41	Zinc, ICP, Dry ash (ppm)	15	13	173.7	35.03	24.33	6.906	25.29	14.47%	4.11%	15.04%	3.662
037.42	Zinc, ICP, Open vessel (ppm)	21	19	216.6	17.07	14.44	13.83	20.00	6.66%	6.37%	9.22%	1.446
037.43	Zinc, ICP, Microwave (ppm)	33	30	214.2	15.49	13.30	10.12	16.71	6.23%	4.74%	7.83%	1.652
038.42	Molybdenum, ICP, Open vessel (ppm)	7	6	2.674	0.3142	0.3086	0.1064	0.3264	11.35%	3.91%	12.00%	3.069
038.43	Molybdenum, ICP, Microwave (ppm)	11	10	2.945	0.6839	0.3030	0.1810	0.3529	10.97%	6.55%	12.78%	1.950
042.00	Chloride, Titrimetric (%)	8	7	0.8402	0.0704	0.0515	0.0163	0.0540	6.01%	1.89%	6.30%	3.324
106.02	Vitamin A, LC (KU / kg)	11	10	13.55	3.424	3.325	1.158	3.521	24.54%	8.55%	25.99%	3.040
109.02	Vitamin E, LC (IU / kg)	8	6	27.43	12.31	3.382	1.878	3.868	11.45%	6.36%	13.10%	2.060
120.00	Alanine, Post-col Ninhydrin Der (%)	15	13	0.7052	0.0302	0.0209	0.0088	0.0226	2.95%	1.25%	3.20%	2.571
120.05	Alanine, Pre-col AQC Der (%)	8	8	0.6901	0.0282	0.0245	0.0199	0.0315	3.55%	2.88%	4.57%	1.587
121.00	Arginine, Post-col Ninhydrin Der (%)	15	12	0.7590	0.0585	0.0303	0.0091	0.0316	4.09%	1.23%	4.27%	3.484
121.05	Arginine, Pre-col AQC Der (%)	8	8	0.7546	0.0483	0.0435	0.0297	0.0527	5.77%	3.93%	6.98%	1.776
122.00	Aspartic, Post-col Ninhydrin Der (%)	15	14	0.9275	0.0392	0.0338	0.0144	0.0367	3.66%	1.56%	3.98%	2.547
122.05	Aspartic, Pre-col AQC Der (%)	8	7	0.8978	0.0668	0.0598	0.0093	0.0605	6.57%	1.02%	6.65%	6.504
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin Der (%)	15	14	0.2701	0.0192	0.0136	0.0055	0.0146	5.09%	2.05%	5.49%	2.676
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	6	0.2627	0.0270	0.0270	0.0078	0.0281	10.43%	3.01%	10.86%	3.612
125.00	Glutamic, Post-col Ninhydrin Der (%)	15	13	2.330	0.0670	0.0484	0.0264	0.0552	2.09%	1.14%	2.38%	2.086
125.05	Glutamic, Pre-col AQC Der (%)	8	8	2.319	0.1849	0.1831	0.0369	0.1868	7.90%	1.59%	8.06%	5.059
126.00	Glycine, Post-col Ninhydrin Der (%)	15	13	0.6142	0.0444	0.0265	0.0091	0.0280	4.28%	1.46%	4.52%	3.087
126.05	Glycine, Pre-col AQC Der (%)	8	7	0.6232	0.0312	0.0317	0.0105	0.0334	5.06%	1.67%	5.33%	3.191
127.00	Histidine, Post-col Ninhydrin Der (%)	15	15	0.3341	0.0291	0.0288	0.0052	0.0293	8.63%	1.55%	8.76%	5.670
127.05	Histidine, Pre-col AQC Der (%)	8	7	0.3400	0.0386	0.0406	0.0127	0.0426	11.97%	3.74%	12.54%	3.357
128.00	Isoleucine, Post-col Ninhydrin Der (%)	15	15	0.4380	0.0340	0.0334	0.0091	0.0346	7.62%	2.08%	7.90%	3.797
128.05	Isoleucine, Pre-col AQC Der (%)	8	7	0.4628	0.0815	0.0310	0.0148	0.0343	7.10%	3.39%	7.87%	2.320
129.00	Leucine, Post-col Ninhydrin Der (%)	15	13	0.9883	0.0469	0.0289	0.0130	0.0317	2.92%	1.31%	3.20%	2.441
129.05	Leucine, Pre-col AQC Der (%)	8	8	0.9860	0.0514	0.0453	0.0344	0.0569	4.60%	3.49%	5.77%	1.652
130.00	L-Lysine, Post-col Ninhydrin Der (%)	15	15	0.5050	0.0313	0.0305	0.0095	0.0320	6.05%	1.88%	6.33%	3.375
130.05	L-Lysine, Pre-col AQC Der (%)	8	7	0.4986	0.0465	0.0426	0.0202	0.0472	8.68%	4.11%	9.60%	2.338
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	15	15	0.2149	0.0105	0.0099	0.0047	0.0110	4.62%	2.18%	5.11%	2.342
131.05	Methionine, PAO Pre-col AQC Der (%)	8	7	0.2006	0.0403	0.0208	0.0050	0.0214	9.77%	2.32%	10.05%	4.321
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	15	15	0.5469	0.0308	0.0294	0.0132	0.0322	5.37%	2.42%	5.89%	2.436
132.05	Phenylalanine, Pre-col AQC Der (%)	8	8	0.5434	0.0340	0.0294	0.0242	0.0380	5.41%	4.45%	7.00%	1.574
133.00	Proline, Post-col Ninhydrin Der (%)	15	15	0.8461	0.0634	0.0623	0.0164	0.0644	7.37%	1.94%	7.62%	3.928
133.05	Proline, Pre-col AQC Der (%)	8	7	0.8251	0.0878	0.0714	0.0178	0.0736	8.87%	2.21%	9.14%	4.141
134.00	Serine, Post-col Ninhydrin Der (%)	15	13	0.5743	0.0297	0.0212	0.0079	0.0226	3.66%	1.37%	3.91%	2.851
134.05	Serine, Pre-col AQC Der (%)	8	8	0.5759	0.0426	0.0414	0.0138	0.0437	7.19%	2.40%	7.59%	3.154
135.00	Threonine, Post-col Ninhydrin Der (%)	15	14	0.4625	0.0194	0.0188	0.0065	0.0199	4.07%	1.41%	4.31%	3.063
135.05	Threonine, Pre-col AQC Der (%)	8	7	0.4757	0.0340	0.0286	0.0134	0.0316	6.11%	2.85%	6.74%	2.365
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	8	8	0.1616	0.0086	0.0082	0.0038	0.0090	5.06%	2.37%	5.59%	2.360
137.00	Tyrosine, Post-col Ninhydrin Der (%)	11	11	0.3559	0.0621	0.0617	0.0106	0.0626	17.33%	2.98%	17.58%	5.909
137.05	Tyrosine, Pre-col AQC Der (%)	8	8	0.3759	0.0479	0.0461	0.0185	0.0497	12.27%	4.92%	13.21%	2.688
138.00	Valine, Post-col Ninhydrin Der (%)	15	14	0.6176	0.0490	0.0355	0.0131	0.0378	5.67%	2.09%	6.04%	2.894
138.05	Valine, Pre-col AQC Der (%)	8	8	0.5892	0.0327	0.0303	0.0172	0.0349	5.14%	2.92%	5.91%	2.024

Test Material Code # 202422

Issue Date : 03/31/2024

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
365.03	Monensin, LC-PCD (ppm)	8	7	41.70	5.992	2.274	1.415	2.679	5.21%	3.24%	6.14%	1.893
365.05	Monensin, LC-MS/MS (ppm)	10	10	42.27	4.573	4.473	1.348	4.671	10.58%	3.19%	11.05%	3.466
400.01	Water Activity, Aqualab chilled mirror (Units)	13	11	0.4646	0.0279	0.0258	0.0069	0.0267	5.50%	1.48%	5.70%	3.848
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	6	6	25.46	6.049	6.044	0.3573	6.054	23.74%	1.40%	23.78%	16.95

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