



AAFCO
Association of American Feed Control Officials



Animal Feed Scheme

Cattle Mineral

Test Material Code # 202592

Method Summary Report

(Precision Report Follows)

Labs Reporting: 138

Methods Reported: 304

Issue Date : 01/31/2026

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 (%)	25	25	3.927	0.2512	3.908	0.2127	0.0532	5.44%	0.1324	3.26%
001.99	Loss on Drying, Miscellaneous (%)	12	11	3.758	0.5470	3.763	0.4796	0.1808	12.75%	0.1703	3.28%
001.00	Loss on Drying, Vac 95°C 5 hr (%)	4	3	3.850	0.3918	3.850	0.3918	0.2262	10.18%	0.0200	3.27%
001.03	Loss on Drying, Low temp. methods (%)	2	2	4.025	0.5162						
001.05	Loss on Drying, LECO (%)	1	1	3.968							
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	40	39	2.446	0.3603	2.435	0.3516	0.0704	14.44%	0.1773	3.50%
002.01	Protein, Crude, Auto Kjel-Foss (%)	4	4	2.420	0.1236	2.420	0.1236	0.0618	5.11%	0.1207	3.50%
002.11	Protein, Crude, NIR (%)	3	3	10.78	5.407	10.78	5.407	3.121	50.16%	0.4100	2.80%
002.05	Protein, Crude, Copper, Boric Acid (%)	2	1	2.340							
002.08	Protein, Crude, Cu/Ti (%)	2	1	2.820							
003.14	Fat, Crude, Ankom (%)	11	10	1.144	0.0907	1.144	0.1028	0.0406	8.99%	0.0483	3.92%
003.10	Fat, Crude, Randall, Pet Ether (%)	7	7	1.018	0.2979	1.014	0.3285	0.1552	32.41%	0.2243	3.99%
003.06	Fat, Crude, Pet Ether (%)	3	3	0.8503	0.3131	0.8503	0.3131	0.1808	36.82%	0.0453	4.10%
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	2	2	1.151	0.2069						
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	2	2	1.018	0.0248						
003.11	Fat, Crude, NIR (%)	2	2	3.513	3.030						
003.99	Fat, Crude, Miscellaneous (%)	2	2	11.60	14.99						
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	1	1	0.9100							
003.13	Fat, Crude, Randall, Hexane Ext. (%)	1	1	0.9850							
004.07	Fiber, Crude, ANKOM (%)	13	13	4.526	0.6358	4.497	0.6513	0.2258	14.48%	0.2629	3.19%
004.00	Fiber, Crude, Asbestos Free (%)	2	2	3.490	1.004						
004.06	Fiber, Crude, Fibertec (%)	2	2	3.633	0.0248						
004.11	Fiber, Crude, NIR (%)	2	2	32.86	18.14						
005.00	Ash, 2h @ 600°C (%)	75	73	70.86	2.252	71.19	1.464	0.2142	2.06%	0.5066	1.19%
005.05	Ash, 3h @ 550°C (%)	15	15	73.37	1.829	73.34	2.026	0.6539	2.76%	0.4684	1.17%
005.99	Ash, Miscellaneous (%)	5	5	71.89	1.687	71.89	1.687	0.7545	2.35%	0.4600	1.18%
005.11	Ash, NIR (%)	3	3	25.61	15.31	25.61	15.31	8.837	59.77%	1.890	1.98%
005.02	Ash, LECO (%)	1	1	70.13							
005.03	Ash, Microwave furnace (%)	1	1	71.90							

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006.00	Total Sugars, As sucrose (%)	2	2	5.704	1.561						
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	6	5	5.789	1.849	5.789	1.849	1.033	31.93%	0.5264	3.07%
008.02	Fiber, Acid Detergent, Crucible (%)	1	1	5.380							
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	6	6	10.48	3.075	10.20	2.816	1.437	27.59%	0.4610	2.82%
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	1	1	5.650							
010.99	Moisture, Miscellaneous (%)	13	12	3.916	0.5329	3.828	0.3754	0.1355	9.81%	0.1095	3.27%
010.11	Moisture, NIR (%)	3	3	6.275	2.757	6.275	2.757	1.592	43.94%	0.7367	3.03%
010.03	Moisture, Karl-Fischer (%)	2	2	2.636	1.144						
011.01	Loss on Drying, HT, 135°C 2hr (%)	52	52	4.829	0.5234	4.859	0.3253	0.0564	6.69%	0.1335	3.15%
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	5	5	4.713	0.6867	4.713	0.6867	0.3071	14.57%	0.6375	3.17%
011.02	Loss on Drying, HT, 130°C for 2 hours (%)	2	2	4.790	0.2334						
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	4	4	0.5138	0.2006	0.5138	0.2006	0.1003	39.05%	0.2424	4.42%
012.00	Starch, Polarimetric (Ewers) (%)	2	2	1.150	0.6364						
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	2	2	0.9300	0.2546						
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	1	1	0.3348							
013.00	Fat, Pretreat, Acid hydrolysis (%)	7	6	1.780	0.9605	1.780	1.089	0.5558	61.18%	0.0601	3.67%
013.02	Fat, Pretreat, Mojonniere, Bak Ext, Acid hydrolysis (%)	6	6	2.660	1.033	2.660	1.172	0.5980	44.06%	0.3201	3.45%
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	2	2	5.759	3.976						
013.08	Fat, Pretreat, Roese-Gottlieb Modified, Alkaline Hydrolysis (%)	1	1	1.325							
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	1	1	1.175							
015.43	Aluminum, ICP, Microwave (ppm)	6	5	964.2	245.0	964.2	245.0	137.0	25.41%	37.29	5.69%
015.41	Aluminum, ICP, Dry ash (ppm)	3	3	908.5	94.07	908.5	94.07	54.31	10.35%	12.44	5.74%
015.42	Aluminum, ICP, Open vessel (ppm)	2	2	757.6	65.90						
015.53	Aluminum, ICP-MS, Microwave (ppm)	2	2	1,131	181.8						
017.43	Boron, ICP, Microwave (ppm)	5	4	7.490	6.191	7.490	6.191	3.096	82.66%	0.4156	11.81%
017.41	Boron, ICP, Dry ash (ppm)	4	3	10.07	1.463	10.07	1.463	0.8447	14.53%	0.1832	11.30%
017.42	Boron, ICP, Open vessel (ppm)	3	3	26.65	18.40	26.65	18.40	10.62	69.02%	2.250	9.76%
017.53	Boron, ICP-MS, Microwave (ppm)	1	1	9.867							
019.43	Calcium, ICP, Microwave (%)	34	34	11.98	0.6158	11.96	0.5567	0.1193	4.65%	0.4079	2.75%
019.42	Calcium, ICP, Open vessel (%)	21	21	12.27	0.9135	12.28	1.020	0.2781	8.30%	0.3871	2.74%
019.41	Calcium, ICP, Dry ash (%)	16	16	11.69	1.056	11.87	0.7394	0.2310	6.23%	0.5214	2.76%
019.08	Calcium, EDTA (%)	10	10	12.91	0.4510	12.92	0.4843	0.1914	3.75%	0.4697	2.72%
019.31	Calcium, AAS, Dry ash (%)	10	9	12.33	0.4140	12.38	0.3393	0.1414	2.74%	0.1643	2.74%
019.99	Calcium, Miscellaneous (%)	7	7	12.85	1.288	12.82	1.403	0.6627	10.94%	0.3429	2.72%
019.00	Calcium, Ox-MnO4 Vol. (%)	6	6	12.79	1.075	12.41	0.1950	0.0995	1.57%	0.1338	2.74%
019.53	Calcium, ICP-MS, Microwave (%)	6	6	12.09	1.024	12.30	0.6233	0.3181	5.07%	0.4069	2.74%
019.32	Calcium, AAS, Open vessel (%)	2	2	12.59	0.6187						
019.52	Calcium, ICP-MS, Open vessel (%)	2	2	12.03	0.0601						
019.02	Calcium, Hach Method (%)	1	1	10.75							
019.09	Calcium, Ion-selective electrode (%)	1	1	11.70							

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019.33	Calcium, AAS, Microwave (%)	1	1	12.57							
019.44	Calcium, ICP, Dry ash (%)	1	1	12.55							
021.43	Cobalt, ICP, Microwave (ppm)	11	10	51.46	7.312	51.36	8.084	3.196	15.74%	0.5852	8.84%
021.41	Cobalt, ICP, Dry ash (ppm)	4	4	49.88	11.22	49.88	11.22	5.611	22.50%	1.689	8.88%
021.42	Cobalt, ICP, Open vessel (ppm)	4	4	37.14	4.375	37.14	4.375	2.187	11.78%	3.375	9.28%
021.53	Cobalt, ICP-MS, Microwave (ppm)	3	3	62.19	7.943	62.19	7.943	4.586	12.77%	2.120	8.59%
021.31	Cobalt, AAS, Dry ash (ppm)	2	2	55.38	7.877						
021.52	Cobalt, ICP-MS, Open vessel (ppm)	2	2	55.88	2.026						
021.99	Cobalt, Miscellaneous (ppm)	1	1	38.70							
022.43	Copper, ICP, Microwave (ppm)	32	31	1,238	156.8	1,239	120.7	27.09	9.74%	28.79	5.48%
022.42	Copper, ICP, Open vessel (ppm)	21	21	1,291	153.2	1,265	103.2	28.15	8.16%	42.88	5.46%
022.41	Copper, ICP, Dry ash (ppm)	14	14	1,227	107.2	1,235	102.5	34.24	8.30%	33.35	5.48%
022.31	Copper, AAS, Dry ash (ppm)	7	6	1,333	101.8	1,306	43.81	22.36	3.35%	10.65	5.43%
022.99	Copper, Miscellaneous (ppm)	6	6	1,232	145.7	1,253	114.9	58.63	9.17%	32.31	5.47%
022.53	Copper, ICP-MS, Microwave (ppm)	5	5	1,337	157.1	1,337	157.1	70.25	11.75%	81.04	5.41%
022.32	Copper, AAS, Open vessel (ppm)	2	2	1,341	26.87						
022.44	Copper, ICP, Dry ash (ppm)	2	2	1,315	28.28						
022.52	Copper, ICP-MS, Open vessel (ppm)	2	2	1,361	39.82						
022.33	Copper, AAS, Microwave (ppm)	1	1	1,297							
024.03	Iodine, Ion-selective electrode (ppm)	1	1	24.55							
024.52	Iodine, ICP-MS, Open vessel (ppm)	1	1	42.17							
025.43	Iron, ICP, Microwave (ppm)	25	24	6,919	714.0	6,896	685.3	174.8	9.94%	130.4	4.23%
025.42	Iron, ICP, Open vessel (ppm)	17	17	6,852	843.7	6,856	703.3	213.2	10.26%	144.0	4.23%
025.41	Iron, ICP, Dry ash (ppm)	12	12	6,494	1,042	6,602	899.3	324.5	13.62%	197.0	4.26%
025.31	Iron, AAS, Dry ash (ppm)	5	4	6,653	954.0	6,653	954.0	477.0	14.34%	170.2	4.25%
025.53	Iron, ICP-MS, Microwave (ppm)	3	3	7,343	1,186	7,343	1,186	684.5	16.15%	383.7	4.19%
025.99	Iron, Miscellaneous (ppm)	3	3	7,060	98.78	7,060	98.78	57.03	1.40%	94.67	4.21%
025.33	Iron, AAS, Microwave (ppm)	1	1	6,359							
027.43	Magnesium, ICP, Microwave (%)	33	33	10.92	0.7665	10.89	0.7610	0.1656	6.99%	0.3703	2.79%
027.42	Magnesium, ICP, Open vessel (%)	21	21	11.38	1.177	11.24	0.9635	0.2628	8.57%	0.3472	2.78%
027.41	Magnesium, ICP, Dry ash (%)	14	14	9.890	2.573	10.84	0.6213	0.2076	5.73%	0.3231	2.79%
027.31	Magnesium, AAS, Dry ash (%)	8	8	11.16	0.9865	11.25	0.8992	0.3974	7.99%	0.2352	2.78%
027.53	Magnesium, ICP-MS, Microwave (%)	6	6	10.71	0.7263	10.76	0.7101	0.3624	6.60%	0.4340	2.80%
027.99	Magnesium, Miscellaneous (%)	5	5	10.84	1.069	10.84	1.069	0.4778	9.86%	0.3500	2.79%
027.32	Magnesium, AAS, Open vessel (%)	2	2	9.660	1.598						
027.52	Magnesium, ICP-MS, Open vessel (%)	2	2	10.77	0.2581						
027.33	Magnesium, AAS, Microwave (%)	1	1	10.78							
027.44	Magnesium, ICP, Dry ash (%)	1	1	11.50							
028.43	Manganese, ICP, Microwave (ppm)	25	25	1,842	194.4	1,858	172.9	43.22	9.30%	48.41	5.15%
028.42	Manganese, ICP, Open vessel (ppm)	17	17	1,962	216.8	1,935	175.5	53.20	9.07%	48.72	5.12%

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028.41	Manganese, ICP, Dry ash (ppm)	10	10	1,848	164.1	1,853	175.8	69.49	9.49%	64.76	5.15%
028.31	Manganese, AAS, Dry ash (ppm)	6	6	1,926	158.2	1,927	177.3	90.49	9.20%	89.52	5.12%
028.99	Manganese, Miscellaneous (ppm)	5	5	2,017	162.2	2,017	162.2	72.54	8.04%	75.00	5.09%
028.53	Manganese, ICP-MS, Microwave (ppm)	3	3	2,207	355.6	2,207	355.6	205.3	16.11%	56.28	5.02%
028.44	Manganese, ICP, Dry ash (ppm)	2	2	1,878	264.1						
028.33	Manganese, AAS, Microwave (ppm)	1	1	1,937							
031.43	Phosphorus, ICP, Microwave (%)	33	32	2.670	0.2419	2.683	0.2057	0.0455	7.67%	0.1494	3.45%
031.01	Phosphorus, Photometric (%)	24	24	2.669	0.2543	2.675	0.1055	0.0269	3.94%	0.0599	3.45%
031.42	Phosphorus, ICP, Open vessel (%)	22	22	2.680	0.3231	2.707	0.2097	0.0559	7.75%	0.0846	3.44%
031.41	Phosphorus, ICP, Dry ash (%)	15	15	2.572	0.2667	2.587	0.2661	0.0859	10.29%	0.1109	3.47%
031.99	Phosphorus, Miscellaneous (%)	6	6	2.810	0.7493	2.571	0.2118	0.1081	8.24%	0.0867	3.47%
031.53	Phosphorus, ICP-MS, Microwave (%)	5	4	2.745	0.0646	2.745	0.0646	0.0323	2.35%	0.0300	3.44%
031.03	Phosphorus, Autoanalyzer (%)	2	2	2.806	0.0788						
031.44	Phosphorus, ICP, Dry ash (%)	2	2	2.660	0.0421						
031.52	Phosphorus, ICP-MS, Open vessel (%)	2	2	2.748	0.2015						
031.00	Phosphorus, Vol (%)	1	1	4.105							
031.02	Phosphorus, GQMP (AOAC 935.13-Extraction) (%)	1	1	2.765							
032.43	Potassium, ICP, Microwave (%)	18	17	0.7206	0.1042	0.7101	0.0931	0.0282	13.11%	0.0417	4.21%
032.42	Potassium, ICP, Open vessel (%)	15	15	0.6936	0.0880	0.6910	0.0940	0.0303	13.61%	0.0476	4.23%
032.41	Potassium, ICP, Dry ash (%)	10	10	0.8101	0.3345	0.7307	0.0818	0.0323	11.19%	0.0344	4.19%
032.31	Potassium, AAS, Dry ash (%)	3	3	0.8393	0.1139	0.8393	0.1139	0.0657	13.57%	0.0061	4.11%
032.53	Potassium, ICP-MS, Microwave (%)	3	3	0.6836	0.0562	0.6836	0.0562	0.0325	8.22%	0.0166	4.24%
032.52	Potassium, ICP-MS, Open vessel (%)	2	2	0.6710	0.0184						
032.99	Potassium, Miscellaneous (%)	2	2	0.6700	0.0566						
032.33	Potassium, AAS, Microwave (%)	1	1	0.7250							
032.44	Potassium, ICP, Dry ash (%)	1	1	0.6780							
033.01	Salt as chloride, Poten Cl (%)	19	18	15.44	4.207	16.69	0.5738	0.1691	3.44%	0.2585	2.45%
033.99	Salt, Miscellaneous (%)	13	12	16.12	0.6583	16.13	0.7103	0.2563	4.40%	0.5539	2.49%
033.00	Salt as chloride, Sol Cl (%)	11	10	16.38	0.9027	16.52	0.6352	0.2511	3.84%	0.3368	2.46%
033.03	Salt as chloride, Quantab (%)	4	2	17.11	0.5515	17.11	0.5515				2.42%
033.05	Salt as chloride, Ion Sel Electrode (%)	1	1	16.31							
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	10	10	22.27	3.903	21.80	2.587	1.022	11.86%	0.8736	10.06%
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	6	5	19.72	2.808	19.72	2.808	1.570	14.24%	0.8223	10.21%
034.04	Selenium, Total (Se), AA, Hydride (ppm)	4	3	18.35	2.441	18.35	2.441	1.409	13.30%	0.1796	10.32%
034.41	Selenium, Total (Se), ICP, Dry ash (ppm)	3	3	17.46	1.555	17.46	1.555	0.8979	8.91%	0.4967	10.40%
034.99	Selenium, Total (Se), Miscellaneous (ppm)	4	3	18.63	2.135	18.63	2.135	1.233	11.46%	1.187	10.30%
034.42	Selenium, Total (Se), ICP, Open vessel (ppm)	2	2	19.14	2.068						
034.01	Selenium, Total (Se), Fluor (ppm)	1	1	21.65							
034.52	Selenium, Total (Se), ICP-MS, Open vessel (ppm)	1	1	20.50							
035.43	Sodium, ICP, Microwave (%)	24	24	6.291	0.3719	6.271	0.3743	0.0955	5.97%	0.1919	3.03%

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035.42	Sodium, ICP, Open vessel (%)	18	18	6.644	0.4781	6.600	0.4225	0.1245	6.40%	0.1461	3.01%
035.41	Sodium, ICP, Dry ash (%)	12	12	6.218	0.6051	6.329	0.3907	0.1410	6.17%	0.2584	3.03%
035.31	Sodium, AAS, Dry ash (%)	5	5	5.878	0.5993	5.878	0.5993	0.2680	10.20%	0.1636	3.06%
035.53	Sodium, ICP-MS, Microwave (%)	4	4	6.463	0.1702	6.463	0.1702	0.0851	2.63%	0.1888	3.02%
035.99	Sodium, Miscellaneous (%)	4	2	6.500	0.3889	6.500	0.3889			0.1100	3.02%
035.05	Sodium, Flame Emission (%)	1	1	5.070							
035.32	Sodium, AAS, Open vessel (%)	1	1	6.395							
035.33	Sodium, AAS, Microwave (%)	1	1	6.030							
035.52	Sodium, ICP-MS, Open vessel (%)	1	1	6.935							
036.42	Sulfur, ICP, Open vessel (%)	19	19	0.5127	0.1013	0.5249	0.0840	0.0241	16.00%	0.0233	4.41%
036.43	Sulfur, ICP, Microwave (%)	17	16	0.5305	0.0539	0.5343	0.0464	0.0145	8.69%	0.0138	4.40%
036.04	Sulfur, LECO (%)	3	3	0.3702	0.1560	0.3702	0.1560	0.1103	42.15%	0.0310	4.64%
036.52	Sulfur, ICP-MS, Open vessel (%)	1	1	0.6440							
036.53	Sulfur, ICP-MS, Microwave (%)	1	1	0.2065							
036.99	Sulfur, Miscellaneous (%)	1	1	0.5500							
037.43	Zinc, ICP, Microwave (ppm)	34	34	2,446	320.3	2,434	226.6	48.58	9.31%	81.37	4.95%
037.42	Zinc, ICP, Open vessel (ppm)	20	20	2,388	260.5	2,360	199.3	55.69	8.44%	50.23	4.97%
037.41	Zinc, ICP, Dry ash (ppm)	14	14	2,317	291.9	2,340	275.5	92.05	11.78%	56.45	4.98%
037.31	Zinc, AAS, Dry ash (ppm)	6	6	2,575	94.37	2,587	75.64	38.60	2.92%	50.15	4.90%
037.99	Zinc, Miscellaneous (ppm)	5	5	2,231	207.4	2,231	207.4	92.75	9.30%	40.05	5.01%
037.53	Zinc, ICP-MS, Microwave (ppm)	5	4	2,635	55.53	2,635	55.53	27.76	2.11%	183.0	4.89%
037.32	Zinc, AAS, Open vessel (ppm)	2	2	2,503	81.32						
037.44	Zinc, ICP, Dry ash (ppm)	2	2	2,311	168.3						
037.52	Zinc, ICP-MS, Open vessel (ppm)	2	2	2,493	8.132						
037.33	Zinc, AAS, Microwave (ppm)	1	1	2,272							
038.42	Molybdenum, ICP, Open vessel (ppm)	6	6	6.339	2.383	6.339	2.702	1.379	42.62%	0.4247	12.12%
038.43	Molybdenum, ICP, Microwave (ppm)	5	5	6.321	1.234	6.321	1.234	0.5518	19.52%	0.4479	12.12%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	3	3	9.097	0.7676	9.097	0.7676	0.4432	8.44%	0.3409	11.47%
038.41	Molybdenum, ICP, Dry ash (ppm)	2	2	7.745	1.987						
038.52	Molybdenum, ICP-MS, Open vessel (ppm)	2	2	8.370	0.5091						
040.43	Barium, ICP, Microwave (ppm)	2	2	21.15	2.593						
040.53	Barium, ICP-MS, Microwave (ppm)	1	1	25.30							
041.53	Vanadium, ICP-MS, Microwave (ppm)	1	1	17.46							
042.00	Chloride, Titrimetric (%)	6	6	9.599	0.9469	9.831	0.4747	0.2422	4.83%	0.6049	2.84%
042.99	Chloride, Miscellaneous (%)	1	1	15.25							
095.01	Methoprene, LC (UV or FL) (ppm)	1	1	14.78							
095.99	Methoprene, Miscellaneous (ppm)	1	1	10.42							
101.99	Choline Chloride, Miscellaneous (ppm)	1	1	154.0							
102.01	Niacin, Microbiological (ppm)	1	1	6.185							
103.01	Pantothenic Acid, Microbiological (ppm)	1	1	3.890							

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
104.03	Riboflavin, LC (ppm)	1	1	0.2050							
104.00	Riboflavin, Fluorometric (ppm)	1		0.5000							
105.00	Thiamine, LC (ppm)	1	1	0.0950							
105.01	Thiamine, Fluorometer (ppm)	1		0.5000							
106.02	Vitamin A, LC (KU / kg)	14	14	130.9	21.80	129.9	22.30	7.449	17.16%	15.80	
106.00	Vitamin A, Color (KU / kg)	1	1	115.0							
106.01	Vitamin A, UV (KU / kg)	1	1	123.5							
106.99	Vitamin A, Miscellaneous (KU / kg)	1	1	87.68							
107.00	Vitamin B12, Microbiological (ppb)	1		4.400							
108.02	Vitamin D3, LC (KU / kg)	5	4	16.39	3.924	16.39	3.924	1.962	23.95%	1.718	
108.99	Vitamin D3, Miscellaneous (KU / kg)	2	1	18.12							
109.02	Vitamin E, LC (IU / kg)	12	11	250.5	63.76	244.7	57.68	21.74	23.58%	7.915	
109.99	Vitamin E, Miscellaneous (IU / kg)	2	2	243.0	7.071						
111.00	Vitamin C, Phosphorylated, LC (ppm)	1		4.400							
113.01	Folic Acid, Micro (ppm)	1	1	0.1065							
114.99	Biotin, Miscellaneous (ppm)	1		0.0400							
115.00	Non Protein N (NPN), Urea + Am, Urease method (%)	2	2	0.5080	0.2729						
120.00	Alanine, Post-col Ninhydrin Der (%)	5	4	0.0878	0.0097	0.0878	0.0097	0.0049	11.04%	0.0040	5.77%
120.05	Alanine, Pre-col AQC Der (%)	3	3	0.1065	0.0482	0.1065	0.0482	0.0278	45.26%	0.0072	5.60%
121.00	Arginine, Post-col Ninhydrin Der (%)	5	4	0.0787	0.0116	0.0787	0.0116	0.0058	14.69%	0.0048	5.86%
121.05	Arginine, Pre-col AQC Der (%)	3	3	0.0811	0.0223	0.0811	0.0223	0.0129	27.49%	0.0062	5.84%
122.00	Aspartic, Post-col Ninhydrin Der (%)	5	4	0.2184	0.0191	0.2184	0.0191	0.0111	8.76%	0.0080	5.03%
122.05	Aspartic, Pre-col AQC Der (%)	3	3	0.1998	0.0300	0.1998	0.0300	0.0173	14.99%	0.0123	5.10%
124.00	Cysteine/Cystine, PAO Post-col Ninhydry (%)	4	3	0.0923	0.1170	0.0923	0.1170	0.0675	126.79%	0.0037	5.73%
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	3	2	0.0371	0.0129	0.0371	0.0129			0.0062	6.57%
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	1	1	0.0200							
125.00	Glutamic, Post-col Ninhydrin Der (%)	5	5	0.2672	0.0397	0.2672	0.0397	0.0178	14.86%	0.0190	4.88%
125.05	Glutamic, Pre-col AQC Der (%)	3	3	0.3142	0.0740	0.3142	0.0740	0.0427	23.56%	0.0190	4.76%
126.00	Glycine, Post-col Ninhydrin Der (%)	5	4	0.1324	0.0062	0.1324	0.0062	0.0036	4.65%		5.42%
126.05	Glycine, Pre-col AQC Der (%)	3	3	0.1082	0.0243	0.1082	0.0243	0.0140	22.46%	0.0057	5.59%
127.00	Histidine, Post-col Ninhydrin Der (%)	5	4	0.0282	0.0086	0.0282	0.0086	0.0043	30.40%	0.0024	6.84%
127.05	Histidine, Pre-col AQC Der (%)	3	1								
128.00	Isoleucine, Post-col Ninhydrin Der (%)	5	4	0.0790	0.0155	0.0790	0.0155	0.0090	19.65%		5.86%
128.05	Isoleucine, Pre-col AQC Der (%)	3	3	0.0657	0.0154	0.0657	0.0154	0.0089	23.43%	0.0044	6.03%
129.00	Leucine, Post-col Ninhydrin Der (%)	5	5	0.1101	0.0164	0.1101	0.0164	0.0073	14.86%	0.0085	5.57%
129.05	Leucine, Pre-col AQC Der (%)	3	3	0.1447	0.0873	0.1447	0.0873	0.0504	60.35%	0.0073	5.35%
130.00	L-Lysine, Post-col Ninhydrin Der (%)	5	4	0.0660	0.0041	0.0660	0.0041	0.0020	6.19%	0.0055	6.02%
130.05	L-Lysine, Pre-col AQC Der (%)	3	3	0.0759	0.0127	0.0759	0.0127	0.0074	16.80%	0.0055	5.90%
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	4	2	0.0583	0.0669	0.0583	0.0669				6.13%
131.02	Methionine, PAO Post-col OPA Der (%)	1	1	0.0150							

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131.05	Methionine, PAO Pre-col AQC Der (%)	3	1								
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	5	3	0.0722	0.0140	0.0722	0.0140	0.0099	19.43%		5.94%
132.05	Phenylalanine, Pre-col AQC Der (%)	3	3	0.0840	0.0348	0.0840	0.0348	0.0201	41.49%	0.0154	5.81%
133.00	Proline, Post-col Ninhydrin Der (%)	5	4	0.0793	0.0156	0.0793	0.0156	0.0078	19.61%	0.0063	5.86%
133.05	Proline, Pre-col AQC Der (%)	3	3	0.1285	0.0526	0.1285	0.0526	0.0303	40.89%	0.0117	5.45%
134.00	Serine, Post-col Ninhydrin Der (%)	5	3	0.0866	0.0031	0.0866	0.0031	0.0022	3.56%		5.78%
134.05	Serine, Pre-col AQC Der (%)	3	3	0.0918	0.0186	0.0918	0.0186	0.0107	20.20%	0.0068	5.73%
135.00	Threonine, Post-col Ninhydrin Der (%)	5	3	0.0601	0.0032	0.0601	0.0032	0.0018	5.33%	0.0026	6.11%
135.05	Threonine, Pre-col AQC Der (%)	3	3	0.0699	0.0199	0.0699	0.0199	0.0115	28.40%	0.0053	5.97%
136.01	Tryptophan, Alka-Hydrol Rev Phase LC UV (%)	2	2	0.0185	0.0021						
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	3	2	0.0168	0.0010	0.0168	0.0010			0.0005	7.40%
136.05	Tryptophan, Pre-col AQC Der (%)	2	1	0.0235							
137.00	Tyrosine, Post-col Ninhydrin Der (%)	5	3	0.0569	0.0032	0.0569	0.0032	0.0019	5.67%	0.0010	6.16%
137.05	Tyrosine, Pre-col AQC Der (%)	3	3	0.0675	0.0153	0.0675	0.0153	0.0088	22.61%	0.0086	6.00%
138.00	Valine, Post-col Ninhydrin Der (%)	5	5	0.0898	0.0173	0.0898	0.0173	0.0077	19.27%	0.0063	5.75%
138.05	Valine, Pre-col AQC Der (%)	3	3	0.0925	0.0238	0.0925	0.0238	0.0137	25.69%	0.0071	5.72%
139.05	Taurine, Pre-col AQC Der (%)	1	1	0.0235							
139.02	Taurine, Post-col OPA Der (%)	1		0.0100							
160.99	Fructose, Miscellaneous (%)	1	1	0.4000							
162.99	Glucose, Miscellaneous (%)	1		0.1500							
163.99	Lactose, Miscellaneous (%)	1		0.1500							
164.99	Maltose, Miscellaneous (%)	1		0.1500							
165.99	Sucrose, Miscellaneous (%)	1	1	3.480							
166.99	Raffinose, Miscellaneous (%)	1		0.0500							
167.99	Stachyose, Miscellaneous (%)	1	1	0.0800							
400.01	Water Activity, Aqualab chilled mirror (Units)	10	9	0.4694	0.0136	0.4694	0.0154	0.0064	3.28%	0.0063	
400.99	Water Activity, Miscellaneous (Units)	2	2	0.4645	0.0177						
516.53	Arsenic, Total (As), ICP-MS, Microwave (ppm)	4	3	1.725	0.0917	1.725	0.0917	0.0529	5.31%	0.0167	14.74%
516.52	Arsenic, Total (As), ICP-MS, Open vessel (ppm)	2	2	1.360	0.1414						
516.00	Arsenic, Total (As), AA, Hydride (ppm)	1	1	1.575							
516.43	Arsenic, Total (As), ICP, Microwave (ppm)	1		20.00							
518.53	Cadmium, ICP-MS, Microwave (ppm)	4	4	0.7925	0.0915	0.7925	0.0915	0.0458	11.55%	0.0387	16.57%
518.43	Cadmium, ICP, Microwave (ppm)	3	3	0.9730	0.4578	0.9730	0.4578	0.2643	47.05%	0.0394	16.06%
518.52	Cadmium, ICP-MS, Open vessel (ppm)	2	2	0.6728	0.0173						
518.34	Cadmium, AAS, Graphite furnace (ppm)	1	1	0.7350							
518.41	Cadmium, ICP, Dry ash (ppm)	1	1	0.6395							
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	5	5	87.81	25.99	87.81	25.99	11.62	29.60%	3.141	8.16%
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	3	3	95.47	19.22	95.47	19.22	11.10	20.14%	3.116	8.05%
520.41	Chromium, Total (Cr), ICP, Dry ash (ppm)	1	1	49.14							
520.42	Chromium, Total (Cr), ICP, Open vessel (ppm)	1	1	66.95							

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
520.51	Chromium, Total (Cr), ICP-MS, Dry ash (ppm)	1	1	79.77							
520.52	Chromium, Total (Cr), ICP-MS, Open vessel (ppm)	1	1	89.71							
526.53	Lead, ICP-MS, Microwave (ppm)	5	4	1.051	0.1143	1.051	0.1143	0.0572	10.87%	0.0448	15.88%
526.43	Lead, ICP, Microwave (ppm)	2	2	5.200	5.190						
526.52	Lead, ICP-MS, Open vessel (ppm)	2	2	1.118	0.0743						
526.34	Lead, AAS, Graphite furnace (ppm)	1	1	0.9050							
526.41	Lead, ICP, Dry ash (ppm)	1	1	1.366							
529.99	Mercury, Miscellaneous (ppb)	4	3	230.1	389.7	230.1	389.7	275.5	169.38%	0.4368	19.96%
539.43	Nickel, ICP, Microwave (ppm)	2	2	36.02	25.55						
539.53	Nickel, ICP-MS, Microwave (ppm)	2	2	34.47	7.926						
539.41	Nickel, ICP, Dry ash (ppm)	1	1	25.40							
539.51	Nickel, ICP-MS, Dry ash (ppm)	1	1	32.77							
539.52	Nickel, ICP-MS, Open vessel (ppm)	1	1	38.46							
706.99	Caprylic acid (8:0), Miscellaneous (%) (w/w))	1	1	1.375							
708.99	Capric acid (10:0), Miscellaneous (%) (w/w))	1	1	0.2200							
710.99	Lauric Acid (12:0), Miscellaneous (%) (w/w))	1	1	0.1250							
714.99	Myristic Acid (14:0), Miscellaneous (%) (w/w))	1	1	1.825							
716.99	Palmitic Acid (16:0), Miscellaneous (%) (w/w))	1	1	24.85							
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (%) (w/w))	1	1	1.945							
722.99	Stearic Acid (18:0), Miscellaneous (%) (w/w))	1	1	8.850							
724.99	Oleic Acid (9c-18:1), Miscellaneous (%) (w/w))	1	1	24.95							
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (%) (w/w))	1	1	2.735							
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (%) (w/w))	1	1	0.2750							
730.99	Arachidic Acid (20:0), Miscellaneous (%) (w/w))	1	1	0.2900							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (%) (w/w))	1		0.0500							
742.99	Behenic Acid (22:0), Miscellaneous (%) (w/w))	1	1	0.3050							
744.99	Erucic Acid (13c-22:1), Miscellaneous (%) (w/w))	1	1	0.2150							
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (%) (w/w))	1		0.0500							
748.99	Lignoceric Acid (24:0), Miscellaneous (%) (w/w))	1		0.0500							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (%) (w/w))	1	1	0.8800							
754.99	Total n-3 Polyunsaturated (Omega-3) Fatty Acids, Miscellaneous (%) (w/w))	1	1	0.0150							
756.99	Total n-6 Polyunsaturated (Omega-6) Fatty Acids, Miscellaneous (%) (w/w))	1	1	0.0350							
758.99	Total Saturated Fatty Acids, Miscellaneous (%) (w/w))	1	1	38.82							
762.99	Total Monounsaturated Fatty Acids, Miscellaneous (%) (w/w))	1	1	29.55							
766.99	Total Polyunsaturated Fatty Acids, Miscellaneous (%) (w/w))	1	1	4.140							

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.



AAFCO
Association of American Feed Control Officials



Animal Feed Scheme

Cattle Mineral

Test Material Code # 202592

Method Precision Report

Methods Reported: 79

Labs Reporting: 138

Issue Date : 01/31/2026

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 (%)	25	22	3.927	0.2512	0.1486	0.1106	0.1852	3.85%	2.87%	4.80%	1.675
001.99	Loss on Drying, Miscellaneous (%)	12	11	3.758	0.5470	0.5380	0.1401	0.5559	14.32%	3.73%	14.79%	3.968
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	40	38	2.446	0.3603	0.3399	0.1568	0.3743	13.83%	6.38%	15.23%	2.388
003.10	Fat, Crude, Randall, Pet Ether (%)	7	7	1.018	0.2979	0.2661	0.1893	0.3265	26.14%	18.60%	32.08%	1.725
003.14	Fat, Crude, Ankom (%)	11	10	1.144	0.0907	0.0848	0.0453	0.0962	7.42%	3.96%	8.41%	2.123
004.07	Fiber, Crude, ANKOM (%)	13	13	4.526	0.6358	0.6113	0.2474	0.6595	13.51%	5.47%	14.57%	2.665
005.00	Ash, 2h @ 600°C (%)	75	68	70.86	2.252	1.668	0.4332	1.724	2.35%	0.61%	2.43%	3.979
005.05	Ash, 3h @ 550°C (%)	15	15	73.37	1.829	1.801	0.4557	1.857	2.45%	0.62%	2.53%	4.076
005.99	Ash, Miscellaneous (%)	5	5	71.89	1.687	1.667	0.3728	1.708	2.32%	0.52%	2.38%	4.580
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	6	5	5.789	1.849	1.818	0.4739	1.879	31.40%	8.19%	32.45%	3.964
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	6	6	10.48	3.075	3.062	0.3986	3.088	29.21%	3.80%	29.45%	7.747
010.99	Moisture, Miscellaneous (%)	13	10	3.916	0.5329	0.3428	0.0976	0.3564	9.03%	2.57%	9.39%	3.652
011.01	Loss on Drying, HT, 135°C 2hr (%)	52	48	4.829	0.5234	0.3596	0.1155	0.3777	7.43%	2.39%	7.81%	3.269
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	5	5	4.713	0.6867	0.6159	0.4294	0.7508	13.07%	9.11%	15.93%	1.749
013.00	Fat, Pretreat, Acid hydrolysis (%)	7	5	1.780	0.9605	1.064	0.0145	1.064	61.60%	0.84%	61.61%	73.42
013.02	Fat, Pretreat, Mojonnier, Bak Ext, Acid hydrolysis (%)	6	6	2.660	1.033	1.014	0.2788	1.052	38.14%	10.48%	39.55%	3.774
015.43	Aluminum, ICP, Microwave (ppm)	6	5	964.2	245.0	244.2	27.94	245.8	25.33%	2.90%	25.49%	8.796
019.00	Calcium, Ox-Mn04 Vol. (%)	6	5	12.79	1.075	0.0516	0.1314	0.1412	0.42%	1.06%	1.14%	1.074
019.08	Calcium, EDTA (%)	10	9	12.91	0.4510	0.4285	0.2922	0.5186	3.31%	2.26%	4.01%	1.775
019.31	Calcium, AAS, Dry ash (%)	10	8	12.33	0.4140	0.2336	0.1105	0.2584	1.88%	0.89%	2.08%	2.339
019.41	Calcium, ICP, Dry ash (%)	16	16	11.69	1.056	1.012	0.4260	1.098	8.65%	3.64%	9.39%	2.577
019.42	Calcium, ICP, Open vessel (%)	21	21	12.27	0.9135	0.8766	0.3631	0.9488	7.14%	2.96%	7.73%	2.613
019.43	Calcium, ICP, Microwave (%)	34	33	11.98	0.6158	0.4535	0.3844	0.5945	3.80%	3.22%	4.99%	1.547
019.53	Calcium, ICP-MS, Microwave (%)	6	5	12.09	1.024	0.2332	0.3493	0.4200	1.87%	2.80%	3.36%	1.202
019.99	Calcium, Miscellaneous (%)	7	7	12.85	1.288	1.272	0.2873	1.304	9.90%	2.24%	10.15%	4.539
021.43	Cobalt, ICP, Microwave (ppm)	11	9	51.46	7.312	7.673	0.3564	7.681	14.82%	0.69%	14.83%	21.55
022.31	Copper, AAS, Dry ash (ppm)	7	5	1,333	101.8	23.52	5.791	24.23	1.82%	0.45%	1.87%	4.183
022.41	Copper, ICP, Dry ash (ppm)	14	13	1,227	107.2	78.43	33.93	85.46	6.29%	2.72%	6.86%	2.518

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
022.42	Copper, ICP, Open vessel (ppm)	21	20	1,291	153.2	96.32	46.55	107.0	7.61%	3.68%	8.46%	2.298
022.43	Copper, ICP, Microwave (ppm)	32	28	1,238	156.8	99.66	25.06	102.8	8.07%	2.03%	8.32%	4.100
022.53	Copper, ICP-MS, Microwave (ppm)	5	5	1,337	157.1	149.2	69.60	164.6	11.16%	5.21%	12.32%	2.365
025.41	Iron, ICP, Dry ash (ppm)	12	10	6,494	1,042	725.2	197.9	751.7	10.81%	2.95%	11.20%	3.799
025.42	Iron, ICP, Open vessel (ppm)	17	17	6,852	843.7	838.3	134.9	849.1	12.23%	1.97%	12.39%	6.292
025.43	Iron, ICP, Microwave (ppm)	25	22	6,919	714.0	741.2	103.9	748.4	10.72%	1.50%	10.82%	7.204
027.31	Magnesium, AAS, Dry ash (%)	8	7	11.16	0.9865	0.6139	0.1425	0.6303	5.36%	1.25%	5.51%	4.422
027.41	Magnesium, ICP, Dry ash (%)	14	12	9.890	2.573	1.938	0.3224	1.965	18.83%	3.13%	19.09%	6.093
027.42	Magnesium, ICP, Open vessel (%)	21	20	11.38	1.177	0.8453	0.3487	0.9144	7.55%	3.11%	8.16%	2.622
027.43	Magnesium, ICP, Microwave (%)	33	32	10.92	0.7665	0.6304	0.3554	0.7237	5.81%	3.28%	6.67%	2.036
027.53	Magnesium, ICP-MS, Microwave (%)	6	6	10.71	0.7263	0.6757	0.3768	0.7736	6.31%	3.52%	7.22%	2.053
027.99	Magnesium, Miscellaneous (%)	5	5	10.84	1.069	1.041	0.3422	1.096	9.60%	3.16%	10.11%	3.201
028.31	Manganese, AAS, Dry ash (ppm)	6	6	1,926	158.2	152.6	59.18	163.7	7.92%	3.07%	8.50%	2.766
028.41	Manganese, ICP, Dry ash (ppm)	10	10	1,848	164.1	158.4	60.61	169.6	8.57%	3.28%	9.18%	2.798
028.42	Manganese, ICP, Open vessel (ppm)	17	15	1,962	216.8	159.1	44.70	165.3	8.30%	2.33%	8.62%	3.698
028.43	Manganese, ICP, Microwave (ppm)	25	23	1,842	194.4	145.1	40.32	150.6	7.74%	2.15%	8.03%	3.735
028.99	Manganese, Miscellaneous (ppm)	5	5	2,017	162.2	156.3	61.10	167.9	7.75%	3.03%	8.32%	2.747
031.01	Phosphorus, Photometric (%)	24	22	2.669	0.2543	0.0961	0.0523	0.1094	3.58%	1.95%	4.08%	2.091
031.41	Phosphorus, ICP, Dry ash (%)	15	15	2.572	0.2667	0.2571	0.0999	0.2758	10.00%	3.88%	10.72%	2.762
031.42	Phosphorus, ICP, Open vessel (%)	22	20	2.680	0.3231	0.1979	0.0761	0.2121	7.22%	2.78%	7.74%	2.785
031.43	Phosphorus, ICP, Microwave (%)	33	31	2.670	0.2419	0.1935	0.1400	0.2388	7.19%	5.21%	8.88%	1.706
031.99	Phosphorus, Miscellaneous (%)	6	5	2.810	0.7493	0.1022	0.0757	0.1272	4.08%	3.02%	5.07%	1.681
032.41	Potassium, ICP, Dry ash (%)	10	9	0.8101	0.3345	0.0813	0.0292	0.0863	11.49%	4.13%	12.21%	2.956
032.42	Potassium, ICP, Open vessel (%)	15	14	0.6936	0.0880	0.0869	0.0377	0.0947	12.49%	5.42%	13.62%	2.512
032.43	Potassium, ICP, Microwave (%)	18	16	0.7206	0.1042	0.0805	0.0387	0.0893	11.42%	5.48%	12.67%	2.309
033.00	Salt as chloride, Sol Cl (%)	11	9	16.38	0.9027	0.4500	0.2210	0.5013	2.71%	1.33%	3.02%	2.268
033.01	Salt as chloride, Poten Cl (%)	19	16	15.44	4.207	1.856	0.2405	1.872	11.39%	1.48%	11.49%	7.784
033.99	Salt, Miscellaneous (%)	13	12	16.12	0.6583	0.5646	0.4787	0.7402	3.50%	2.97%	4.59%	1.546
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	6	5	19.72	2.808	2.766	0.6862	2.850	14.03%	3.48%	14.45%	4.153
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	10	8	22.27	3.903	1.742	0.5934	1.840	8.40%	2.86%	8.88%	3.101
035.31	Sodium, AAS, Dry ash (%)	5	5	5.878	0.5993	0.5940	0.1121	0.6045	10.11%	1.91%	10.28%	5.394
035.41	Sodium, ICP, Dry ash (%)	12	11	6.218	0.6051	0.2800	0.3030	0.4126	4.40%	4.76%	6.48%	1.362
035.42	Sodium, ICP, Open vessel (%)	18	17	6.644	0.4781	0.3363	0.1449	0.3662	5.12%	2.21%	5.58%	2.528
035.43	Sodium, ICP, Microwave (%)	24	24	6.291	0.3719	0.3496	0.1794	0.3929	5.56%	2.85%	6.25%	2.191
036.42	Sulfur, ICP, Open vessel (%)	19	19	0.5127	0.1013	0.1005	0.0177	0.1020	19.60%	3.45%	19.90%	5.770
036.43	Sulfur, ICP, Microwave (%)	17	14	0.5305	0.0539	0.0410	0.0081	0.0418	7.62%	1.50%	7.77%	5.171
037.31	Zinc, AAS, Dry ash (ppm)	6	5	2,575	94.37	31.13	38.21	49.29	1.19%	1.46%	1.89%	1.290
037.41	Zinc, ICP, Dry ash (ppm)	14	13	2,317	291.9	222.9	51.27	228.7	9.41%	2.16%	9.65%	4.461

Test Material Code # 202592

Issue Date : 01/31/2026

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
037.42	Zinc, ICP, Open vessel (ppm)	20	18	2,388	260.5	168.1	39.22	172.6	7.16%	1.67%	7.35%	4.402
037.43	Zinc, ICP, Microwave (ppm)	34	32	2,446	320.3	234.0	74.17	245.4	9.78%	3.10%	10.26%	3.309
037.99	Zinc, Miscellaneous (ppm)	5	5	2,231	207.4	206.3	30.38	208.5	9.25%	1.36%	9.35%	6.864
038.42	Molybdenum, ICP, Open vessel (ppm)	6	5	6.339	2.383	1.712	0.2659	1.733	24.18%	3.76%	24.47%	6.517
038.43	Molybdenum, ICP, Microwave (ppm)	5	5	6.321	1.234	1.207	0.3648	1.261	19.09%	5.77%	19.94%	3.456
042.00	Chloride, Titrimetric (%)	6	5	9.599	0.9469		0.5076			5.09%		
106.02	Vitamin A, LC (KU / kg)	14	14	130.9	21.80	16.95	19.40	25.76	12.95%	14.82%	19.68%	1.328
109.02	Vitamin E, LC (IU / kg)	12	10	250.5	63.76	43.94	7.637	44.60	18.62%	3.24%	18.90%	5.839
125.00	Glutamic, Post-col Ninhydrin Der (%)	5	5	0.2672	0.0397	0.0383	0.0145	0.0410	14.35%	5.44%	15.35%	2.824
129.00	Leucine, Post-col Ninhydrin Der (%)	5	5	0.1101	0.0164	0.0160	0.0048	0.0167	14.54%	4.37%	15.18%	3.476
138.00	Valine, Post-col Ninhydrin Der (%)	5	5	0.0898	0.0173	0.0170	0.0047	0.0176	18.91%	5.29%	19.63%	3.715
400.01	Water Activity, Aqualab chilled mirror (Units)	10	8	0.4694	0.0136	0.0124	0.0041	0.0131	2.63%	0.88%	2.78%	3.167
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	5	5	87.81	25.99	25.92	2.658	26.06	29.52%	3.03%	29.68%	9.804

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