



AAFCO
Association of American Feed Control Officials



Animal Feed Scheme

Cattle Feed, Medicated

Test Material Code # 202531

Method Summary Report

(Precision Report Follows)

Labs Reporting: 154

Methods Reported: 349

Issue Date : 12/31/2025

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 (%)	39	38	10.60	0.5748	10.68	0.3011	0.0611	2.82%	0.1156	2.80%
001.99	Loss on Drying, Miscellaneous (%)	16	15	10.34	0.9588	10.45	0.4836	0.1561	4.63%	0.1012	2.81%
001.00	Loss on Drying, Vac 95°C 5 hr (%)	3	3	10.53	1.013	10.53	1.013	0.7164	9.62%	0.1933	2.81%
001.03	Loss on Drying, Low temp. methods (%)	3	3	10.93	0.3516	10.93	0.3516	0.2030	3.22%	0.1133	2.79%
001.05	Loss on Drying, LECO (%)	1	1	10.26							
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	111	110	18.51	0.3875	18.54	0.2738	0.0326	1.48%	0.1875	2.32%
002.05	Protein, Crude, Copper, Boric Acid (%)	22	22	18.25	0.4336	18.32	0.2830	0.0754	1.54%	0.0798	2.34%
002.01	Protein, Crude, Auto Kjell-Foss (%)	15	14	18.25	0.2261	18.28	0.1307	0.0436	0.71%	0.0750	2.34%
002.11	Protein, Crude, NIR (%)	8	8	17.66	1.229	17.77	1.127	0.4981	6.34%	0.1338	2.37%
002.08	Protein, Crude, Cu/Ti (%)	2	2	18.40	0.1297						
002.00	Protein, Crude, Crude (%)	1	1	17.61							
002.02	Protein, Crude, Semiauto Autoanalyzer (%)	1	1	18.28							
002.04	Protein, Crude, Copper Catalyst (%)	1	1	18.14							
003.14	Fat, Crude, Ankom (%)	49	49	3.592	0.3335	3.569	0.2673	0.0477	7.49%	0.1062	3.30%
003.10	Fat, Crude, Randall, Pet Ether (%)	26	26	3.565	0.2136	3.541	0.1676	0.0411	4.73%	0.0951	3.31%
003.06	Fat, Crude, Pet Ether (%)	15	14	3.615	0.2490	3.613	0.2767	0.0924	7.66%	0.0624	3.30%
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	11	10	3.680	0.3105	3.703	0.2974	0.1176	8.03%	0.0913	3.28%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	8	8	3.625	0.1722	3.653	0.1217	0.0538	3.33%	0.1045	3.29%
003.12	Fat, Crude, Hexane Ext (%)	5	5	3.747	0.2139	3.747	0.2139	0.0957	5.71%	0.2780	3.28%
003.11	Fat, Crude, NIR (%)	5	4	3.959	0.2417	3.959	0.2417	0.1209	6.11%	0.0525	3.25%
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	3	3	3.693	0.1685	3.693	0.1685	0.0973	4.56%	0.1689	3.29%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	3	3	3.582	0.1072	3.582	0.1072	0.0619	2.99%	0.0634	3.30%
003.99	Fat, Crude, Miscellaneous (%)	3	3	4.253	0.8318	4.253	0.8318	0.4802	19.56%	0.1100	3.22%
004.07	Fiber, Crude, ANKOM (%)	74	73	5.348	0.4446	5.338	0.4362	0.0638	8.17%	0.1673	3.11%
004.06	Fiber, Crude, Fibertec (%)	16	15	5.483	0.5363	5.477	0.5768	0.1862	10.53%	0.2066	3.10%
004.00	Fiber, Crude, Asbestos Free (%)	6	6	5.448	0.6017	5.446	0.6774	0.3457	12.44%	0.2133	3.10%
004.11	Fiber, Crude, NIR (%)	5	4	7.250	2.049	7.250	2.049	1.025	28.27%	0.0750	2.97%
004.03	Fiber, Crude, Fritted Glass (%)	3	3	6.610	1.567	6.610	1.567	0.9045	23.70%	0.1135	3.01%
004.99	Fiber, Crude, Miscellaneous (%)	1	1	5.418							

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005.00	Ash, 2h @ 600°C (%)	90	87	7.051	0.2070	7.040	0.1616	0.0217	2.30%	0.0715	2.98%
005.05	Ash, 3h @ 550°C (%)	24	23	7.234	0.1783	7.243	0.1834	0.0478	2.53%	0.0377	2.97%
005.11	Ash, NIR (%)	5	5	6.026	0.3309	6.026	0.3309	0.1480	5.49%	0.1720	3.05%
005.99	Ash, Miscellaneous (%)	5	5	7.303	0.1187	7.303	0.1187	0.0531	1.63%	0.1975	2.97%
005.02	Ash, LECO (%)	1	1	7.519							
005.03	Ash, Microwave furnace (%)	1	1	6.950							
006.99	Total Sugars, Miscellaneous (%)	5	4	5.613	1.116	5.613	1.116	0.5578	19.88%	0.2933	3.09%
006.00	Total Sugars, As sucrose (%)	1	1	5.120							
006.03	Total Sugars, Invert w/o Invsrn (%)	1	1	6.700							
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	48	46	7.442	0.4688	7.417	0.4582	0.0844	6.18%	0.1784	2.96%
008.02	Fiber, Acid Detergent, Crucible (%)	10	10	7.653	0.4054	7.621	0.3813	0.1507	5.00%	0.1446	2.95%
008.99	Fiber, Acid Detergent, Miscellaneous (%)	2	2	5.180	4.391						
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	43	43	18.82	1.033	18.71	0.8826	0.1682	4.72%	0.4090	2.31%
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	11	11	19.39	1.585	19.63	1.051	0.3961	5.35%	0.3470	2.26%
010.99	Moisture, Miscellaneous (%)	15	15	10.65	0.7377	10.58	0.6290	0.2030	5.95%	0.1221	2.80%
010.11	Moisture, NIR (%)	5	5	10.43	0.7794	10.43	0.7794	0.3486	7.47%	0.1800	2.81%
010.03	Moisture, Karl-Fischer (%)	2	2	10.04	0.2970						
011.01	Loss on Drying, HT, 135°C 2hr (%)	57	56	11.87	0.7843	11.99	0.5564	0.0929	4.64%	0.1261	2.75%
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	6	6	11.10	1.340	11.10	1.520	0.7757	13.70%	0.2235	2.78%
011.02	Loss on Drying, HT, 130°C for 2 hours (%)	2	2	11.93	0.3889						
012.00	Starch, Polarimetric (Ewers) (%)	16	15	27.95	0.9275	27.98	0.5917	0.1910	2.11%	0.2744	1.89%
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	10	10	26.96	2.117	26.75	1.867	0.7378	6.98%	0.6629	1.93%
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	8	8	26.63	1.783	26.57	1.891	0.8355	7.11%	0.6063	1.94%
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	2	2	27.17	1.280						
012.11	Starch, NIR (%)	2	2	31.79	4.914						
012.20	Starch, Dietary, Enzymatic-Colorimetric (%)	1	1	25.98							
012.99	Starch, Miscellaneous (%)	1	1	27.40							
013.00	Fat, Pretreat, Acid hydrolysis (%)	19	18	4.516	0.5415	4.469	0.4194	0.1236	9.39%	0.1078	3.19%
013.02	Fat, Pretreat, Mojonniier, Bak Ext, Acid hydrolysis (%)	12	12	5.026	0.5743	5.026	0.6512	0.2350	12.96%	0.1489	3.14%
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	11	11	4.461	0.6592	4.413	0.6278	0.2366	14.22%	0.1103	3.20%
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	7	7	4.431	0.4115	4.456	0.4079	0.1927	9.15%	0.0700	3.19%
013.08	Fat, Pretreat, Roese-Gottlieb Modified, Alkaline Hydrolysis (%)	1	1	1.685							
013.99	Fat, Pretreat, Miscellaneous (%)	1	1	3.245							
014.99	Fiber, Total Dietary, Miscellaneous (%)	2	2	23.90	1.839						
014.02	Fiber, Total Dietary, ANKOM Enz-Grav (%)	1	1	22.25							
015.43	Aluminum, ICP, Microwave (ppm)	5	5	53.31	18.19	53.31	18.19	8.135	34.12%	3.312	8.79%
015.41	Aluminum, ICP, Dry ash (ppm)	3	3	58.92	10.37	58.92	10.37	5.989	17.61%	3.341	8.66%
015.42	Aluminum, ICP, Open vessel (ppm)	2	2	31.89	5.109						
015.53	Aluminum, ICP-MS, Microwave (ppm)	1	1	56.55							
015.99	Aluminum, Miscellaneous (ppm)	1	1	42.15							

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017.41	Boron, ICP, Dry ash (ppm)	4	4	7.804	0.8175	7.804	0.8175	0.4088	10.48%	0.7275	11.74%
017.42	Boron, ICP, Open vessel (ppm)	4	4	8.183	1.204	8.183	1.204	0.6020	14.71%	0.6328	11.66%
017.43	Boron, ICP, Microwave (ppm)	5	4	7.680	0.5292	7.680	0.5292	0.2646	6.89%	0.2965	11.77%
017.99	Boron, Miscellaneous (ppm)	1	1	7.970							
019.43	Calcium, ICP, Microwave (%)	35	34	1.147	0.0546	1.146	0.0520	0.0112	4.54%	0.0194	3.92%
019.42	Calcium, ICP, Open vessel (%)	20	20	1.153	0.0648	1.158	0.0608	0.0170	5.25%	0.0352	3.91%
019.41	Calcium, ICP, Dry ash (%)	18	18	1.113	0.0501	1.118	0.0414	0.0122	3.71%	0.0232	3.93%
019.31	Calcium, AAS, Dry ash (%)	12	12	1.111	0.0831	1.125	0.0542	0.0196	4.82%	0.0279	3.93%
019.08	Calcium, EDTA (%)	10	9	1.181	0.0996	1.160	0.0516	0.0215	4.45%	0.0148	3.91%
019.99	Calcium, Miscellaneous (%)	7	7	1.180	0.1814	1.180	0.2057	0.0972	17.43%	0.0567	3.90%
019.00	Calcium, Ox-Mn04 Vol. (%)	6	6	1.116	0.0950	1.116	0.1077	0.0550	9.66%	0.0319	3.93%
019.44	Calcium, ICP, Dry ash (%)	2	2	1.178	0.0530						
019.53	Calcium, ICP-MS, Microwave (%)	2	2	1.108	0.0035						
019.02	Calcium, Hach Method (%)	1	1	1.060							
019.09	Calcium, Ion-selective electrode (%)	1	1	1.195							
019.32	Calcium, AAS, Open vessel (%)	1	1	1.170							
019.33	Calcium, AAS, Microwave (%)	1	1	1.105							
019.52	Calcium, ICP-MS, Open vessel (%)	1	1	1.175							
021.43	Cobalt, ICP, Microwave (ppm)	8	7	1.219	0.3347	1.328	0.0656	0.0310	4.94%	0.1031	15.33%
021.42	Cobalt, ICP, Open vessel (ppm)	2	2	1.047	0.0050						
021.52	Cobalt, ICP-MS, Open vessel (ppm)	2	2	0.9900	0.1697						
021.31	Cobalt, AAS, Dry ash (ppm)	1	1	1.513							
021.41	Cobalt, ICP, Dry ash (ppm)	1	1	1.225							
021.99	Cobalt, Miscellaneous (ppm)	1	1	1.115							
022.43	Copper, ICP, Microwave (ppm)	32	32	24.26	1.594	24.23	1.722	0.3805	7.11%	1.049	9.90%
022.42	Copper, ICP, Open vessel (ppm)	19	18	24.34	1.240	24.39	1.289	0.3796	5.28%	1.025	9.89%
022.41	Copper, ICP, Dry ash (ppm)	13	13	22.39	2.931	22.32	2.915	1.011	13.06%	1.105	10.02%
022.31	Copper, AAS, Dry ash (ppm)	8	8	20.87	4.481	21.36	3.883	1.716	18.18%	0.8428	10.09%
022.44	Copper, ICP, Dry ash (ppm)	3	3	24.25	1.091	24.25	1.091	0.6299	4.50%	1.187	9.90%
022.99	Copper, Miscellaneous (ppm)	4	3	22.80	0.7211	22.80	0.7211	0.4163	3.16%	1.733	9.99%
022.53	Copper, ICP-MS, Microwave (ppm)	2	2	23.15	0.7743						
022.32	Copper, AAS, Open vessel (ppm)	1	1	22.20							
022.33	Copper, AAS, Microwave (ppm)	1	1	24.02							
022.52	Copper, ICP-MS, Open vessel (ppm)	1	1	25.59							
024.52	Iodine, ICP-MS, Open vessel (ppm)	1	1	1.276							
025.43	Iron, ICP, Microwave (ppm)	32	32	205.0	24.86	206.4	8.293	1.833	4.02%	4.920	7.17%
025.42	Iron, ICP, Open vessel (ppm)	18	18	201.5	13.72	200.4	12.71	3.746	6.35%	5.169	7.20%
025.41	Iron, ICP, Dry ash (ppm)	16	16	204.1	17.78	205.1	17.68	5.524	8.62%	5.400	7.18%
025.31	Iron, AAS, Dry ash (ppm)	8	8	203.6	13.82	203.6	15.67	6.926	7.70%	4.137	7.19%
025.99	Iron, Miscellaneous (ppm)	3	3	201.8	5.485	201.8	5.485	3.167	2.72%	7.500	7.20%

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025.53	Iron, ICP-MS, Microwave (ppm)	2	2	202.3	14.50						
025.33	Iron, AAS, Microwave (ppm)	1	1	204.5							
027.43	Magnesium, ICP, Microwave (%)	31	31	0.2797	0.0158	0.2802	0.0138	0.0031	4.93%	0.0089	4.84%
027.42	Magnesium, ICP, Open vessel (%)	20	19	0.2843	0.0117	0.2842	0.0131	0.0037	4.60%	0.0055	4.83%
027.41	Magnesium, ICP, Dry ash (%)	14	14	0.2771	0.0170	0.2768	0.0180	0.0060	6.50%	0.0053	4.85%
027.31	Magnesium, AAS, Dry ash (%)	9	9	0.2786	0.0127	0.2786	0.0144	0.0060	5.16%	0.0063	4.85%
027.99	Magnesium, Miscellaneous (%)	4	4	0.2800	0.0108	0.2800	0.0108	0.0054	3.86%	0.0100	4.84%
027.44	Magnesium, ICP, Dry ash (%)	2	2	0.2905	0.0205						
027.53	Magnesium, ICP-MS, Microwave (%)	2	2	0.2768	0.0046						
027.32	Magnesium, AAS, Open vessel (%)	1	1	0.2750							
027.33	Magnesium, AAS, Microwave (%)	1	1	0.2900							
027.52	Magnesium, ICP-MS, Open vessel (%)	1	1	0.2909							
028.43	Manganese, ICP, Microwave (ppm)	29	29	138.2	8.888	137.6	6.185	1.436	4.49%	3.470	7.62%
028.42	Manganese, ICP, Open vessel (ppm)	19	19	137.3	4.533	137.3	5.063	1.452	3.69%	3.265	7.63%
028.41	Manganese, ICP, Dry ash (ppm)	13	13	135.2	10.02	135.7	10.18	3.529	7.50%	2.125	7.64%
028.31	Manganese, AAS, Dry ash (ppm)	7	7	137.2	5.060	137.2	5.738	2.711	4.18%	0.9260	7.63%
028.99	Manganese, Miscellaneous (ppm)	4	4	139.9	10.27	139.9	10.27	5.137	7.34%	2.750	7.60%
028.44	Manganese, ICP, Dry ash (ppm)	3	3	129.3	20.52	129.3	20.52	11.85	15.87%	2.033	7.70%
028.53	Manganese, ICP-MS, Microwave (ppm)	3	3	136.8	12.47	136.8	12.47	7.201	9.12%	1.667	7.63%
028.32	Manganese, AAS, Open vessel (ppm)	1	1	149.0							
028.33	Manganese, AAS, Microwave (ppm)	1	1	132.7							
028.34	Manganese, AAS, Dry ash (ppm)	1	1	133.0							
028.52	Manganese, ICP-MS, Open vessel (ppm)	1	1	138.4							
030.01	Nitrate, Ion-selective electrode (%)	1		0.0001							
031.43	Phosphorus, ICP, Microwave (%)	34	33	0.7340	0.0379	0.7328	0.0363	0.0079	4.96%	0.0160	4.19%
031.01	Phosphorus, Photometric (%)	27	26	0.7251	0.0353	0.7264	0.0278	0.0068	3.83%	0.0094	4.20%
031.42	Phosphorus, ICP, Open vessel (%)	20	20	0.7285	0.0300	0.7275	0.0315	0.0088	4.34%	0.0215	4.20%
031.41	Phosphorus, ICP, Dry ash (%)	17	16	0.7159	0.0367	0.7164	0.0370	0.0116	5.17%	0.0121	4.21%
031.99	Phosphorus, Miscellaneous (%)	5	4	0.7088	0.0384	0.7088	0.0384	0.0192	5.42%	0.0225	4.21%
031.44	Phosphorus, ICP, Dry ash (%)	3	3	0.7274	0.0906	0.7274	0.0906	0.0523	12.45%	0.0253	4.20%
031.03	Phosphorus, Autoanalyzer (%)	2	2	0.7036	0.0122						
031.53	Phosphorus, ICP-MS, Microwave (%)	2	2	0.7468	0.0166						
031.06	Phosphorus, Hach Method (%)	1	1	0.6600							
031.52	Phosphorus, ICP-MS, Open vessel (%)	1	1	0.6901							
032.43	Potassium, ICP, Microwave (%)	32	32	1.174	0.0442	1.175	0.0353	0.0078	3.00%	0.0283	3.90%
032.42	Potassium, ICP, Open vessel (%)	19	18	1.201	0.0616	1.200	0.0611	0.0180	5.09%	0.0246	3.89%
032.41	Potassium, ICP, Dry ash (%)	15	14	1.154	0.0655	1.149	0.0541	0.0181	4.71%	0.0211	3.92%
032.31	Potassium, AAS, Dry ash (%)	7	7	1.136	0.1049	1.136	0.1190	0.0562	10.47%	0.0326	3.92%
032.99	Potassium, Miscellaneous (%)	5	4	1.172	0.0057	1.172	0.0057	0.0028	0.48%	0.0240	3.91%
032.44	Potassium, ICP, Dry ash (%)	2	2	1.253	0.1096						

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032.52	Potassium, ICP-MS, Open vessel (%)	2	2	1.243	0.0463						
032.53	Potassium, ICP-MS, Microwave (%)	2	2	1.128	0.0248						
032.02	Potassium, Flame Emission (%)	1	1	1.030							
032.32	Potassium, AAS, Open vessel (%)	1	1	1.140							
032.33	Potassium, AAS, Microwave (%)	1	1	1.180							
033.01	Salt as chloride, Poten Cl (%)	25	24	0.9837	0.0228	0.9815	0.0202	0.0052	2.06%	0.0194	4.01%
033.99	Salt, Miscellaneous (%)	15	15	0.9653	0.0601	0.9735	0.0435	0.0140	4.47%	0.0281	4.02%
033.00	Salt as chloride, Sol Cl (%)	12	12	0.9810	0.1229	0.9571	0.0645	0.0233	6.74%	0.0218	4.03%
033.03	Salt as chloride, Quantab (%)	4	3	0.9167	0.0289	0.9167	0.0289				4.05%
033.05	Salt as chloride, Ion Sel Electrode (%)	1	1	0.8350							
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	7	7	0.7734	0.0791	0.7734	0.0897	0.0424	11.60%	0.0241	16.63%
034.04	Selenium, Total (Se), AA, Hydride (ppm)	3	3	0.7175	0.0572	0.7175	0.0572	0.0330	7.97%	0.0367	16.82%
034.41	Selenium, Total (Se), ICP, Dry ash (ppm)	3	3	0.6034	0.2445	0.6034	0.2445	0.1412	40.53%	0.0710	17.26%
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	4	2	0.7550	0.0071	0.7550	0.0071				16.69%
034.52	Selenium, Total (Se), ICP-MS, Open vessel (ppm)	2	2	1.159	0.5359						
034.01	Selenium, Total (Se), Fluor (ppm)	1	1	0.7695							
034.42	Selenium, Total (Se), ICP, Open vessel (ppm)	1	1	2.530							
034.99	Selenium, Total (Se), Miscellaneous (ppm)	1	1	1.090							
035.43	Sodium, ICP, Microwave (%)	31	30	0.3900	0.0181	0.3888	0.0152	0.0035	3.90%	0.0087	4.61%
035.41	Sodium, ICP, Dry ash (%)	17	17	0.3764	0.0206	0.3754	0.0203	0.0061	5.40%	0.0123	4.64%
035.42	Sodium, ICP, Open vessel (%)	18	17	0.3892	0.0165	0.3891	0.0185	0.0056	4.75%	0.0082	4.61%
035.31	Sodium, AAS, Dry ash (%)	8	8	0.3557	0.0691	0.3713	0.0349	0.0154	9.41%	0.0062	4.64%
035.99	Sodium, Miscellaneous (%)	4	4	0.3763	0.0229	0.3763	0.0229	0.0114	6.08%	0.0167	4.63%
035.05	Sodium, Flame Emission (%)	2	2	0.3925	0.0106						
035.53	Sodium, ICP-MS, Microwave (%)	2	2	0.3798	0.0074						
035.32	Sodium, AAS, Open vessel (%)	1	1	0.3550							
035.33	Sodium, AAS, Microwave (%)	1	1	0.3800							
035.52	Sodium, ICP-MS, Open vessel (%)	1	1	0.3657							
036.43	Sulfur, ICP, Microwave (%)	21	20	0.3252	0.0187	0.3247	0.0201	0.0056	6.20%	0.0100	4.74%
036.42	Sulfur, ICP, Open vessel (%)	18	18	0.3164	0.0167	0.3166	0.0184	0.0054	5.81%	0.0083	4.76%
036.04	Sulfur, LECO (%)	5	5	0.3231	0.0214	0.3231	0.0214	0.0096	6.62%	0.0182	4.74%
036.99	Sulfur, Miscellaneous (%)	2	2	0.2950	0.0283						
036.52	Sulfur, ICP-MS, Open vessel (%)	1	1	0.3206							
036.53	Sulfur, ICP-MS, Microwave (%)	1	1	0.2890							
037.43	Zinc, ICP, Microwave (ppm)	31	31	155.0	14.62	154.0	13.80	3.097	8.96%	4.859	7.50%
037.42	Zinc, ICP, Open vessel (ppm)	19	19	152.7	14.22	150.9	11.50	3.297	7.62%	4.844	7.52%
037.41	Zinc, ICP, Dry ash (ppm)	14	14	150.8	13.20	151.5	13.28	4.435	8.76%	4.284	7.51%
037.31	Zinc, AAS, Dry ash (ppm)	7	7	157.4	38.61	152.9	13.93	6.582	9.11%	0.8445	7.50%
037.99	Zinc, Miscellaneous (ppm)	4	4	149.8	8.016	149.8	8.016	4.008	5.35%	4.667	7.53%
037.44	Zinc, ICP, Dry ash (ppm)	3	3	146.5	26.48	146.5	26.48	15.29	18.08%	5.500	7.55%

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037.53	Zinc, ICP-MS, Microwave (ppm)	2	2	144.3	16.62						
037.32	Zinc, AAS, Open vessel (ppm)	1	1	158.0							
037.52	Zinc, ICP-MS, Open vessel (ppm)	1	1	174.9							
038.43	Molybdenum, ICP, Microwave (ppm)	9	8	1.176	0.2406	1.209	0.1899	0.0839	15.71%	0.1017	15.55%
038.42	Molybdenum, ICP, Open vessel (ppm)	5	5	1.328	0.2548	1.328	0.2548	0.1139	19.18%	0.4550	15.33%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	3	3	1.337	0.1079	1.337	0.1079	0.0623	8.07%	0.0667	15.31%
038.52	Molybdenum, ICP-MS, Open vessel (ppm)	2	2	1.098	0.0249						
038.41	Molybdenum, ICP, Dry ash (ppm)	1	1	1.195							
038.99	Molybdenum, Miscellaneous (ppm)	1	1	1.600							
040.43	Barium, ICP, Microwave (ppm)	1	1	9.732							
042.00	Chloride, Titrimetric (%)	8	7	0.6083	0.0162	0.6083	0.0184	0.0087	3.03%	0.0081	4.31%
042.99	Chloride, Miscellaneous (%)	1	1	0.6400							
101.99	Choline Chloride, Miscellaneous (ppm)	1	1	2.015							
102.01	Niacin, Microbiological (ppm)	1	1	118.0							
102.02	Niacin, LC (ppm)	1	1	66.55							
103.01	Pantothenic Acid, Microbiological (ppm)	1	1	35.15							
104.03	Riboflavin, LC (ppm)	2	2	11.33	0.3217						
104.00	Riboflavin, Fluorometric (ppm)	1	1	14.80							
105.00	Thiamine, LC (ppm)	1	1	3.365							
105.01	Thiamine, Fluorometer (ppm)	1	1	5.300							
106.02	Vitamin A, LC (KU / kg)	11	8	4.961	3.465	4.712	3.337	1.475	70.83%	0.5359	
106.00	Vitamin A, Color (KU / kg)	1	1	3.015							
106.01	Vitamin A, UV (KU / kg)	1	1	5.680							
108.02	Vitamin D3, LC (KU / kg)	5	4	2.983	0.1306	2.983	0.1306	0.0653	4.38%	0.2217	
108.99	Vitamin D3, Miscellaneous (KU / kg)	1	1	2.775							
109.02	Vitamin E, LC (IU / kg)	11	10	119.0	18.28	120.7	16.65	6.580	13.80%	2.222	
109.99	Vitamin E, Miscellaneous (IU / kg)	2	2	125.0	8.485						
111.00	Vitamin C, Phosphorylated, LC (ppm)	1		4.400							
112.01	Pyridoxine, LC (µg / g)	2	2	4.550	0.9829						
113.01	Folic Acid, Micro (ppm)	1	1	1.840							
113.02	Folic acid, LC (ppm)	1	1	1.430							
114.99	Biotin, Miscellaneous (ppm)	1	1	0.3805							
115.00	Non Protein N (NPN), Urea + Am, Urease method (%)	1	1	2.395							
115.99	Non Protein N (NPN), Miscellaneous (%)	1	1	0.5790							
120.00	Alanine, Post-col Ninhydrin Der (%)	18	18	0.8930	0.0284	0.8942	0.0294	0.0087	3.29%	0.0125	4.07%
120.05	Alanine, Pre-col AQC Der (%)	9	9	0.8942	0.0357	0.8950	0.0385	0.0161	4.30%	0.0203	4.07%
120.02	Alanine, Post-col OPA Der (%)	1	1	0.8990							
121.00	Arginine, Post-col Ninhydrin Der (%)	18	18	1.097	0.0489	1.100	0.0481	0.0142	4.38%	0.0246	3.94%
121.05	Arginine, Pre-col AQC Der (%)	9	9	1.060	0.1001	1.080	0.0584	0.0244	5.41%	0.0266	3.95%
121.02	Arginine, Post-col OPA Der (%)	1	1	1.048							

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122.00	Aspartic, Post-col Ninhydrin Der (%)	18	18	1.618	0.0587	1.614	0.0519	0.0153	3.21%	0.0170	3.72%
122.05	Aspartic, Pre-col AQC Der (%)	9	9	1.618	0.1184	1.618	0.1342	0.0559	8.29%	0.0305	3.72%
122.02	Aspartic, Post-col OPA Der (%)	1	1	1.569							
124.00	Cysteine/Cystine, PAO Post-col Ninhydry (%)	16	16	0.3151	0.0174	0.3147	0.0187	0.0058	5.95%	0.0077	4.76%
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	8	0.3016	0.0370	0.3007	0.0399	0.0176	13.27%	0.0189	4.79%
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	2	2	0.3085	0.0332						
125.00	Glutamic, Post-col Ninhydrin Der (%)	18	18	3.312	0.1317	3.297	0.0987	0.0291	2.99%	0.0308	3.34%
125.05	Glutamic, Pre-col AQC Der (%)	9	9	3.341	0.2278	3.350	0.2361	0.0984	7.05%	0.0438	3.33%
125.02	Glutamic, Post-col OPA Der (%)	1	1	3.257							
126.00	Glycine, Post-col Ninhydrin Der (%)	18	18	0.7975	0.0334	0.7990	0.0342	0.0101	4.28%	0.0110	4.14%
126.05	Glycine, Pre-col AQC Der (%)	9	9	0.8262	0.0635	0.8139	0.0378	0.0157	4.64%	0.0224	4.13%
126.02	Glycine, Post-col OPA Der (%)	1	1	0.7975							
127.00	Histidine, Post-col Ninhydrin Der (%)	18	18	0.4372	0.0231	0.4380	0.0173	0.0051	3.96%	0.0100	4.53%
127.05	Histidine, Pre-col AQC Der (%)	9	8	0.4970	0.1446	0.4574	0.0483	0.0214	10.57%	0.0040	4.50%
127.02	Histidine, Post-col OPA Der (%)	1	1	0.4400							
128.00	Isoleucine, Post-col Ninhydrin Der (%)	18	17	0.6625	0.0384	0.6612	0.0402	0.0122	6.08%	0.0148	4.26%
128.05	Isoleucine, Pre-col AQC Der (%)	9	9	0.6263	0.1350	0.6541	0.0742	0.0309	11.35%	0.0109	4.26%
128.02	Isoleucine, Post-col OPA Der (%)	1	1	0.7195							
129.00	Leucine, Post-col Ninhydrin Der (%)	18	17	1.362	0.0351	1.362	0.0393	0.0119	2.89%	0.0134	3.82%
129.05	Leucine, Pre-col AQC Der (%)	9	8	1.267	0.2552	1.320	0.1422	0.0628	10.77%	0.0083	3.84%
129.02	Leucine, Post-col OPA Der (%)	1	1	1.365							
130.00	L-Lysine, Post-col Ninhydrin Der (%)	18	17	0.7296	0.0381	0.7282	0.0400	0.0121	5.49%	0.0153	4.20%
130.05	L-Lysine, Pre-col AQC Der (%)	9	8	0.6800	0.1614	0.7100	0.1031	0.0455	14.52%	0.0095	4.21%
130.02	L-Lysine, Post-col OPA Der (%)	1	1	0.8055							
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	16	15	0.2692	0.0166	0.2668	0.0113	0.0037	4.24%	0.0061	4.88%
131.05	Methionine, PAO Pre-col AQC Der (%)	9	8	0.2330	0.0834	0.2491	0.0511	0.0226	20.50%	0.0084	4.93%
131.02	Methionine, PAO Post-col OPA Der (%)	2	2	0.2670	0.0042						
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	18	18	0.8196	0.0318	0.8199	0.0347	0.0102	4.24%	0.0146	4.12%
132.05	Phenylalanine, Pre-col AQC Der (%)	9	9	0.8170	0.0820	0.8060	0.0485	0.0202	6.02%	0.0164	4.13%
132.02	Phenylalanine, Post-col OPA Der (%)	1	1	0.8255							
133.00	Proline, Post-col Ninhydrin Der (%)	18	18	1.055	0.0692	1.062	0.0453	0.0133	4.27%	0.0180	3.96%
133.05	Proline, Pre-col AQC Der (%)	9	9	1.094	0.0228	1.095	0.0228	0.0095	2.08%	0.0129	3.95%
134.00	Serine, Post-col Ninhydrin Der (%)	18	18	0.8338	0.0438	0.8354	0.0330	0.0097	3.95%	0.0180	4.11%
134.05	Serine, Pre-col AQC Der (%)	9	9	0.8644	0.0581	0.8644	0.0658	0.0274	7.62%	0.0266	4.09%
134.02	Serine, Post-col OPA Der (%)	1	1	0.6830							
135.00	Threonine, Post-col Ninhydrin Der (%)	18	18	0.6375	0.0258	0.6394	0.0187	0.0055	2.93%	0.0124	4.28%
135.05	Threonine, Pre-col AQC Der (%)	9	9	0.6465	0.0443	0.6446	0.0209	0.0087	3.24%	0.0173	4.27%
135.02	Threonine, Post-col OPA Der (%)	1	1	0.5700							
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	8	8	0.2322	0.0368	0.2214	0.0096	0.0042	4.32%	0.0067	5.02%
136.00	Tryptophan, Alka-Hydrol Post-col Ninhydry (%)	3	3	0.1961	0.0335	0.1961	0.0335	0.0193	17.07%	0.0185	5.11%

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136.01	Tryptophan, Alka-Hydrol Rev Phase LC UV (%)	3	3	0.2208	0.0227	0.2208	0.0227	0.0131	10.27%	0.0065	5.02%
136.05	Tryptophan, Pre-col AQC Der (%)	3	3	0.2043	0.0071	0.2043	0.0071	0.0050	3.47%	0.0063	5.08%
136.99	Tryptophan, Miscellaneous (%)	2	2	0.2145	0.0347						
136.02	Tryptophan, Alka-Hydrol Post-col OPA De (%)	1	1	0.2153							
137.00	Tyrosine, Post-col Ninhydrin Der (%)	15	15	0.5385	0.0396	0.5400	0.0339	0.0109	6.27%	0.0158	4.39%
137.05	Tyrosine, Pre-col AQC Der (%)	9	8	0.6442	0.2884	0.5600	0.0763	0.0337	13.63%	0.0075	4.36%
137.02	Tyrosine, Post-col OPA Der (%)	1	1	0.4925							
138.00	Valine, Post-col Ninhydrin Der (%)	18	17	0.8191	0.0428	0.8181	0.0462	0.0140	5.65%	0.0149	4.12%
138.05	Valine, Pre-col AQC Der (%)	9	9	0.8231	0.0746	0.8288	0.0710	0.0296	8.56%	0.0179	4.11%
138.02	Valine, Post-col OPA Der (%)	1	1	0.8835							
139.00	Taurine, Post-col Ninhydrin Der (%)	1	1	0.2400							
139.05	Taurine, Pre-col AQC Der (%)	2	1	1.135							
139.02	Taurine, Post-col OPA Der (%)	2		0.0100							
160.10	Fructose, HPAEC PAD (%)	2	2	1.553	0.0884						
160.99	Fructose, Miscellaneous (%)	1	1	1.650							
161.10	Galactose, HPAEC PAD (%)	2	1	0.0600							
162.10	Glucose, HPAEC PAD (%)	2	2	0.9975	0.0035						
162.99	Glucose, Miscellaneous (%)	1	1	0.8300							
163.10	Lactose, HPAEC PAD (%)	2	1	0.0300							
163.99	Lactose, Miscellaneous (%)	1		0.1500							
164.10	Maltose, HPAEC PAD (%)	2	2	0.5525	0.0743						
164.99	Maltose, Miscellaneous (%)	1		0.1500							
165.10	Sucrose, HPAEC PAD (%)	2	2	1.135	0.0071						
165.99	Sucrose, Miscellaneous (%)	1	1	1.045							
166.10	Raffinose, HPAEC PAD (%)	2	2	0.3350	0.1131						
166.99	Raffinose, Miscellaneous (%)	1	1	0.2100							
167.10	Stachyose, HPAEC PAD (%)	2	2	0.6950	0.0283						
167.99	Stachyose, Miscellaneous (%)	1	1	0.7600							
354.01	Decoquinatate, LC (UV or FL) (ppm)	11	11	31.90	1.405	31.79	1.324	0.4991	4.17%	1.061	9.50%
354.04	Decoquinatate, LC-MS/MS (ppm)	3	3	31.37	4.585	31.37	4.585	2.647	14.62%	1.872	9.52%
354.02	Decoquinatate, LC (ppm)	2	2	31.06	0.6930						
400.01	Water Activity, Aqualab chilled mirror (Units)	15	15	0.5757	0.0220	0.5774	0.0206	0.0066	3.56%	0.0069	
400.99	Water Activity, Miscellaneous (Units)	4	4	0.5508	0.0476	0.5508	0.0476	0.0238	8.64%	0.0080	
516.00	Arsenic, Total (As), AA, Hydride (ppm)	2	2	0.0761	0.0058						
516.52	Arsenic, Total (As), ICP-MS, Open vessel (ppm)	2	2	0.0587	0.0019						
516.53	Arsenic, Total (As), ICP-MS, Microwave (ppm)	1	1	0.0680							
516.43	Arsenic, Total (As), ICP, Microwave (ppm)	1		20.00							
518.43	Cadmium, ICP, Microwave (ppm)	2	2	0.0909	0.0153						
518.52	Cadmium, ICP-MS, Open vessel (ppm)	2	2	0.0867	0.0094						
518.33	Cadmium, AAS, Microwave (ppm)	1	1	0.0962							

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518.53	Cadmium, ICP-MS, Microwave (ppm)	1	1	0.0900							
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	3	3	4.927	0.3938	4.927	0.3938	0.2273	7.99%	0.0465	12.58%
520.42	Chromium, Total (Cr), ICP, Open vessel (ppm)	2	2	4.835	0.1131						
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	2	2	4.948	0.8096						
520.51	Chromium, Total (Cr), ICP-MS, Dry ash (ppm)	1	1	2.370							
520.52	Chromium, Total (Cr), ICP-MS, Open vessel (ppm)	1	1	2.349							
526.53	Lead, ICP-MS, Microwave (ppm)	2	2	0.0687	0.0144						
526.33	Lead, AAS, Microwave (ppm)	1	1	0.9512							
526.52	Lead, ICP-MS, Open vessel (ppm)	2	1	0.0668							
526.43	Lead, ICP, Microwave (ppm)	1		0.0500							
529.99	Mercury, Miscellaneous (ppb)	3	1								
539.43	Nickel, ICP, Microwave (ppm)	1	1	3.360							
539.51	Nickel, ICP-MS, Dry ash (ppm)	1	1	2.190							
539.52	Nickel, ICP-MS, Open vessel (ppm)	1	1	2.265							
539.53	Nickel, ICP-MS, Microwave (ppm)	1	1	3.485							
706.99	Caprylic acid (8:0), Miscellaneous (%) (w/w)	1		0.0500							
708.99	Capric acid (10:0), Miscellaneous (%) (w/w)	1	1	0.1300							
710.99	Lauric Acid (12:0), Miscellaneous (%) (w/w)	2		0.0050							
714.99	Myristic Acid (14:0), Miscellaneous (%) (w/w)	2	2	0.0782	0.1015						
716.99	Palmitic Acid (16:0), Miscellaneous (%) (w/w)	2	2	7.910	10.30						
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (%) (w/w)	2	2	0.1149	0.1487						
722.99	Stearic Acid (18:0), Miscellaneous (%) (w/w)	2	2	1.447	1.885						
724.99	Oleic Acid (9c-18:1), Miscellaneous (%) (w/w)	2	2	11.96	15.61						
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (%) (w/w)	2	2	25.59	33.37						
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (%) (w/w)	2	2	1.633	2.132						
730.99	Arachidic Acid (20:0), Miscellaneous (%) (w/w)	2	2	0.1610	0.2107						
732.99	Gondoic Acid (11c-20:1), Miscellaneous (%) (w/w)	1	1	0.0180							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (%) (w/w)	2	1	0.0900							
742.99	Behenic Acid (22:0), Miscellaneous (%) (w/w)	2	2	0.1293	0.1707						
744.99	Erucic Acid (13c-22:1), Miscellaneous (%) (w/w)	2	1	0.1400							
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (%) (w/w)	2		0.0050							
748.99	Lignoceric Acid (24:0), Miscellaneous (%) (w/w)	2	2	0.1048	0.1346						
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (%) (w/w)	2		0.0050							
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	0.1400							
756.99	Total n-6 Polyunsaturated (Omega-6) Fatty Acids, Miscellaneous (%) (w/w)	1	1	2.120							
758.99	Total Saturated Fatty Acids, Miscellaneous (%) (w/w)	1	1	19.26							
762.99	Total Monounsaturated Fatty Acids, Miscellaneous (%) (w/w)	1	1	23.96							
766.99	Total Polyunsaturated Fatty Acids, Miscellaneous (%) (w/w)	1	1	52.49							
772.99	Total Fatty Acids, Miscellaneous (%) (w/w)	1	1	3.853							

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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 Feed, Medicated

Test Material Code # 202531

Method Precision Report

Methods Reported: 124

Labs Reporting: 154

Issue Date : 12/31/2025

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 (%)	39	36	10.60	0.5748	0.3333	0.1287	0.3573	3.11%	1.20%	3.34%	2.777
001.99	Loss on Drying, Miscellaneous (%)	16	13	10.34	0.9588	0.4908	0.0905	0.4990	4.64%	0.86%	4.72%	5.516
002.01	Protein, Crude, Auto Kjel-Foss (%)	15	12	18.25	0.2261	0.1103	0.0366	0.1162	0.60%	0.20%	0.63%	3.172
002.05	Protein, Crude, Copper, Boric Acid (%)	22	21	18.25	0.4336	0.2899	0.0646	0.2970	1.58%	0.35%	1.62%	4.600
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	111	103	18.51	0.3875	0.2457	0.1679	0.2976	1.32%	0.90%	1.60%	1.772
002.11	Protein, Crude, NIR (%)	8	8	17.66	1.229	1.226	0.1194	1.232	6.94%	0.68%	6.98%	10.31
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	11	10	3.680	0.3105	0.3060	0.0741	0.3149	8.32%	2.01%	8.56%	4.250
003.06	Fat, Crude, Pet Ether (%)	15	13	3.615	0.2490	0.2200	0.0361	0.2229	6.14%	1.01%	6.22%	6.180
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	8	7	3.625	0.1722	0.0674	0.0714	0.0982	1.83%	1.94%	2.67%	1.376
003.10	Fat, Crude, Randall, Pet Ether (%)	26	24	3.565	0.2136	0.1376	0.0838	0.1611	3.89%	2.37%	4.56%	1.922
003.12	Fat, Crude, Hexane Ext (%)	5	5	3.747	0.2139	0.0695	0.2862	0.2945	1.85%	7.64%	7.86%	1.029
003.14	Fat, Crude, Ankom (%)	49	47	3.592	0.3335	0.2406	0.0997	0.2604	6.78%	2.81%	7.34%	2.613
004.00	Fiber, Crude, Asbestos Free (%)	6	6	5.448	0.6017	0.5834	0.2083	0.6194	10.71%	3.82%	11.37%	2.974
004.06	Fiber, Crude, Fibertec (%)	16	14	5.483	0.5363	0.5095	0.1500	0.5311	9.38%	2.76%	9.77%	3.542
004.07	Fiber, Crude, ANKOM (%)	74	70	5.348	0.4446	0.4007	0.1470	0.4268	7.54%	2.77%	8.03%	2.904
005.00	Ash, 2h @ 600°C (%)	90	82	7.051	0.2070	0.1557	0.0586	0.1664	2.22%	0.83%	2.37%	2.841
005.05	Ash, 3h @ 550°C (%)	24	22	7.234	0.1783	0.1805	0.0384	0.1845	2.49%	0.53%	2.55%	4.801
005.11	Ash, NIR (%)	5	5	6.026	0.3309	0.3136	0.1496	0.3474	5.20%	2.48%	5.77%	2.322
005.99	Ash, Miscellaneous (%)	5	5	7.303	0.1187	0.0574	0.1470	0.1578	0.79%	2.01%	2.16%	1.073
008.02	Fiber, Acid Detergent, Crucible (%)	10	9	7.653	0.4054	0.4136	0.0991	0.4253	5.38%	1.29%	5.54%	4.293
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	48	45	7.442	0.4688	0.4401	0.1513	0.4654	5.93%	2.04%	6.27%	3.076
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	11	10	19.39	1.585	0.7939	0.3669	0.8746	4.01%	1.85%	4.42%	2.384
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	43	41	18.82	1.033	0.8498	0.3555	0.9211	4.54%	1.90%	4.92%	2.591
010.11	Moisture, NIR (%)	5	5	10.43	0.7794	0.7773	0.0806	0.7815	7.45%	0.77%	7.49%	9.693
010.99	Moisture, Miscellaneous (%)	15	14	10.65	0.7377	0.5019	0.1295	0.5183	4.78%	1.23%	4.93%	4.002
011.01	Loss on Drying, HT, 135°C 2hr (%)	57	53	11.87	0.7843	0.6164	0.1056	0.6254	5.16%	0.88%	5.24%	5.922
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	6	6	11.10	1.340	1.334	0.1792	1.346	12.02%	1.62%	12.13%	7.512
012.00	Starch, Polarimetric (Ewers) (%)	16	15	27.95	0.9275	0.9144	0.2188	0.9403	3.27%	0.78%	3.36%	4.297

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
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	10	8	26.96	2.117	1.425	0.4828	1.504	5.41%	1.83%	5.71%	3.116
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	8	8	26.63	1.783	1.748	0.5025	1.818	6.56%	1.89%	6.83%	3.619
013.00	Fat, Pretreat, Acid hydrolysis (%)	19	16	4.516	0.5415	0.4418	0.0737	0.4479	10.01%	1.67%	10.15%	6.079
013.02	Fat, Pretreat, Mojonnier, Bak Ext, Acid hydrolysis (%)	12	12	5.026	0.5743	0.5656	0.1406	0.5828	11.25%	2.80%	11.60%	4.145
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	7	7	4.431	0.4115	0.4098	0.0528	0.4132	9.25%	1.19%	9.32%	7.828
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	11	11	4.461	0.6592	0.6565	0.0850	0.6620	14.72%	1.90%	14.84%	7.790
015.43	Aluminum, ICP, Microwave (ppm)	5	5	53.31	18.19	18.09	2.707	18.29	33.93%	5.08%	34.31%	6.758
019.00	Calcium, Ox-Mn04 Vol. (%)	6	6	1.116	0.0950	0.0936	0.0228	0.0964	8.39%	2.05%	8.64%	4.220
019.08	Calcium, EDTA (%)	10	7	1.181	0.0996	0.0323	0.0039	0.0326	2.79%	0.34%	2.81%	8.300
019.31	Calcium, AAS, Dry ash (%)	12	11	1.111	0.0831	0.0396	0.0211	0.0449	3.50%	1.87%	3.97%	2.125
019.41	Calcium, ICP, Dry ash (%)	18	17	1.113	0.0501	0.0382	0.0197	0.0430	3.41%	1.76%	3.84%	2.184
019.42	Calcium, ICP, Open vessel (%)	20	20	1.153	0.0648	0.0598	0.0353	0.0695	5.19%	3.06%	6.02%	1.969
019.43	Calcium, ICP, Microwave (%)	35	32	1.147	0.0546	0.0519	0.0169	0.0546	4.54%	1.48%	4.78%	3.226
019.99	Calcium, Miscellaneous (%)	7	7	1.180	0.1814	0.1786	0.0444	0.1841	15.14%	3.76%	15.60%	4.146
021.43	Cobalt, ICP, Microwave (ppm)	8	6	1.219	0.3347		0.0896			6.66%		
022.31	Copper, AAS, Dry ash (ppm)	8	8	20.87	4.481	4.454	0.6972	4.508	21.34%	3.34%	21.60%	6.466
022.41	Copper, ICP, Dry ash (ppm)	13	13	22.39	2.931	2.835	1.051	3.024	12.66%	4.69%	13.50%	2.877
022.42	Copper, ICP, Open vessel (ppm)	19	17	24.34	1.240	1.128	0.8142	1.391	4.64%	3.35%	5.73%	1.709
022.43	Copper, ICP, Microwave (ppm)	32	31	24.26	1.594	1.448	0.8756	1.693	5.99%	3.62%	7.00%	1.933
025.31	Iron, AAS, Dry ash (ppm)	8	8	203.6	13.82	13.63	3.192	14.00	6.70%	1.57%	6.88%	4.388
025.41	Iron, ICP, Dry ash (ppm)	16	15	204.1	17.78	14.04	4.357	14.70	6.79%	2.11%	7.11%	3.375
025.42	Iron, ICP, Open vessel (ppm)	18	15	201.5	13.72	10.11	3.440	10.68	5.07%	1.73%	5.36%	3.103
025.43	Iron, ICP, Microwave (ppm)	32	30	205.0	24.86	10.17	4.239	11.02	4.91%	2.05%	5.32%	2.599
027.31	Magnesium, AAS, Dry ash (%)	9	9	0.2786	0.0127	0.0123	0.0044	0.0130	4.41%	1.56%	4.68%	2.996
027.41	Magnesium, ICP, Dry ash (%)	14	14	0.2771	0.0170	0.0168	0.0037	0.0172	6.05%	1.32%	6.19%	4.678
027.42	Magnesium, ICP, Open vessel (%)	20	19	0.2843	0.0117	0.0113	0.0040	0.0120	3.98%	1.40%	4.22%	3.014
027.43	Magnesium, ICP, Microwave (%)	31	29	0.2797	0.0158	0.0134	0.0063	0.0148	4.74%	2.24%	5.24%	2.342
028.31	Manganese, AAS, Dry ash (ppm)	7	7	137.2	5.060	5.039	0.6559	5.081	3.67%	0.48%	3.70%	7.746
028.41	Manganese, ICP, Dry ash (ppm)	13	13	135.2	10.02	9.931	1.883	10.11	7.34%	1.39%	7.47%	5.369
028.42	Manganese, ICP, Open vessel (ppm)	19	19	137.3	4.533	3.922	3.215	5.071	2.86%	2.34%	3.69%	1.577
028.43	Manganese, ICP, Microwave (ppm)	29	28	138.2	8.888	6.634	2.942	7.257	4.84%	2.15%	5.29%	2.466
031.01	Phosphorus, Photometric (%)	27	25	0.7251	0.0353	0.0358	0.0055	0.0362	4.94%	0.76%	5.00%	6.554
031.41	Phosphorus, ICP, Dry ash (%)	17	16	0.7159	0.0367	0.0363	0.0083	0.0372	5.07%	1.17%	5.20%	4.458
031.42	Phosphorus, ICP, Open vessel (%)	20	20	0.7285	0.0300	0.0238	0.0257	0.0351	3.27%	3.53%	4.81%	1.363
031.43	Phosphorus, ICP, Microwave (%)	34	32	0.7340	0.0379	0.0329	0.0123	0.0352	4.51%	1.69%	4.81%	2.851
032.31	Potassium, AAS, Dry ash (%)	7	6	1.136	0.1049	0.1142	0.0113	0.1147	10.02%	1.00%	10.07%	10.12
032.41	Potassium, ICP, Dry ash (%)	15	12	1.154	0.0655	0.0474	0.0150	0.0497	4.15%	1.32%	4.36%	3.308
032.42	Potassium, ICP, Open vessel (%)	19	17	1.201	0.0616	0.0622	0.0168	0.0645	5.19%	1.40%	5.37%	3.837

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
032.43	Potassium, ICP, Microwave (%)	32	31	1.174	0.0442	0.0353	0.0241	0.0427	2.99%	2.05%	3.63%	1.770
033.00	Salt as chloride, Sol Cl (%)	12	11	0.9810	0.1229	0.0492	0.0157	0.0516	5.19%	1.65%	5.44%	3.295
033.01	Salt as chloride, Poten Cl (%)	25	23	0.9837	0.0228	0.0162	0.0121	0.0202	1.65%	1.24%	2.06%	1.666
033.99	Salt, Miscellaneous (%)	15	14	0.9653	0.0601	0.0285	0.0290	0.0407	2.91%	2.97%	4.16%	1.402
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	7	7	0.7734	0.0791	0.0777	0.0214	0.0806	10.05%	2.76%	10.42%	3.768
035.31	Sodium, AAS, Dry ash (%)	8	6	0.3557	0.0691	0.0264	0.0017	0.0264	6.98%	0.45%	6.99%	15.70
035.41	Sodium, ICP, Dry ash (%)	17	15	0.3764	0.0206	0.0158	0.0090	0.0182	4.22%	2.39%	4.85%	2.030
035.42	Sodium, ICP, Open vessel (%)	18	17	0.3892	0.0165	0.0160	0.0057	0.0170	4.10%	1.48%	4.36%	2.954
035.43	Sodium, ICP, Microwave (%)	31	28	0.3900	0.0181	0.0137	0.0064	0.0151	3.53%	1.65%	3.90%	2.356
036.04	Sulfur, LECO (%)	5	5	0.3231	0.0214	0.0174	0.0175	0.0247	5.40%	5.41%	7.65%	1.412
036.42	Sulfur, ICP, Open vessel (%)	18	17	0.3164	0.0167	0.0168	0.0052	0.0176	5.31%	1.66%	5.56%	3.357
036.43	Sulfur, ICP, Microwave (%)	21	19	0.3252	0.0187	0.0185	0.0067	0.0197	5.68%	2.07%	6.05%	2.925
037.31	Zinc, AAS, Dry ash (ppm)	7	6	157.4	38.61	33.24	0.3025	33.24	19.98%	0.18%	19.98%	109.9
037.41	Zinc, ICP, Dry ash (ppm)	14	13	150.8	13.20	13.22	3.282	13.62	8.81%	2.19%	9.08%	4.151
037.42	Zinc, ICP, Open vessel (ppm)	19	18	152.7	14.22	10.18	4.445	11.11	6.77%	2.95%	7.39%	2.500
037.43	Zinc, ICP, Microwave (ppm)	31	29	155.0	14.62	13.08	5.025	14.01	8.52%	3.27%	9.13%	2.789
038.42	Molybdenum, ICP, Open vessel (ppm)	5	5	1.328	0.2548		0.3941			29.67%		
038.43	Molybdenum, ICP, Microwave (ppm)	9	7	1.176	0.2406	0.1074	0.1071	0.1517	8.59%	8.57%	12.14%	1.416
042.00	Chloride, Titrimetric (%)	8	6	0.6083	0.0162	0.0155	0.0044	0.0162	2.57%	0.73%	2.67%	3.634
106.02	Vitamin A, LC (KU / kg)	11	7	4.961	3.465	3.729	0.0972	3.730	73.66%	1.92%	73.68%	38.36
109.02	Vitamin E, LC (IU / kg)	11	9	119.0	18.28	12.42	1.754	12.54	10.06%	1.42%	10.16%	7.151
120.00	Alanine, Post-col Ninhydrin Der (%)	18	17	0.8930	0.0284	0.0284	0.0081	0.0295	3.18%	0.90%	3.31%	3.660
120.05	Alanine, Pre-col AQC Der (%)	9	9	0.8942	0.0357	0.0340	0.0155	0.0373	3.80%	1.73%	4.17%	2.410
121.00	Arginine, Post-col Ninhydrin Der (%)	18	17	1.097	0.0489	0.0479	0.0169	0.0508	4.38%	1.54%	4.64%	3.014
121.05	Arginine, Pre-col AQC Der (%)	9	8	1.060	0.1001	0.0400	0.0199	0.0447	3.67%	1.83%	4.10%	2.242
122.00	Aspartic, Post-col Ninhydrin Der (%)	18	16	1.618	0.0587	0.0441	0.0152	0.0466	2.74%	0.94%	2.90%	3.073
122.05	Aspartic, Pre-col AQC Der (%)	9	8	1.618	0.1184	0.1084	0.0172	0.1098	6.78%	1.08%	6.87%	6.365
124.00	Cysteine/Cystine, PAO Post-col Ninhydry (%)	16	16	0.3151	0.0174	0.0167	0.0068	0.0181	5.31%	2.16%	5.73%	2.653
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	7	0.3016	0.0370	0.0271	0.0077	0.0281	9.26%	2.65%	9.63%	3.640
125.00	Glutamic, Post-col Ninhydrin Der (%)	18	16	3.312	0.1317	0.0825	0.0223	0.0855	2.51%	0.68%	2.60%	3.839
125.05	Glutamic, Pre-col AQC Der (%)	9	8	3.341	0.2278	0.2278	0.0247	0.2292	6.87%	0.75%	6.91%	9.261
126.00	Glycine, Post-col Ninhydrin Der (%)	18	17	0.7975	0.0334	0.0335	0.0081	0.0344	4.21%	1.01%	4.33%	4.264
126.05	Glycine, Pre-col AQC Der (%)	9	8	0.8262	0.0635	0.0258	0.0133	0.0290	3.19%	1.64%	3.59%	2.186
127.00	Histidine, Post-col Ninhydrin Der (%)	18	17	0.4372	0.0231	0.0183	0.0060	0.0192	4.15%	1.35%	4.36%	3.229
127.05	Histidine, Pre-col AQC Der (%)	9	7	0.4970	0.1446	0.0334	0.0035	0.0335	7.46%	0.78%	7.50%	9.593
128.00	Isoleucine, Post-col Ninhydrin Der (%)	18	16	0.6625	0.0384	0.0382	0.0109	0.0397	5.75%	1.64%	5.98%	3.642
128.05	Isoleucine, Pre-col AQC Der (%)	9	8	0.6263	0.1350	0.0536	0.0074	0.0541	8.03%	1.10%	8.10%	7.337
129.00	Leucine, Post-col Ninhydrin Der (%)	18	16	1.362	0.0351	0.0350	0.0087	0.0360	2.57%	0.64%	2.65%	4.164

Test Material Code # 202531

Issue Date : 12/31/2025

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
129.05	Leucine, Pre-col AQC Der (%)	9	7	1.267	0.2552	0.0983	0.0044	0.0984	7.28%	0.32%	7.29%	22.47
130.00	L-Lysine, Post-col Ninhydrin Der (%)	18	17	0.7296	0.0381	0.0371	0.0118	0.0390	5.09%	1.61%	5.34%	3.312
130.05	L-Lysine, Pre-col AQC Der (%)	9	7	0.6800	0.1614	0.0712	0.0058	0.0714	9.72%	0.79%	9.76%	12.33
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	16	14	0.2692	0.0166	0.0087	0.0038	0.0095	3.29%	1.42%	3.58%	2.529
131.05	Methionine, PAO Pre-col AQC Der (%)	9	7	0.2330	0.0834	0.0351	0.0055	0.0356	13.50%	2.12%	13.67%	6.454
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	18	18	0.8196	0.0318	0.0304	0.0127	0.0330	3.71%	1.55%	4.03%	2.592
132.05	Phenylalanine, Pre-col AQC Der (%)	9	8	0.8170	0.0820	0.0424	0.0128	0.0443	5.35%	1.62%	5.58%	3.457
133.00	Proline, Post-col Ninhydrin Der (%)	18	17	1.055	0.0692	0.0421	0.0163	0.0451	3.94%	1.52%	4.23%	2.772
133.05	Proline, Pre-col AQC Der (%)	9	9	1.094	0.0228	0.0218	0.0093	0.0237	1.99%	0.85%	2.17%	2.553
134.00	Serine, Post-col Ninhydrin Der (%)	18	17	0.8338	0.0438	0.0319	0.0133	0.0346	3.80%	1.58%	4.11%	2.607
134.05	Serine, Pre-col AQC Der (%)	9	9	0.8644	0.0581	0.0563	0.0201	0.0598	6.51%	2.33%	6.92%	2.972
135.00	Threonine, Post-col Ninhydrin Der (%)	18	17	0.6375	0.0258	0.0161	0.0103	0.0191	2.51%	1.60%	2.98%	1.861
135.05	Threonine, Pre-col AQC Der (%)	9	9	0.6465	0.0443	0.0435	0.0121	0.0451	6.73%	1.87%	6.98%	3.739
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	8	7	0.2322	0.0368	0.0056	0.0049	0.0075	2.56%	2.25%	3.41%	1.513
137.00	Tyrosine, Post-col Ninhydrin Der (%)	15	14	0.5385	0.0396	0.0402	0.0095	0.0414	7.49%	1.77%	7.70%	4.337
137.05	Tyrosine, Pre-col AQC Der (%)	9	7	0.6442	0.2884	0.0527	0.0042	0.0529	9.70%	0.77%	9.73%	12.64
138.00	Valine, Post-col Ninhydrin Der (%)	18	17	0.8191	0.0428	0.0420	0.0121	0.0437	5.12%	1.47%	5.33%	3.621
138.05	Valine, Pre-col AQC Der (%)	9	9	0.8231	0.0746	0.0742	0.0108	0.0750	9.01%	1.32%	9.11%	6.913
354.01	Decoquinatate, LC (UV or FL) (ppm)	11	10	31.90	1.405	0.8841	0.7091	1.133	2.80%	2.24%	3.59%	1.598
400.01	Water Activity, Aqualab chilled mirror (Units)	15	13	0.5757	0.0220	0.0145	0.0067	0.0160	2.52%	1.16%	2.77%	2.391

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