



AAFCO
Association of American Feed Control Officials



Animal Feed Scheme
Sheep feed, Medicated
Test Material Code # 202222

Method Summary Report
(Precision Report Follows)

Labs Reporting: 170
Methods Reported: 375
Issue Date : 03/31/2022

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO #fp Robust SD	Uncertainty (U) Robust	% RSD - Robust	Average Range (R-bar)	Thompson Horwitz %RSD
000.02	Urea, As protein, Colorimetric (%)	1	1	0.9000							
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	45	43	7.103	0.5654	7.067	0.2531	0.0482	3.58%	0.1139	2.98%
001.99	Loss on Drying, Miscellaneous (%)	19	19	6.869	0.5498	6.919	0.4458	0.1278	6.44%	0.0794	2.99%
001.00	Loss on Drying, Vac 95°C 5 hr (%)	4	4	6.940	0.4502	6.940	0.4502	0.2251	6.49%	0.1255	2.99%
001.03	Loss on Drying, Low temp. methods (%)	2	2	7.038	0.0743						
001.05	Loss on Drying, LECO (%)	1	1	6.905							
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	114	112	12.75	0.3555	12.76	0.2450	0.0289	1.92%	0.1487	2.73%
002.05	Protein, Crude, Copper, Boric Acid (%)	24	24	12.49	0.2563	12.51	0.1974	0.0504	1.58%	0.0664	2.73%
002.01	Protein, Crude, Auto Kjeh-Foss (%)	13	11	12.61	0.3317	12.67	0.1826	0.0688	1.44%	0.1072	2.73%
002.11	Protein, Crude, NIR (%)	4	4	12.80	2.046	12.80	2.046	1.023	15.99%	0.0875	2.73%
002.08	Protein, Crude, Cu/Ti (%)	2	2	12.62	0.2953						
002.00	Protein, Crude, Crude (%)	1	1	12.90							
002.02	Protein, Crude, Semiauto Autoanalyzer (%)	1	1	12.65							
002.04	Protein, Crude, Copper Catalyst (%)	1	1	12.32							
002.10	Protein, Crude, Block dig/distillation (%)	1	1	12.96							
002.99	Protein, Crude, Miscellaneous (%)	1	1	12.59							
003.14	Fat, Crude, Ankom (%)	51	50	2.866	0.3924	2.863	0.3227	0.0570	11.27%	0.0999	3.41%
003.10	Fat, Crude, Randall, Pet Ether (%)	25	24	2.882	0.2674	2.898	0.2576	0.0657	8.89%	0.1001	3.41%
003.06	Fat, Crude, Pet Ether (%)	16	16	2.915	0.2593	2.915	0.2941	0.0919	10.09%	0.1047	3.40%
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	10	10	2.986	0.4356	3.014	0.4259	0.1683	14.13%	0.1058	3.39%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	10	10	3.109	0.1906	3.110	0.1901	0.0751	6.11%	0.0671	3.37%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	6	6	3.111	0.5911	3.111	0.6703	0.3420	21.55%	0.1208	3.37%
003.11	Fat, Crude, NIR (%)	4	4	3.254	0.8135	3.254	0.8135	0.4067	25.00%	0.0825	3.35%
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	3	3	2.674	0.8380	2.674	0.8380	0.4838	31.34%	0.0793	3.45%
003.12	Fat, Crude, Hexane Ext (%)	3	3	3.037	0.1291	3.037	0.1291	0.0745	4.25%	0.1867	3.38%
003.99	Fat, Crude, Miscellaneous (%)	3	3	3.023	0.3398	3.023	0.3398	0.1962	11.24%	0.0933	3.39%
004.07	Fiber, Crude, ANKOM (%)	70	68	14.46	2.417	14.50	2.082	0.3156	14.36%	0.3638	2.63%
004.06	Fiber, Crude, Fibertec (%)	20	18	12.69	0.6421	12.69	0.6799	0.2003	5.36%	0.1224	2.73%
004.00	Fiber, Crude, Asbestos Free (%)	8	8	15.17	3.524	15.03	3.660	1.618	24.36%	0.7111	2.58%

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004.03	Fiber, Crude, Fritted Glass (%)	4	4	13.94	1.102	13.94	1.102	0.5512	7.91%	0.3700	2.68%
004.11	Fiber, Crude, NIR (%)	3	3	14.25	2.684	14.25	2.684	1.898	18.84%	0.6333	2.65%
004.99	Fiber, Crude, Miscellaneous (%)	2	2	12.14	0.8591						
005.00	Ash, 2h @ 600°C (%)	92	91	16.33	0.6817	16.37	0.5684	0.0745	3.47%	0.1390	2.47%
005.05	Ash, 3h @ 550°C (%)	21	19	16.75	0.6214	16.79	0.5330	0.1529	3.17%	0.1412	2.44%
005.99	Ash, Miscellaneous (%)	10	10	16.80	0.4057	16.80	0.4559	0.1802	2.71%	0.1768	2.44%
005.11	Ash, NIR (%)	5	4	11.34	4.340	11.34	4.340	2.170	38.27%	0.1850	2.78%
005.03	Ash, Microwave furnace (%)	2	2	15.70	1.697						
005.02	Ash, LECO (%)	1	1	17.36							
006.00	Total Sugars, As sucrose (%)	5	5	3.817	0.2500	3.817	0.2500	0.1118	6.55%	0.2189	3.27%
006.99	Total Sugars, Miscellaneous (%)	4	4	5.081	1.267	5.081	1.267	0.6335	24.93%	0.0625	3.13%
006.03	Total Sugars, Invert w/o Invrn (%)	1	1	2.900							
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	43	41	16.91	1.260	16.80	1.020	0.1991	6.07%	0.4106	2.44%
008.02	Fiber, Acid Detergent, Crucible (%)	14	14	17.56	1.255	17.44	0.6324	0.2113	3.63%	0.2760	2.39%
008.99	Fiber, Acid Detergent, Miscellaneous (%)	3	3	16.37	0.2521	16.37	0.2521	0.1455	1.54%	0.2240	2.47%
008.05	Fiber, Acid Detergent, Acid Detergent-Hach (%)	1	1	17.45							
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	40	39	31.93	1.949	32.07	1.563	0.3129	4.87%	0.5648	1.77%
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	14	14	33.85	2.678	33.42	0.9147	0.3056	2.74%	0.2870	1.73%
009.04	Fiber, Neutral Detergent, Neutral Det-No ENZ Pretreat (%)	2	2	35.17	1.927						
009.99	Fiber, Neutral Detergent, Miscellaneous (%)	2	2	30.03	2.365						
010.99	Moisture, Miscellaneous (%)	16	15	6.949	0.3054	6.955	0.2989	0.0965	4.30%	0.0811	2.99%
010.11	Moisture, NIR (%)	3	3	7.863	1.353	7.863	1.353	0.7813	17.21%	0.3000	2.93%
010.03	Moisture, Karl-Fischer (%)	2	2	6.253	0.1096						
011.01	Loss on Drying, HT, 135°C 2hr (%)	61	59	8.024	0.6008	8.014	0.4184	0.0681	5.22%	0.1388	2.92%
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	4	4	7.938	0.7830	7.938	0.7830	0.3915	9.86%	0.2763	2.93%
011.02	Loss on Drying, HT, 130°C for 2 hours (%)	2	2	8.008	0.4844						
012.00	Starch, Polarimetric (Ewers) (%)	13	13	15.97	1.375	16.20	0.8338	0.2891	5.15%	0.2722	2.48%
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	12	12	15.23	4.450	16.19	1.420	0.5124	8.77%	0.3187	2.49%
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	6	6	16.07	1.117	16.07	1.267	0.6464	7.88%	0.5113	2.49%
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	3	3	15.96	0.1639	15.96	0.1639	0.0946	1.03%	0.3375	2.50%
012.11	Starch, NIR (%)	3	3	16.81	2.301	16.81	2.301	1.329	13.69%	0.5267	2.44%
012.20	Starch, Dietary, Enzymatic-Colorimetric (%)	1	1	15.65							
013.00	Fat, Acid Pretreat, Acid hydrolysis (%)	18	18	3.666	0.4497	3.668	0.4898	0.1443	13.35%	0.1618	3.29%
013.02	Fat, Acid Pretreat, Mojonniier, Bak Ext (%)	14	13	4.318	0.4485	4.304	0.4207	0.1458	9.77%	0.1576	3.21%
013.13	Fat, Acid Pretreat, Ankom- Acid Hydrolysis (%)	11	10	4.253	1.233	4.110	1.030	0.4072	25.06%	0.1723	3.23%
013.10	Fat, Acid Pretreat, Soxtec-Acid Hydrolysis (%)	4	4	3.382	0.4154	3.382	0.4154	0.2077	12.28%	0.1160	3.33%
013.08	Fat, Base Pretreat, Roese-Gottlieb Modified (%)	1	1	3.305							
015.43	Aluminum, ICP, Microwave (ppm)	8	8	223.6	46.75	223.6	53.02	23.43	23.71%	7.390	7.09%
015.41	Aluminum, ICP, Dry ash (ppm)	6	6	217.3	20.91	217.3	23.71	12.10	10.91%	2.461	7.12%
015.53	Aluminum, ICP-MS, Microwave (ppm)	3	3	223.2	16.62	223.2	16.62	9.595	7.45%	3.716	7.09%

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015.42	Aluminum, ICP, Open vessel (ppm)	2	2	179.1	130.9						
017.42	Boron, ICP, Open vessel (ppm)	6	6	7.537	2.097	7.039	1.101	0.5620	15.64%	0.3455	11.93%
017.41	Boron, ICP, Dry ash (ppm)	5	5	7.786	1.836	7.786	1.836	0.8212	23.58%	0.6251	11.75%
017.43	Boron, ICP, Microwave (ppm)	6	4	8.636	2.149	8.636	2.149	0.1249	24.88%	0.5018	11.56%
017.53	Boron, ICP-MS, Microwave (ppm)	1	1	7.055							
019.43	Calcium, ICP, Microwave (%)	29	28	4.174	0.2470	4.151	0.2160	0.0510	5.20%	0.0783	3.23%
019.41	Calcium, ICP, Dry ash (%)	23	22	4.147	0.2224	4.140	0.2218	0.0591	5.36%	0.0852	3.23%
019.42	Calcium, ICP, Open vessel (%)	20	19	4.224	0.4039	4.265	0.3400	0.0975	7.97%	0.1029	3.22%
019.31	Calcium, AAS, Dry ash (%)	15	14	4.165	0.1695	4.175	0.1285	0.0429	3.08%	0.0432	3.23%
019.08	Calcium, EDTA (%)	11	10	4.183	0.1322	4.184	0.1460	0.0577	3.49%	0.0300	3.22%
019.00	Calcium, Ox-Mn04 Vol. (%)	7	6	4.279	0.1721	4.264	0.0467	0.0238	1.09%	0.0151	3.22%
019.52	Calcium, ICP-MS, Open vessel (%)	4	4	3.787	0.5404	3.787	0.5404	0.2702	14.27%	0.3914	3.27%
019.53	Calcium, ICP-MS, Microwave (%)	4	4	4.131	0.2978	4.131	0.2978	0.1489	7.21%	0.1684	3.23%
019.99	Calcium, Miscellaneous (%)	4	4	4.185	0.1835	4.185	0.1835	0.0917	4.38%	0.1250	3.22%
019.09	Calcium, Ion-selective electrode (%)	1	1	4.219							
019.32	Calcium, AAS, Open vessel (%)	1	1	4.000							
019.44	Calcium, ICP, Dry ash (%)	1	1	3.975							
021.43	Cobalt, ICP, Microwave (ppm)	8	8	7.401	0.7547	7.401	0.8558	0.3782	11.56%	0.2060	11.84%
021.41	Cobalt, ICP, Dry ash (ppm)	6	6	6.383	1.500	6.362	1.652	0.8431	25.97%	0.0752	12.11%
021.53	Cobalt, ICP-MS, Microwave (ppm)	6	6	7.494	1.295	7.494	1.469	0.7494	19.60%	0.2039	11.81%
021.42	Cobalt, ICP, Open vessel (ppm)	3	3	5.606	0.6459	5.606	0.6459	0.3729	11.52%	0.5433	12.34%
021.52	Cobalt, ICP-MS, Open vessel (ppm)	4	3	5.463	1.051	5.463	1.051	0.6068	19.24%	0.1667	12.39%
021.31	Cobalt, AAS, Dry ash (ppm)	2	2	8.472	0.2718						
022.43	Copper, ICP, Microwave (ppm)	22	21	13.37	2.474	13.04	1.598	0.4359	12.26%	0.7913	10.87%
022.42	Copper, ICP, Open vessel (ppm)	18	18	13.57	1.227	13.53	1.286	0.3789	9.51%	0.4501	10.81%
022.41	Copper, ICP, Dry ash (ppm)	16	16	12.80	3.783	12.27	2.300	0.7187	18.75%	0.5014	10.97%
022.31	Copper, AAS, Dry ash (ppm)	10	9	15.44	9.212	15.10	8.387	3.495	55.53%	0.7487	10.63%
022.53	Copper, ICP-MS, Microwave (ppm)	4	3	12.69	0.0796	12.69	0.0796	0.0563	0.63%	0.5303	10.91%
022.99	Copper, Miscellaneous (ppm)	3	3	10.92	0.6292	10.92	0.6292	0.3632	5.76%	0.5000	11.16%
022.33	Copper, AAS, Microwave (ppm)	2	2	7.750	10.96						
022.44	Copper, ICP, Dry ash (ppm)	2	2	15.46	4.179						
022.52	Copper, ICP-MS, Open vessel (ppm)	2	2	12.23	1.096						
024.52	Iodine, ICP-MS, Open vessel (ppm)	1	1	8.770							
025.43	Iron, ICP, Microwave (ppm)	26	25	584.8	62.31	584.4	49.85	12.46	8.53%	14.15	6.13%
025.41	Iron, ICP, Dry ash (ppm)	20	20	566.8	48.63	569.2	43.34	12.11	7.61%	7.307	6.16%
025.42	Iron, ICP, Open vessel (ppm)	18	17	466.2	131.0	480.9	107.9	32.70	22.43%	20.37	6.32%
025.31	Iron, AAS, Dry ash (ppm)	8	8	558.4	89.79	557.9	99.11	43.80	17.76%	9.934	6.18%
025.53	Iron, ICP-MS, Microwave (ppm)	4	3	552.1	8.373	552.1	8.373	4.834	1.52%	15.72	6.19%
025.99	Iron, Miscellaneous (ppm)	2	2	571.3	25.10						
025.33	Iron, AAS, Microwave (ppm)	1	1	0.0477							

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025.52	Iron, ICP-MS, Open vessel (ppm)	1	1	414.0							
027.43	Magnesium, ICP, Microwave (%)	25	25	0.5786	0.0429	0.5783	0.0364	0.0091	6.30%	0.0127	4.34%
027.42	Magnesium, ICP, Open vessel (%)	20	19	0.6015	0.0324	0.6045	0.0262	0.0075	4.34%	0.0102	4.31%
027.41	Magnesium, ICP, Dry ash (%)	19	17	0.5838	0.0416	0.5839	0.0465	0.0141	7.96%	0.0089	4.34%
027.31	Magnesium, AAS, Dry ash (%)	9	9	0.5815	0.0428	0.5881	0.0312	0.0130	5.30%	0.0057	4.33%
027.52	Magnesium, ICP-MS, Open vessel (%)	4	3	0.5819	0.0718	0.5819	0.0718	0.0415	12.34%	0.0199	4.34%
027.53	Magnesium, ICP-MS, Microwave (%)	4	3	0.5823	0.0023	0.5823	0.0023	0.0014	0.40%	0.0126	4.34%
027.99	Magnesium, Miscellaneous (%)	4	3	0.5667	0.0794	0.5667	0.0794	0.0459	14.02%	0.0133	4.36%
027.33	Magnesium, AAS, Microwave (%)	2	2	0.6047	0.0137						
027.32	Magnesium, AAS, Open vessel (%)	1	1	0.4850							
027.44	Magnesium, ICP, Dry ash (%)	1	1	0.5750							
028.43	Manganese, ICP, Microwave (ppm)	25	24	502.1	57.52	498.6	33.11	8.448	6.64%	12.32	6.28%
028.42	Manganese, ICP, Open vessel (ppm)	20	20	506.4	45.34	508.5	46.89	13.11	9.22%	13.69	6.26%
028.41	Manganese, ICP, Dry ash (ppm)	18	18	483.0	45.29	486.3	28.69	8.452	5.90%	9.358	6.30%
028.31	Manganese, AAS, Dry ash (ppm)	10	9	505.6	30.82	505.6	34.95	14.56	6.91%	7.874	6.27%
028.53	Manganese, ICP-MS, Microwave (ppm)	5	5	514.7	28.43	514.7	28.43	12.71	5.52%	22.51	6.25%
028.52	Manganese, ICP-MS, Open vessel (ppm)	3	3	456.1	66.27	456.1	66.27	38.26	14.53%	56.55	6.37%
028.99	Manganese, Miscellaneous (ppm)	3	3	483.0	56.47	483.0	56.47	32.60	11.69%	21.33	6.31%
028.44	Manganese, ICP, Dry ash (ppm)	2	2	473.2	20.21						
028.33	Manganese, AAS, Microwave (ppm)	1	1	0.0251							
030.01	Nitrate, Ion-selective electrode (%)	1	1	0.0079							
031.01	Phosphorus, Photometric (%)	32	31	1.194	0.0483	1.196	0.0489	0.0110	4.09%	0.0143	3.89%
031.43	Phosphorus, ICP, Microwave (%)	27	26	1.215	0.0720	1.217	0.0713	0.0175	5.86%	0.0288	3.88%
031.42	Phosphorus, ICP, Open vessel (%)	21	21	1.197	0.0826	1.201	0.0777	0.0212	6.47%	0.0397	3.89%
031.41	Phosphorus, ICP, Dry ash (%)	21	20	1.197	0.0593	1.198	0.0463	0.0129	3.86%	0.0163	3.89%
031.53	Phosphorus, ICP-MS, Microwave (%)	4	4	1.220	0.0740	1.220	0.0740	0.0370	6.06%	0.0077	3.88%
031.99	Phosphorus, Miscellaneous (%)	3	3	1.112	0.1793	1.112	0.1793	0.1035	16.12%	0.0100	3.94%
031.03	Phosphorus, Autoanalyzer (%)	2	2	1.248	0.0378						
031.44	Phosphorus, ICP, Dry ash (%)	2	2	1.185	0.0629						
031.52	Phosphorus, ICP-MS, Open vessel (%)	2	2	1.184	0.0387						
031.02	Phosphorus, GQMP (AOAC 935.13-Extraction) (%)	1	1	1.220							
031.06	Phosphorus, Hach Method (%)	1	1	1.130							
032.43	Potassium, ICP, Microwave (%)	26	26	0.9880	0.0514	0.9858	0.0388	0.0095	3.94%	0.0254	4.01%
032.42	Potassium, ICP, Open vessel (%)	20	20	0.9973	0.0765	0.9992	0.0519	0.0145	5.20%	0.0250	4.00%
032.41	Potassium, ICP, Dry ash (%)	19	19	1.006	0.2241	0.9631	0.0863	0.0248	8.96%	0.0328	4.02%
032.31	Potassium, AAS, Dry ash (%)	8	8	0.9183	0.0427	0.9183	0.0484	0.0214	5.27%	0.0182	4.05%
032.99	Potassium, Miscellaneous (%)	5	5	0.9520	0.0805	0.9520	0.0805	0.0360	8.46%	0.0064	4.03%
032.52	Potassium, ICP-MS, Open vessel (%)	4	4	0.9686	0.0338	0.9686	0.0338	0.0169	3.49%	0.0980	4.02%
032.53	Potassium, ICP-MS, Microwave (%)	4	3	0.9950	0.0926	0.9950	0.0926	0.0655	9.31%	0.0013	4.00%
032.08	Potassium, Ion-selective electrode (%)	1	1	0.9700							

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032.32	Potassium, AAS, Open vessel (%)	1	1	0.8450							
032.33	Potassium, AAS, Microwave (%)	1	1	0.4191							
032.44	Potassium, ICP, Dry ash (%)	1	1	0.9050							
033.01	Salt as chloride, Poten Cl (%)	33	33	2.329	0.0616	2.335	0.0501	0.0109	2.15%	0.0218	3.52%
033.00	Salt as chloride, Sol Cl (%)	16	16	2.121	0.4954	2.237	0.1404	0.0439	6.28%	0.0612	3.54%
033.99	Salt, Miscellaneous (%)	9	9	2.064	0.3536	2.093	0.3304	0.1377	15.79%	0.0452	3.58%
033.03	Salt as chloride, Quantab (%)	5	5	2.026	0.0780	2.026	0.0780	0.0349	3.85%	0.0120	3.60%
033.05	Salt as chloride, Ion Sel Electrode (%)	3	3	2.208	0.2421	2.208	0.2421	0.1712	10.96%	0.0100	3.55%
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	10	10	5.581	0.6632	5.549	0.6782	0.2681	12.22%	0.4194	12.36%
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	7	7	6.899	1.983	6.585	0.5135	0.2426	7.80%	0.4340	12.05%
034.04	Selenium, Total (Se), AA, Hydride (ppm)	4	4	4.689	0.9314	4.689	0.9314	0.4657	19.86%	0.0731	12.68%
034.52	Selenium, Total (Se), ICP-MS, Open vessel (ppm)	3	3	4.945	0.6637	4.945	0.6637	0.3832	13.42%	0.1700	12.58%
034.41	Selenium, Total (Se), ICP, Dry ash (ppm)	2	2	5.195	0.5233						
034.99	Selenium, Total (Se), Miscellaneous (ppm)	1	1	5.040							
034.42	Selenium, Total (Se), ICP, Open vessel (ppm)	1		10.00							
035.43	Sodium, ICP, Microwave (%)	26	25	0.6852	0.0512	0.6960	0.0304	0.0076	4.37%	0.0130	4.22%
035.41	Sodium, ICP, Dry ash (%)	20	19	0.6733	0.0578	0.6775	0.0356	0.0102	5.25%	0.0197	4.24%
035.42	Sodium, ICP, Open vessel (%)	19	19	0.7001	0.0391	0.7011	0.0420	0.0120	5.99%	0.0179	4.22%
035.31	Sodium, AAS, Dry ash (%)	10	10	0.6573	0.0509	0.6622	0.0455	0.0180	6.87%	0.0132	4.26%
035.53	Sodium, ICP-MS, Microwave (%)	4	4	0.7156	0.0779	0.7156	0.0779	0.0389	10.88%	0.0221	4.21%
035.52	Sodium, ICP-MS, Open vessel (%)	3	3	0.7188	0.0367	0.7188	0.0367	0.0212	5.11%	0.0748	4.20%
035.99	Sodium, Miscellaneous (%)	4	3	0.5117	0.3220	0.5117	0.3220	0.1859	62.92%	0.0100	4.42%
035.01	Sodium, Ion-selective electrode (%)	2	2	0.7540	0.1047						
035.32	Sodium, AAS, Open vessel (%)	1	1	0.5650							
035.33	Sodium, AAS, Microwave (%)	1	1	0.7189							
036.42	Sulfur, ICP, Open vessel (%)	23	23	0.3211	0.0239	0.3216	0.0157	0.0041	4.88%	0.0065	4.74%
036.43	Sulfur, ICP, Microwave (%)	20	20	0.3356	0.0218	0.3363	0.0230	0.0064	6.82%	0.0080	4.71%
036.04	Sulfur, LECO (%)	4	4	0.3111	0.0112	0.3111	0.0112	0.0056	3.59%	0.0098	4.77%
036.99	Sulfur, Miscellaneous (%)	2	2	0.2925	0.0318						
036.52	Sulfur, ICP-MS, Open vessel (%)	1	1	0.3318							
036.53	Sulfur, ICP-MS, Microwave (%)	1	1	0.2970							
037.43	Zinc, ICP, Microwave (ppm)	27	27	1,002	98.88	1,005	57.43	13.81	5.72%	35.31	5.65%
037.42	Zinc, ICP, Open vessel (ppm)	20	20	964.8	87.54	964.8	99.24	27.74	10.29%	21.20	5.69%
037.41	Zinc, ICP, Dry ash (ppm)	19	19	927.2	99.37	922.0	95.43	27.37	10.35%	18.70	5.73%
037.31	Zinc, AAS, Dry ash (ppm)	10	9	881.5	253.8	953.3	62.20	25.92	6.52%	12.32	5.70%
037.53	Zinc, ICP-MS, Microwave (ppm)	4	4	938.9	64.42	938.9	64.42	32.21	6.86%	45.77	5.71%
037.99	Zinc, Miscellaneous (ppm)	4	4	900.1	140.8	900.1	140.8	70.42	15.65%	21.28	5.75%
037.52	Zinc, ICP-MS, Open vessel (ppm)	3	3	677.8	588.9	677.8	588.9	340.0	86.90%	11.99	6.00%
037.33	Zinc, AAS, Microwave (ppm)	2	2	507.6	717.6						
037.44	Zinc, ICP, Dry ash (ppm)	2	2	890.3	15.21						

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038.43	Molybdenum, ICP, Microwave (ppm)	8	8	7.592	1.314	7.592	1.490	0.6584	19.62%	0.2878	11.79%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	5	5	9.060	0.7104	9.060	0.7104	0.3177	7.84%	0.5230	11.48%
038.42	Molybdenum, ICP, Open vessel (ppm)	4	4	7.850	0.7422	7.850	0.7422	0.3711	9.46%	0.1853	11.73%
038.41	Molybdenum, ICP, Dry ash (ppm)	3	3	7.341	0.7452	7.341	0.7452	0.4303	10.15%	0.1781	11.85%
038.52	Molybdenum, ICP-MS, Open vessel (ppm)	2	2	7.530	0.3606						
040.53	Barium, ICP-MS, Microwave (ppm)	2	2	16.85	0.9534						
040.52	Barium, ICP-MS, Open vessel (ppm)	1	1	15.25							
041.53	Vanadium, ICP-MS, Microwave (ppm)	2	2	3.823	0.0449						
042.00	Chloride, Titrimetric (%)	2	2	1.413	0.0106						
042.01	Chloride, Ion-selective electrode (%)	1	1	1.470							
042.99	Chloride, Miscellaneous (%)	1	1	1.490							
101.99	Choline Chloride, Miscellaneous (ppm)	1	1	1,240							
102.01	Niacin, Microbiological (ppm)	1	1	76.35							
103.01	Pantothenic Acid, Microbiological (ppm)	1	1	13.05							
104.00	Riboflavin, Fluorometric (ppm)	1	1	5.990							
105.01	Thiamine, Fluorometer (ppm)	1	1	3.660							
106.02	Vitamin A, LC (KU / kg)	11	11	48.70	12.08	48.70	13.70	5.163	28.13%	5.725	
106.00	Vitamin A, Color (KU / kg)	1	1	40.65							
106.01	Vitamin A, UV (KU / kg)	1	1	50.85							
107.00	Vitamin B12, Microbiological (ppb)	1	1	23.55							
108.02	Vitamin D3, LC (KU / kg)	4	4	4.103	0.5559	4.103	0.5559	0.2780	13.55%	0.3700	
108.99	Vitamin D3, Miscellaneous (KU / kg)	1	1	5.390							
109.02	Vitamin E, LC (IU / kg)	10	10	234.8	40.89	231.6	28.98	11.46	12.51%	16.30	
109.99	Vitamin E, Miscellaneous (IU / kg)	2	2	260.1	8.668						
111.00	Vitamin C, Phosphorylated, LC (ppm)	1	1	4.400							
112.01	Pyridoxine, LC (µg / g)	1	1	4.410							
113.01	Folic Acid, Micro (ppm)	1	1	1.070							
114.01	Biotin, Microbiological (ppm)	1	1	0.2405							
115.00	Non Protein N (NPN), Urea + Am, Urease method (%)	1	1	1.090							
115.99	Non Protein N (NPN), Miscellaneous (%)	1	1	0.6349							
118.99	Peroxide value, Miscellaneous (meq/kg)	1	1	4.850							
120.00	Alanine, Post-col Ninhydrin Der (%)	16	15	0.5832	0.0193	0.5858	0.0152	0.0049	2.59%	0.0063	4.33%
120.05	Alanine, Pre-col AQC Der (%)	7	7	0.5893	0.0510	0.5885	0.0560	0.0264	9.51%	0.0209	4.33%
120.99	Alanine, Miscellaneous (%)	2	2	0.5450	0.0707						
120.01	Alanine, Pre-col OPA Der (%)	1	1	0.6115							
120.02	Alanine, Post-col OPA Der (%)	1	1	0.6380							
121.00	Arginine, Post-col Ninhydrin Der (%)	16	15	0.6856	0.0295	0.6886	0.0262	0.0085	3.81%	0.0085	4.23%
121.05	Arginine, Pre-col AQC Der (%)	7	6	0.6759	0.0316	0.6759	0.0358	0.0183	5.30%	0.0095	4.24%
121.99	Arginine, Miscellaneous (%)	2	2	0.6700	0.0283						
121.01	Arginine, Pre-col OPA Der (%)	1	1	0.7025							

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121.02	Arginine, Post-col OPA Der (%)	1	1	0.6790							
122.00	Aspartic, Post-col Ninhydrin Der (%)	16	16	0.8391	0.0313	0.8381	0.0316	0.0099	3.77%	0.0120	4.11%
122.05	Aspartic, Pre-col AQC Der (%)	7	6	0.8678	0.0595	0.8678	0.0674	0.0344	7.77%	0.0190	4.09%
122.99	Aspartic, Miscellaneous (%)	2	2	0.9000	0.0990						
122.01	Aspartic, Pre-col OPA Der (%)	1	1	0.8515							
122.02	Aspartic, Post-col OPA Der (%)	1	1	0.8450							
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin (%)	16	15	0.2456	0.0252	0.2412	0.0178	0.0057	7.39%	0.0065	4.95%
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	6	5	0.2294	0.0618	0.2294	0.0618	0.0346	26.95%	0.0026	4.99%
124.99	Cysteine/Cystine, Miscellaneous (%)	2	2	0.2200	0.0000						
124.01	Cysteine/Cystine, PAO Pre-col OPA Der (%)	1	1	0.1845							
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	1	1	0.2630							
125.00	Glutamic, Post-col Ninhydrin Der (%)	16	15	2.004	0.0448	2.001	0.0449	0.0145	2.24%	0.0197	3.60%
125.05	Glutamic, Pre-col AQC Der (%)	7	7	2.017	0.2141	2.017	0.2428	0.1147	12.04%	0.0977	3.60%
125.99	Glutamic, Miscellaneous (%)	2	2	2.138	0.2298						
125.01	Glutamic, Pre-col OPA Der (%)	1	1	2.040							
125.02	Glutamic, Post-col OPA Der (%)	1	1	2.000							
126.00	Glycine, Post-col Ninhydrin Der (%)	16	15	0.6037	0.0171	0.6040	0.0179	0.0058	2.96%	0.0056	4.31%
126.05	Glycine, Pre-col AQC Der (%)	7	7	0.6230	0.0597	0.6072	0.0243	0.0115	4.00%	0.0277	4.31%
126.99	Glycine, Miscellaneous (%)	2	2	0.4125	0.2864						
126.01	Glycine, Pre-col OPA Der (%)	1	1	0.6130							
126.02	Glycine, Post-col OPA Der (%)	1	1	0.6315							
127.00	Histidine, Post-col Ninhydrin Der (%)	16	16	0.3073	0.0144	0.3076	0.0157	0.0049	5.11%	0.0088	4.78%
127.05	Histidine, Pre-col AQC Der (%)	7	7	0.3127	0.0228	0.3127	0.0259	0.0122	8.28%	0.0231	4.76%
127.99	Histidine, Miscellaneous (%)	2	2	0.2600	0.0707						
127.01	Histidine, Pre-col OPA Der (%)	1	1	0.2810							
127.02	Histidine, Post-col OPA Der (%)	1	1	0.3015							
128.00	Isoleucine, Post-col Ninhydrin Der (%)	16	16	0.3623	0.0229	0.3620	0.0253	0.0079	7.00%	0.0090	4.66%
128.05	Isoleucine, Pre-col AQC Der (%)	6	6	0.3963	0.0267	0.3963	0.0302	0.0154	7.63%	0.0108	4.60%
128.99	Isoleucine, Miscellaneous (%)	3	3	0.3450	0.0350	0.3450	0.0350	0.0247	10.14%	0.0033	4.69%
128.01	Isoleucine, Pre-col OPA Der (%)	1	1	0.3435							
128.02	Isoleucine, Post-col OPA Der (%)	1	1	0.3740							
129.00	Leucine, Post-col Ninhydrin Der (%)	16	15	0.7694	0.0213	0.7697	0.0234	0.0076	3.04%	0.0094	4.16%
129.05	Leucine, Pre-col AQC Der (%)	6	6	0.7954	0.0384	0.7916	0.0344	0.0175	4.34%	0.0228	4.14%
129.99	Leucine, Miscellaneous (%)	3	3	0.7400	0.0507	0.7400	0.0507	0.0293	6.86%	0.0333	4.19%
129.01	Leucine, Pre-col OPA Der (%)	1	1	0.7760							
129.02	Leucine, Post-col OPA Der (%)	1	1	0.7805							
130.00	L-Lysine, Post-col Ninhydrin Der (%)	17	17	0.4639	0.0203	0.4640	0.0219	0.0066	4.72%	0.0108	4.49%
130.05	L-Lysine, Pre-col AQC Der (%)	6	6	0.4792	0.0333	0.4694	0.0121	0.0062	2.58%	0.0120	4.48%
130.99	L-Lysine, Miscellaneous (%)	3	3	0.4600	0.0950	0.4600	0.0950	0.0548	20.65%	0.0400	4.50%
130.01	L-Lysine, Pre-col OPA Der (%)	1	1	0.4730							

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130.02	L-Lysine, Post-col OPA Der (%)	1	1	0.5020							
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	16	15	0.1612	0.0121	0.1615	0.0130	0.0042	8.03%	0.0048	5.26%
131.05	Methionine, PAO Pre-col AQC Der (%)	6	6	0.1549	0.0342	0.1549	0.0388	0.0198	25.03%	0.0051	5.30%
131.99	Methionine, Miscellaneous (%)	3	3	0.2400	0.0627	0.2400	0.0627	0.0362	26.10%	0.0133	4.96%
131.01	Methionine, PAO Pre-col OPA Der (%)	1	1	0.1860							
131.02	Methionine, PAO Post-col OPA Der (%)	1	1	0.1565							
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	16	15	0.4482	0.0303	0.4450	0.0227	0.0073	5.10%	0.0087	4.52%
132.05	Phenylalanine, Pre-col AQC Der (%)	6	6	0.4402	0.0208	0.4402	0.0236	0.0120	5.36%	0.0153	4.53%
132.99	Phenylalanine, Miscellaneous (%)	3	3	0.4617	0.0503	0.4617	0.0503	0.0356	10.90%	0.0567	4.49%
132.01	Phenylalanine, Pre-col OPA Der (%)	1	1	0.4570							
132.02	Phenylalanine, Post-col OPA Der (%)	1	1	0.4415							
133.00	Proline, Post-col Ninhydrin Der (%)	16	15	0.7379	0.0576	0.7342	0.0562	0.0181	7.65%	0.0159	4.19%
133.05	Proline, Pre-col AQC Der (%)	7	7	0.7672	0.0612	0.7672	0.0694	0.0328	9.05%	0.0253	4.16%
133.99	Proline, Miscellaneous (%)	2	2	0.8150	0.1273						
133.04	Proline, Pre-col FMOC Der (%)	1	1	0.3410							
134.00	Serine, Post-col Ninhydrin Der (%)	16	15	0.5090	0.0299	0.5074	0.0288	0.0093	5.68%	0.0057	4.43%
134.05	Serine, Pre-col AQC Der (%)	7	6	0.4955	0.0360	0.4955	0.0408	0.0208	8.23%	0.0103	4.45%
134.99	Serine, Miscellaneous (%)	2	2	0.5200	0.0000						
134.01	Serine, Pre-col OPA Der (%)	1	1	0.5500							
134.02	Serine, Post-col OPA Der (%)	1	1	0.4780							
135.00	Threonine, Post-col Ninhydrin Der (%)	16	16	0.3953	0.0185	0.3953	0.0210	0.0066	5.31%	0.0085	4.60%
135.05	Threonine, Pre-col AQC Der (%)	7	6	0.3836	0.0195	0.3836	0.0221	0.0113	5.77%	0.0105	4.62%
135.99	Threonine, Miscellaneous (%)	2	2	0.4325	0.0601						
135.01	Threonine, Pre-col OPA Der (%)	1	1	0.4275							
135.02	Threonine, Post-col OPA Der (%)	1	1	0.3820							
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	5	5	0.1619	0.0385	0.1619	0.0385	0.0172	23.74%	0.0039	5.26%
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	5	4	0.1699	0.0104	0.1699	0.0104	0.0052	6.10%	0.0013	5.22%
136.99	Tryptophan, Miscellaneous (%)	3	3	0.1600	0.1389	0.1600	0.1389	0.0982	86.83%	0.0067	5.27%
136.01	Tryptophan, Alka-Hydrol Rev Phase LC UV (%)	1	1	0.1650							
136.02	Tryptophan, Alka-Hydrol Post-col OPA De (%)	1	1	0.1650							
136.05	Tryptophan, Pre-col AQC Der (%)	1	1	0.1670							
137.00	Tyrosine, Post-col Ninhydrin Der (%)	13	13	0.3349	0.0515	0.3349	0.0584	0.0203	17.45%	0.0120	4.72%
137.05	Tyrosine, Pre-col AQC Der (%)	6	6	0.3488	0.0385	0.3515	0.0372	0.0190	10.58%	0.0143	4.68%
137.99	Tyrosine, Miscellaneous (%)	3	3	0.3400	0.0391	0.3400	0.0391	0.0276	11.49%	0.0333	4.70%
137.01	Tyrosine, Pre-col OPA Der (%)	1	1	0.3335							
137.02	Tyrosine, Post-col OPA Der (%)	1	1	0.3120							
138.00	Valine, Post-col Ninhydrin Der (%)	16	16	0.5299	0.0238	0.5309	0.0249	0.0078	4.69%	0.0140	4.40%
138.05	Valine, Pre-col AQC Der (%)	6	6	0.5409	0.0453	0.5377	0.0435	0.0222	8.10%	0.0192	4.39%
138.99	Valine, Miscellaneous (%)	3	3	0.5117	0.1041	0.5117	0.1041	0.0601	20.34%	0.0167	4.42%
138.01	Valine, Pre-col OPA Der (%)	1	1	0.5035							

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138.02	Valine, Post-col OPA Der (%)	1	1	0.5410							
139.00	Taurine, Post-col Ninhydrin Der (%)	2	2	0.1055	0.0912						
139.05	Taurine, Pre-col AQC Der (%)	1	1	0.0170							
139.99	Taurine, Miscellaneous (%)	2	1	0.0100							
139.02	Taurine, Post-col OPA Der (%)	1		0.0100							
160.99	Fructose, Miscellaneous (%)	2	2	0.2425	0.1379						
160.10	Fructose, HPAEC PAD (%)	1	1	0.3000							
161.10	Galactose, HPAEC PAD (%)	1		0.0000							
162.99	Glucose, Miscellaneous (%)	2	2	0.3680	0.1513						
162.10	Glucose, HPAEC PAD (%)	1	1	0.3400							
163.10	Lactose, HPAEC PAD (%)	1		0.0000							
163.99	Lactose, Miscellaneous (%)	2		0.0000							
164.10	Maltose, HPAEC PAD (%)	1	1	0.2550							
164.99	Maltose, Miscellaneous (%)	1	1	0.2200							
165.99	Sucrose, Miscellaneous (%)	3	3	1.322	0.1250	1.322	0.1250	0.0722	9.46%	0.0233	3.84%
165.10	Sucrose, HPAEC PAD (%)	1	1	1.365							
166.99	Raffinose, Miscellaneous (%)	2	2	0.4608	0.0364						
166.10	Raffinose, HPAEC PAD (%)	1	1	0.7000							
167.10	Stachyose, HPAEC PAD (%)	1	1	0.3050							
167.99	Stachyose, Miscellaneous (%)	2	1	0.0530							
354.01	Decoquinatate, LC (UV or FL) (ppm)	5	5	308.8	18.41	308.8	18.41	8.232	5.96%	12.08	6.75%
354.02	Decoquinatate, LC (ppm)	4	3	310.8	17.61	310.8	17.61	10.17	5.67%	3.987	6.74%
354.04	Decoquinatate, LC-MS/MS (ppm)	3	3	221.5	49.87	221.5	49.87	28.79	22.52%	10.31	7.10%
400.01	Water Activity, Aqualab chilled mirror (Units)	14	13	0.3534	0.0579	0.3534	0.0466	0.0162	13.19%	0.0079	
400.99	Water Activity, Miscellaneous (Units)	3	3	0.3333	0.0141	0.3333	0.0141	0.0082	4.24%	0.0174	
413.01	Starch, Resistant, Enzymatic-Colorimetric (%)	1	1	21.58							
516.53	Arsenic, Total (As), ICP-MS, Microwave (ppm)	6	6	0.1533	0.0601	0.1643	0.0406	0.0207	24.73%	0.0059	20.99%
516.52	Arsenic, Total (As), ICP-MS, Open vessel (ppm)	2	2	0.1693	0.0152						
516.00	Arsenic, Total (As), AA, Hydride (ppm)	1	1	0.1285							
516.43	Arsenic, Total (As), ICP, Microwave (ppm)	2	1	0.0850							
518.53	Cadmium, ICP-MS, Microwave (ppm)	6	6	0.1717	0.0214	0.1717	0.0243	0.0124	14.14%	0.0067	20.85%
518.43	Cadmium, ICP, Microwave (ppm)	3	3	0.1808	0.0816	0.1808	0.0816	0.0471	45.14%	0.0136	20.69%
518.41	Cadmium, ICP, Dry ash (ppm)	2	2	0.1264	0.0112						
518.52	Cadmium, ICP-MS, Open vessel (ppm)	2	2	0.1615	0.0050						
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	6	6	14.42	4.652	14.42	5.275	2.692	36.57%	0.4962	10.71%
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	4	3	16.78	3.355	16.78	3.355	1.937	19.99%	0.0831	10.46%
520.41	Chromium, Total (Cr), ICP, Dry ash (ppm)	2	2	8.663	1.985						
520.42	Chromium, Total (Cr), ICP, Open vessel (ppm)	2	2	14.52	0.9680						
520.52	Chromium, Total (Cr), ICP-MS, Open vessel (ppm)	1	1	6.977							
526.53	Lead, ICP-MS, Microwave (ppm)	6	5	0.3408	0.0193	0.3408	0.0193	0.0108	5.65%	0.0085	18.81%

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO ffp Robust SD	Uncertainty (U) - Robust	% RSD - Robust	Average Range (R-bar)	Thompson Horwitz %RSD
526.41	Lead, ICP, Dry ash (ppm)	2	2	0.2056	0.0029						
526.52	Lead, ICP-MS, Open vessel (ppm)	2	2	0.3620	0.0170						
526.43	Lead, ICP, Microwave (ppm)	2	1	0.3451							
529.99	Mercury, Miscellaneous (ppb)	4	2	2.865	1.605	2.865	1.605			2.434	22.00%
539.53	Nickel, ICP-MS, Microwave (ppm)	4	4	9.571	0.8534	9.571	0.8534	0.4267	8.92%	0.3684	11.39%
539.43	Nickel, ICP, Microwave (ppm)	3	3	8.933	1.862	8.933	1.862	1.075	20.85%	0.1428	11.51%
539.41	Nickel, ICP, Dry ash (ppm)	2	2	6.433	0.8318						
539.52	Nickel, ICP-MS, Open vessel (ppm)	1	1	4.553							
710.99	Lauric Acid (12:0), Miscellaneous (% (w/w))	1		0.0050							
714.99	Myristic Acid (14:0), Miscellaneous (% (w/w))	1	1	0.0069							
716.99	Palmitic Acid (16:0), Miscellaneous (% (w/w))	1	1	0.5439							
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (% (w/w))	1	1	0.0080							
722.99	Stearic Acid (18:0), Miscellaneous (% (w/w))	1	1	0.0572							
724.99	Oleic Acid (9c-18:1), Miscellaneous (% (w/w))	1	1	0.5571							
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (% (w/w))	1	1	1.553							
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (% (w/w))	1	1	0.1095							
730.99	Arachidic Acid (20:0), Miscellaneous (% (w/w))	1	1	0.0095							
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))	1		0.0050							
742.99	Behenic Acid (22:0), Miscellaneous (% (w/w))	1	1	0.0085							
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 (% (w/w))	1		0.0050							
748.99	Lignoceric Acid (24:0), Miscellaneous (% (w/w))	1	1	0.0117							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (% (w/w))	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	2.883							

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

Sheep feed, Medicated

Test Material Code # 202222

Method Precision Report

Methods Reported: 129

Labs Reporting: 170

Issue Date : 03/31/2022

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 (%)	45	40	7.103	0.5654	0.3121	0.0967	0.3268	4.41%	1.37%	4.61%	3.378
001.99	Loss on Drying, Miscellaneous (%)	19	18	6.869	0.5498	0.3771	0.0737	0.3842	5.42%	1.06%	5.52%	5.210
002.01	Protein, Crude, Auto Kjeh-Foss (%)	13	9	12.61	0.3317	0.1331	0.0904	0.1609	1.05%	0.71%	1.27%	1.780
002.05	Protein, Crude, Copper, Boric Acid (%)	24	23	12.49	0.2563	0.1731	0.0615	0.1837	1.38%	0.49%	1.47%	2.985
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	114	107	12.75	0.3555	0.2586	0.1260	0.2877	2.03%	0.99%	2.25%	2.283
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	10	10	2.986	0.4356	0.4302	0.0964	0.4409	14.41%	3.23%	14.77%	4.576
003.06	Fat, Crude, Pet Ether (%)	16	16	2.915	0.2593	0.2494	0.1003	0.2689	8.56%	3.44%	9.22%	2.680
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	10	10	3.109	0.1906	0.1842	0.0693	0.1968	5.93%	2.23%	6.33%	2.840
003.10	Fat, Crude, Randall, Pet Ether (%)	25	22	2.882	0.2674	0.1960	0.0877	0.2147	6.69%	2.99%	7.32%	2.449
003.13	Fat, Crude, Randall, Hexane Ext. (%)	6	6	3.111	0.5911	0.5860	0.1088	0.5961	18.84%	3.50%	19.16%	5.477
003.14	Fat, Crude, Ankom (%)	51	47	2.866	0.3924	0.3427	0.0804	0.3520	12.10%	2.84%	12.42%	4.377
004.00	Fiber, Crude, Asbestos Free (%)	8	8	15.17	3.524	3.491	0.6711	3.555	23.01%	4.42%	23.43%	5.298
004.06	Fiber, Crude, Fibertec (%)	20	18	12.69	0.6421	0.6357	0.1279	0.6484	5.01%	1.01%	5.11%	5.071
004.07	Fiber, Crude, ANKOM (%)	70	65	14.46	2.417	2.014	0.3178	2.039	13.80%	2.18%	13.97%	6.416
005.00	Ash, 2h @ 600°C (%)	92	86	16.33	0.6817	0.6098	0.1192	0.6213	3.73%	0.73%	3.80%	5.214
005.05	Ash, 3h @ 550°C (%)	21	17	16.75	0.6214	0.4318	0.1046	0.4443	2.55%	0.62%	2.63%	4.248
005.99	Ash, Miscellaneous (%)	10	10	16.80	0.4057	0.3912	0.1523	0.4198	2.33%	0.91%	2.50%	2.757
006.00	Total Sugars, As sucrose (%)	5	5	3.817	0.2500	0.2053	0.2017	0.2878	5.38%	5.29%	7.54%	1.427
008.02	Fiber, Acid Detergent, Crucible (%)	14	13	17.56	1.255	0.8746	0.2681	0.9148	5.05%	1.55%	5.28%	3.412
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	43	39	16.91	1.260	0.8437	0.3383	0.9089	5.04%	2.02%	5.43%	2.687
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	14	12	33.85	2.678	1.071	0.2064	1.091	3.23%	0.62%	3.29%	5.286
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	40	37	31.93	1.949	1.548	0.4955	1.625	4.84%	1.55%	5.08%	3.280
010.99	Moisture, Miscellaneous (%)	16	15	6.949	0.3054	0.3004	0.0781	0.3104	4.32%	1.12%	4.47%	3.974
011.01	Loss on Drying, HT, 135°C 2hr (%)	61	55	8.024	0.6008	0.5162	0.0960	0.5250	6.45%	1.20%	6.56%	5.471
012.00	Starch, Polarimetric (Ewers) (%)	13	12	15.97	1.375	0.6425	0.2142	0.6773	3.94%	1.31%	4.15%	3.162
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	12	10	15.23	4.450	1.331	0.2303	1.351	8.08%	1.40%	8.20%	5.864
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	6	6	16.07	1.117	1.066	0.4710	1.166	6.64%	2.93%	7.26%	2.475
013.00	Fat, Acid Pretreat, Acid hydrolysis (%)	18	16	3.666	0.4497	0.4698	0.0956	0.4794	12.89%	2.62%	13.15%	5.014
013.02	Fat, Acid Pretreat, Mojonnier, Bak Ext (%)	14	13	4.318	0.4485	0.4379	0.1374	0.4589	10.14%	3.18%	10.63%	3.339
013.13	Fat, Acid Pretreat, Ankom- Acid Hydrolysis (%)	11	8	4.253	1.233	0.7958	0.1148	0.8040	20.54%	2.96%	20.75%	7.003
015.41	Aluminum, ICP, Dry ash (ppm)	6	6	217.3	20.91	20.86	2.082	20.96	9.60%	0.96%	9.65%	10.07
015.43	Aluminum, ICP, Microwave (ppm)	8	7	223.6	46.75	40.94	3.872	41.12	19.14%	1.81%	19.22%	10.62
017.41	Boron, ICP, Dry ash (ppm)	5	5	7.786	1.836	1.795	0.5456	1.876	23.06%	7.01%	24.10%	3.439
017.42	Boron, ICP, Open vessel (ppm)	6	5	7.537	2.097	0.5524	0.3320	0.6445	8.23%	4.95%	9.61%	1.941
019.00	Calcium, Ox-Mn04 Vol. (%)	7	6	4.279	0.1721	0.1718	0.0125	0.1723	4.02%	0.29%	4.03%	13.76
019.08	Calcium, EDTA (%)	11	10	4.183	0.1322	0.1308	0.0269	0.1335	3.13%	0.64%	3.19%	4.973

Method Code	Analyte and Method	Total # Labs Submitting	# Labs used in Precision Calcs	Precision Mean	Precision SD	Between Labs sL	Within Labs sr	Reproducibility sR	Between Labs %RSD	Within Labs %rsd	Reproducibility %RSD	sR/sr
019.31	Calcium, AAS, Dry ash (%)	15	12	4.165	0.1695	0.1249	0.0287	0.1282	2.98%	0.68%	3.06%	4.472
019.41	Calcium, ICP, Dry ash (%)	23	21	4.147	0.2224	0.2219	0.0723	0.2334	5.35%	1.74%	5.63%	3.227
019.42	Calcium, ICP, Open vessel (%)	20	17	4.224	0.4039	0.2788	0.0838	0.2912	6.52%	1.96%	6.81%	3.475
019.43	Calcium, ICP, Microwave (%)	29	26	4.174	0.2470	0.1695	0.0582	0.1792	4.11%	1.41%	4.34%	3.079
021.41	Cobalt, ICP, Dry ash (ppm)	6	6	6.383	1.500	1.499	0.0755	1.501	23.48%	1.18%	23.51%	19.88
021.43	Cobalt, ICP, Microwave (ppm)	8	8	7.401	0.7547	0.7395	0.2130	0.7696	9.99%	2.88%	10.40%	3.613
021.53	Cobalt, ICP-MS, Microwave (ppm)	6	6	7.494	1.295	1.290	0.1639	1.300	17.21%	2.19%	17.35%	7.932
022.31	Copper, AAS, Dry ash (ppm)	10	9	15.44	9.212	9.193	0.8221	9.230	59.54%	5.32%	59.78%	11.23
022.41	Copper, ICP, Dry ash (ppm)	16	14	12.80	3.783	2.688	0.3911	2.717	22.35%	3.25%	22.58%	6.946
022.42	Copper, ICP, Open vessel (ppm)	18	18	13.57	1.227	1.195	0.3913	1.257	8.81%	2.88%	9.27%	3.213
022.43	Copper, ICP, Microwave (ppm)	22	20	13.37	2.474	1.525	0.7263	1.689	11.78%	5.61%	13.04%	2.326
025.31	Iron, AAS, Dry ash (ppm)	8	8	558.4	89.79	89.57	8.726	90.00	16.04%	1.56%	16.12%	10.31
025.41	Iron, ICP, Dry ash (ppm)	20	19	566.8	48.63	38.11	6.424	38.65	6.64%	1.12%	6.74%	6.016
025.42	Iron, ICP, Open vessel (ppm)	18	15	466.2	131.0	93.95	14.17	95.02	19.15%	2.89%	19.37%	6.705
025.43	Iron, ICP, Microwave (ppm)	26	23	584.8	62.31	50.51	11.81	51.87	8.50%	1.99%	8.72%	4.393
027.31	Magnesium, AAS, Dry ash (%)	9	8	0.5815	0.0428	0.0225	0.0039	0.0228	3.78%	0.66%	3.84%	5.820
027.41	Magnesium, ICP, Dry ash (%)	19	16	0.5838	0.0416	0.0380	0.0062	0.0385	6.45%	1.05%	6.54%	6.223
027.42	Magnesium, ICP, Open vessel (%)	20	17	0.6015	0.0324	0.0208	0.0079	0.0222	3.41%	1.30%	3.65%	2.813
027.43	Magnesium, ICP, Microwave (%)	25	23	0.5786	0.0429	0.0285	0.0093	0.0299	4.92%	1.60%	5.18%	3.228
028.31	Manganese, AAS, Dry ash (ppm)	10	9	505.6	30.82	30.36	7.492	31.27	6.01%	1.48%	6.19%	4.174
028.41	Manganese, ICP, Dry ash (ppm)	18	16	483.0	45.29	28.93	6.365	29.62	5.87%	1.29%	6.01%	4.654
028.42	Manganese, ICP, Open vessel (ppm)	20	20	506.4	45.34	44.43	12.82	46.24	8.77%	2.53%	9.13%	3.606
028.43	Manganese, ICP, Microwave (ppm)	25	22	502.1	57.52	36.29	8.538	37.28	7.24%	1.70%	7.44%	4.367
028.53	Manganese, ICP-MS, Microwave (ppm)	5	5	514.7	28.43	24.36	20.72	31.98	4.73%	4.03%	6.21%	1.544
031.01	Phosphorus, Photometric (%)	32	30	1.194	0.0483	0.0415	0.0143	0.0439	3.46%	1.19%	3.66%	3.067
031.41	Phosphorus, ICP, Dry ash (%)	21	20	1.197	0.0593	0.0583	0.0148	0.0602	4.87%	1.24%	5.03%	4.067
031.42	Phosphorus, ICP, Open vessel (%)	21	21	1.197	0.0826	0.0781	0.0381	0.0868	6.52%	3.18%	7.25%	2.281
031.43	Phosphorus, ICP, Microwave (%)	27	25	1.215	0.0720	0.0606	0.0249	0.0655	4.96%	2.04%	5.36%	2.633
032.31	Potassium, AAS, Dry ash (%)	8	8	0.9183	0.0427	0.0415	0.0142	0.0439	4.52%	1.54%	4.78%	3.096
032.41	Potassium, ICP, Dry ash (%)	19	18	1.006	0.2241	0.0757	0.0328	0.0825	7.91%	3.43%	8.62%	2.516
032.42	Potassium, ICP, Open vessel (%)	20	18	0.9973	0.0765	0.0571	0.0189	0.0602	5.82%	1.93%	6.13%	3.180
032.43	Potassium, ICP, Microwave (%)	26	24	0.9880	0.0514	0.0381	0.0206	0.0433	3.85%	2.08%	4.37%	2.102
032.99	Potassium, Miscellaneous (%)	5	5	0.9520	0.0805	0.0804	0.0059	0.0806	8.45%	0.62%	8.47%	13.75
033.00	Salt as chloride, Sol Cl (%)	16	15	2.121	0.4954	0.1342	0.0621	0.1479	5.99%	2.77%	6.60%	2.382
033.01	Salt as chloride, Poten Cl (%)	33	32	2.329	0.0616	0.0423	0.0211	0.0473	1.81%	0.90%	2.02%	2.236
033.03	Salt as chloride, Quantab (%)	5	5	2.026	0.0780	0.0773	0.0141	0.0786	3.82%	0.70%	3.88%	5.559
033.99	Salt, Miscellaneous (%)	9	9	2.064	0.3536	0.3523	0.0415	0.3548	17.07%	2.01%	17.19%	8.554
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	7	6	6.899	1.983	0.8880	0.2889	0.9338	14.28%	4.65%	15.02%	3.232
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	10	10	5.581	0.6632	0.6149	0.3517	0.7083	11.02%	6.30%	12.69%	2.014
035.31	Sodium, AAS, Dry ash (%)	10	8	0.6573	0.0509	0.0355	0.0083	0.0365	5.32%	1.25%	5.47%	4.376
035.41	Sodium, ICP, Dry ash (%)	20	18	0.6733	0.0578	0.0375	0.0190	0.0420	5.48%	2.78%	6.15%	2.211
035.42	Sodium, ICP, Open vessel (%)	19	19	0.7001	0.0391	0.0374	0.0160	0.0407	5.34%	2.28%	5.81%	2.546
035.43	Sodium, ICP, Microwave (%)	26	22	0.6852	0.0512	0.0338	0.0099	0.0353	4.85%	1.42%	5.05%	3.567
036.42	Sulfur, ICP, Open vessel (%)	23	22	0.3211	0.0239	0.0185	0.0068	0.0197	5.80%	2.14%	6.19%	2.886
036.43	Sulfur, ICP, Microwave (%)	20	20	0.3356	0.0218	0.0211	0.0074	0.0224	6.30%	2.22%	6.68%	3.011
037.31	Zinc, AAS, Dry ash (ppm)	10	8	881.5	253.8	44.46	11.18	45.85	4.61%	1.16%	4.75%	4.099

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
037.41	Zinc, ICP, Dry ash (ppm)	19	18	927.2	99.37	87.37	15.12	88.67	9.54%	1.65%	9.68%	5.863
037.42	Zinc, ICP, Open vessel (ppm)	20	19	964.8	87.54	88.85	19.45	90.95	9.20%	2.02%	9.42%	4.676
037.43	Zinc, ICP, Microwave (ppm)	27	26	1,002	98.88	71.25	31.66	77.97	7.02%	3.12%	7.68%	2.463
038.43	Molybdenum, ICP, Microwave (ppm)	8	7	7.592	1.314	1.193	0.1579	1.203	15.22%	2.01%	15.35%	7.623
038.53	Molybdenum, ICP-MS, Microwave (ppm)	5	5	9.060	0.7104	0.6342	0.4527	0.7792	7.00%	5.00%	8.60%	1.721
106.02	Vitamin A, LC (KU / kg)	11	11	48.70	12.08	11.61	4.706	12.53	23.84%	9.66%	25.73%	2.663
109.02	Vitamin E, LC (IU / kg)	10	9	234.8	40.89	23.67	17.46	29.41	10.54%	7.78%	13.10%	1.685
120.00	Alanine, Post-col Ninhydrin Der (%)	16	15	0.5832	0.0193	0.0187	0.0064	0.0198	3.21%	1.10%	3.40%	3.081
120.05	Alanine, Pre-col AQC Der (%)	7	7	0.5893	0.0510	0.0493	0.0180	0.0525	8.37%	3.05%	8.91%	2.922
121.00	Arginine, Post-col Ninhydrin Der (%)	16	13	0.6856	0.0295	0.0227	0.0066	0.0236	3.28%	0.95%	3.41%	3.603
121.05	Arginine, Pre-col AQC Der (%)	7	5	0.6759	0.0316	0.0331	0.0042	0.0334	4.87%	0.61%	4.91%	8.023
122.00	Aspartic, Post-col Ninhydrin Der (%)	16	16	0.8391	0.0313	0.0300	0.0124	0.0325	3.58%	1.48%	3.87%	2.610
122.05	Aspartic, Pre-col AQC Der (%)	7	6	0.8678	0.0595	0.0583	0.0163	0.0606	6.72%	1.87%	6.98%	3.723
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin Der (%)	16	14	0.2456	0.0252	0.0190	0.0066	0.0201	7.87%	2.75%	8.34%	3.029
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	6	5	0.2294	0.0618	0.0618	0.0024	0.0618	26.95%	1.05%	26.97%	25.59
125.00	Glutamic, Post-col Ninhydrin Der (%)	16	14	2.004	0.0448	0.0446	0.0151	0.0471	2.23%	0.75%	2.35%	3.121
125.05	Glutamic, Pre-col AQC Der (%)	7	6	2.017	0.2141	0.1708	0.0581	0.1804	8.25%	2.81%	8.72%	3.103
126.00	Glycine, Post-col Ninhydrin Der (%)	16	15	0.6037	0.0171	0.0165	0.0061	0.0176	2.73%	1.02%	2.92%	2.865
126.05	Glycine, Pre-col AQC Der (%)	7	6	0.6230	0.0597		0.0290			4.82%		
127.00	Histidine, Post-col Ninhydrin Der (%)	16	16	0.3073	0.0144	0.0132	0.0081	0.0155	4.30%	2.64%	5.05%	1.909
127.05	Histidine, Pre-col AQC Der (%)	7	6	0.3127	0.0228	0.0174	0.0125	0.0215	5.67%	4.07%	6.98%	1.714
128.00	Isoleucine, Post-col Ninhydrin Der (%)	16	16	0.3623	0.0229	0.0222	0.0083	0.0237	6.12%	2.28%	6.53%	2.867
128.05	Isoleucine, Pre-col AQC Der (%)	6	6	0.3963	0.0267	0.0255	0.0110	0.0278	6.43%	2.79%	7.01%	2.515
129.00	Leucine, Post-col Ninhydrin Der (%)	16	15	0.7694	0.0213	0.0204	0.0082	0.0220	2.66%	1.07%	2.86%	2.675
129.05	Leucine, Pre-col AQC Der (%)	6	6	0.7954	0.0384	0.0349	0.0229	0.0417	4.38%	2.88%	5.24%	1.822
130.00	L-Lysine, Post-col Ninhydrin Der (%)	17	17	0.4639	0.0203	0.0190	0.0100	0.0215	4.10%	2.16%	4.63%	2.148
130.05	L-Lysine, Pre-col AQC Der (%)	6	5	0.4792	0.0333	0.0013	0.0092	0.0093	0.28%	1.97%	1.99%	1.010
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	16	14	0.1612	0.0121	0.0122	0.0038	0.0128	7.59%	2.33%	7.94%	3.406
131.05	Methionine, PAO Pre-col AQC Der (%)	6	6	0.1549	0.0342	0.0340	0.0049	0.0344	21.96%	3.19%	22.19%	6.953
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	16	14	0.4482	0.0303	0.0203	0.0070	0.0215	4.60%	1.59%	4.86%	3.067
132.05	Phenylalanine, Pre-col AQC Der (%)	6	6	0.4402	0.0208	0.0177	0.0155	0.0235	4.01%	3.53%	5.35%	1.515
133.00	Proline, Post-col Ninhydrin Der (%)	16	14	0.7379	0.0576	0.0447	0.0131	0.0465	6.13%	1.80%	6.39%	3.558
133.05	Proline, Pre-col AQC Der (%)	7	7	0.7672	0.0612	0.0585	0.0257	0.0639	7.62%	3.35%	8.32%	2.485
134.00	Serine, Post-col Ninhydrin Der (%)	16	15	0.5090	0.0299	0.0296	0.0059	0.0302	5.82%	1.15%	5.94%	5.142
134.05	Serine, Pre-col AQC Der (%)	7	6	0.4955	0.0360	0.0354	0.0090	0.0365	7.14%	1.81%	7.37%	4.061
135.00	Threonine, Post-col Ninhydrin Der (%)	16	15	0.3953	0.0185	0.0170	0.0080	0.0188	4.32%	2.04%	4.77%	2.344
135.05	Threonine, Pre-col AQC Der (%)	7	6	0.3836	0.0195	0.0185	0.0086	0.0204	4.83%	2.25%	5.33%	2.367
136.00	Tryptophan, Alka-Hydrol Post-col Ninhydrin Der (%)	5	5	0.1619	0.0385	0.0383	0.0039	0.0385	23.68%	2.41%	23.80%	9.869
137.00	Tyrosine, Post-col Ninhydrin Der (%)	13	13	0.3349	0.0515	0.0509	0.0111	0.0521	15.20%	3.32%	15.56%	4.684
137.05	Tyrosine, Pre-col AQC Der (%)	6	5	0.3488	0.0385	0.0367	0.0069	0.0373	10.76%	2.03%	10.95%	5.398
138.00	Valine, Post-col Ninhydrin Der (%)	16	16	0.5299	0.0238	0.0220	0.0129	0.0255	4.16%	2.44%	4.82%	1.977
138.05	Valine, Pre-col AQC Der (%)	6	6	0.5409	0.0453	0.0435	0.0175	0.0469	8.05%	3.23%	8.67%	2.688
354.01	Decoquinat, LC (UV or FL) (ppm)	5	5	308.8	18.41	17.23	9.164	19.51	5.58%	2.97%	6.32%	2.130
400.01	Water Activity, Aqualab chilled mirror (Units)	14	13	0.3534	0.0579	0.0576	0.0079	0.0581	16.30%	2.23%	16.45%	7.384
518.53	Cadmium, ICP-MS, Microwave (ppm)	6	6	0.1717	0.0214	0.0209	0.0067	0.0219	12.16%	3.88%	12.76%	3.293
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	6	6	14.42	4.652	4.642	0.4286	4.662	32.18%	2.97%	32.32%	10.88

Test Material Code # 202222

Issue Date : 03/31/2022

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
526.53	Lead, ICP-MS, Microwave (ppm)	6	5	0.3408	0.0193	0.0183	0.0085	0.0202	5.37%	2.50%	5.92%	2.367

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