



Animal Feed Scheme

Swine Mineral

Test Material Code # 202097

Method Summary Report

(Precision Report Follows)

Labs Reporting: 157

Methods Reported: 307

Issue Date : 08/31/2020

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
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	25	23	1.906	0.2446	1.920	0.1924	0.0501	10.02%	0.1226	3.63%
001.99	Loss on Drying, Miscellaneous (%)	10	10	3.309	4.074	2.148	0.7026	0.2777	32.71%	0.1101	3.57%
001.03	Loss on Drying, Low temp. methods (%)	3	3	2.038	0.0922	2.038	0.0922	0.0652	4.53%	0.1167	3.59%
001.05	Loss on Drying, LECO (%)	1	1	1.916							
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	43	40	1.620	1.235	1.424	0.1585	0.0313	11.13%	0.0569	3.79%
002.01	Protein, Crude, Auto Kjell-Foss (%)	6	6	1.757	0.5626	1.684	0.4594	0.2345	27.29%	0.0667	3.70%
002.05	Protein, Crude, Copper, Boric Acid (%)	5	5	1.426	0.1232	1.426	0.1232	0.0551	8.64%	0.0468	3.79%
002.00	Protein, Crude, Crude (%)	1	1	1.205							
002.08	Protein, Crude, Cu/Ti (%)	1	1	1.179							
002.11	Protein, Crude, NIR (%)	1	1	16.76							
002.99	Protein, Crude, Miscellaneous (%)	1	1	2.245							
003.14	Fat, Crude, Ankom (%)	13	13	0.6640	0.1537	0.6620	0.1221	0.0423	18.44%	0.0429	4.26%
003.10	Fat, Crude, Randall, Pet Ether (%)	8	8	0.6442	0.1336	0.6601	0.1117	0.0494	16.92%	0.0365	4.26%
003.06	Fat, Crude, Pet Ether (%)	6	6	0.7658	0.1585	0.7658	0.1798	0.0917	23.48%	0.0708	4.16%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	4	4	0.6858	0.1255	0.6858	0.1255	0.0627	18.29%	0.0720	4.23%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	3	3	1.186	0.2240	1.186	0.2240	0.1293	18.88%	0.0285	3.90%
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	2	2	1.593	1.199						
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	1	1	0.9600							
003.99	Fat, Crude, Miscellaneous (%)	2	1	1.250							
004.07	Fiber, Crude, ANKOM (%)	15	15	6.559	13.99	2.553	1.619	0.5227	63.42%	0.1723	3.47%
004.00	Fiber, Crude, Asbestos Free (%)	6	6	2.415	1.202	2.415	1.363	0.6958	56.45%	0.2040	3.50%
004.03	Fiber, Crude, Fritted Glass (%)	2	2	1.118	0.1662						
004.06	Fiber, Crude, Fibertec (%)	2	2	0.8800	0.0000						
004.01	Fiber, Crude, Sing Filt (%)	1	1	2.400							
004.11	Fiber, Crude, NIR (%)	1	1	3.700							
005.00	Ash, 2h @ 600°C (%)	50	48	81.55	1.704	81.71	1.333	0.2405	1.63%	0.4171	1.11%
005.05	Ash, 3h @ 550°C (%)	13	13	82.88	0.8155	82.90	0.8639	0.2995	1.04%	0.2608	1.10%
005.99	Ash, Miscellaneous (%)	4	2	82.43	1.131	82.43	1.131			0.1500	1.10%
005.02	Ash, LECO (%)	1	1	82.83							

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005.11	Ash, NIR (%)	1	1	6.000							
006.99	Total Sugars, Miscellaneous (%)	2	1	2.850							
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	4	3	14.74	18.66	14.74	18.66	10.77	126.55%	4.560	2.60%
008.02	Fiber, Acid Detergent, Crucible (%)	2	2	6.355	5.650						
008.05	Fiber, Acid Detergent, Acid Detergent-Hach (%)	1	1	3.945							
008.99	Fiber, Acid Detergent, Miscellaneous (%)	1	1	5.600							
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	7	6	3.891	3.579	2.898	1.462	0.7462	50.46%	0.3804	3.41%
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	1	1	25.80							
009.99	Fiber, Neutral Detergent, Miscellaneous (%)	1	1	14.30							
010.99	Moisture, Miscellaneous (%)	6	6	2.102	0.3246	2.102	0.3681	0.1878	17.51%	0.0700	3.58%
010.03	Moisture, Karl-Fischer (%)	2	2	2.843	1.093						
010.11	Moisture, NIR (%)	1	1	11.13							
011.01	Loss on Drying, 135°C 2hr (%)	34	34	3.277	0.9903	3.222	0.4999	0.1072	15.51%	0.1122	3.35%
011.02	Loss on Drying, 130°C for 2 hours (%)	1	1	3.135							
011.99	Loss on Drying, High Temp. Methods Miscellaneous (%)	1	1	3.400							
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	8	7	1.595	1.072	1.595	1.216	0.5744	76.22%	0.1410	3.73%
012.00	Starch, Polarimetric (Ewers) (%)	2	1	0.8400							
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	1	1	0.8377							
012.11	Starch, NIR (%)	1	1	42.05							
012.20	Starch, Dietary, Enzymatic-Colorimetric (%)	1	1	0.3800							
013.02	Fat, Acid Pretreat, Mojonniere, Bak Ext (%)	10	10	1.434	0.7422	1.307	0.4864	0.1923	37.21%	0.0760	3.84%
013.00	Fat, Acid Pretreat, Acid hydrolysis (%)	5	5	1.580	0.5405	1.580	0.5405	0.2417	34.21%	0.0557	3.73%
013.13	Fat, Acid Pretreat, Ankom- Acid Hydrolysis (%)	3	3	3.289	2.848	3.289	2.848	1.644	86.58%	0.8184	3.34%
013.10	Fat, Acid Pretreat, Soxtec-Acid Hydrolysis (%)	1	1	1.320							
013.12	Fat, Acid Pretreat, NIR- Acid Hydrolysis (%)	1	1	2.800							
015.41	Aluminum, ICP, Dry ash (ppm)	5	5	1,332	311.6	1,332	311.6	139.3	23.39%	33.97	5.42%
015.43	Aluminum, ICP, Microwave (ppm)	5	4	1,502	153.5	1,502	153.5	76.73	10.22%	14.91	5.32%
015.53	Aluminum, ICP-MS, Microwave (ppm)	3	3	1,613	197.5	1,613	197.5	114.0	12.24%	77.45	5.26%
015.42	Aluminum, ICP, Open vessel (ppm)	2	2	1,276	41.15						
017.43	Boron, ICP, Microwave (ppm)	6	6	28.19	8.094	28.16	9.117	4.652	32.37%	0.3577	9.68%
017.42	Boron, ICP, Open vessel (ppm)	5	5	30.27	13.05	30.27	13.05	5.834	43.09%	2.151	9.57%
017.41	Boron, ICP, Dry ash (ppm)	3	3	19.75	2.163	19.75	2.163	1.249	10.95%	0.7353	10.21%
019.43	Calcium, ICP, Microwave (%)	30	30	27.51	1.843	27.72	1.423	0.3248	5.13%	0.5992	1.90%
019.41	Calcium, ICP, Dry ash (%)	24	23	26.21	6.107	27.50	1.121	0.2923	4.08%	0.7550	1.91%
019.42	Calcium, ICP, Open vessel (%)	20	20	27.68	2.185	27.86	2.034	0.5686	7.30%	0.7708	1.89%
019.31	Calcium, AAS, Dry ash (%)	17	17	25.22	6.608	27.13	1.115	0.3379	4.11%	0.4005	1.92%
019.00	Calcium, Ox-Mn04 Vol. (%)	9	8	27.10	0.5518	27.17	0.4415	0.1951	1.62%	0.1773	1.92%
019.08	Calcium, EDTA (%)	5	5	27.82	0.8691	27.82	0.8691	0.3887	3.12%	0.4989	1.90%
019.53	Calcium, ICP-MS, Microwave (%)	5	4	25.88	2.234	25.88	2.234	1.290	8.63%	0.2339	1.97%
019.99	Calcium, Miscellaneous (%)	4	3	27.15	2.134	27.15	2.134	1.232	7.86%	0.1367	1.92%

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019.33	Calcium, AAS, Microwave (%)	2	2	28.38	2.344						
019.52	Calcium, ICP-MS, Open vessel (%)	2	2	27.61	2.679						
019.09	Calcium, Ion-selective electrode (%)	1	1	27.53							
019.32	Calcium, AAS, Open vessel (%)	1	1	27.95							
019.44	Calcium, ICP, Dry ash (%)	1	1	27.30							
021.53	Cobalt, ICP-MS, Microwave (ppm)	5	5	6.881	0.9987	6.881	0.9987	0.4466	14.51%	0.9140	11.97%
021.41	Cobalt, ICP, Dry ash (ppm)	4	4	6.519	2.038	6.519	2.038	1.019	31.26%	0.1983	12.06%
021.43	Cobalt, ICP, Microwave (ppm)	5	4	6.171	2.348	6.171	2.348	1.174	38.05%	0.0502	12.16%
021.31	Cobalt, AAS, Dry ash (ppm)	3	3	11.20	8.323	11.20	8.323	4.805	74.33%	0.2195	11.12%
021.52	Cobalt, ICP-MS, Open vessel (ppm)	2	2	5.565	0.4526						
021.42	Cobalt, ICP, Open vessel (ppm)	2	1	1.403							
022.43	Copper, ICP, Microwave (ppm)	26	25	361.7	26.95	361.9	29.30	7.326	8.10%	16.70	6.59%
022.41	Copper, ICP, Dry ash (ppm)	20	20	352.5	34.08	357.2	22.57	6.310	6.32%	15.45	6.60%
022.42	Copper, ICP, Open vessel (ppm)	22	20	368.7	26.67	367.7	27.49	7.684	7.48%	25.88	6.58%
022.31	Copper, AAS, Dry ash (ppm)	15	15	368.6	60.07	374.6	20.34	6.564	5.43%	4.949	6.56%
022.53	Copper, ICP-MS, Microwave (ppm)	7	7	342.9	50.05	351.0	36.21	17.11	10.32%	22.92	6.62%
022.99	Copper, Miscellaneous (ppm)	4	4	353.4	13.43	353.4	13.43	6.713	3.80%	19.54	6.61%
022.33	Copper, AAS, Microwave (ppm)	2	2	369.1	6.520						
022.44	Copper, ICP, Dry ash (ppm)	2	2	366.6	5.038						
022.52	Copper, ICP-MS, Open vessel (ppm)	2	2	346.5	50.17						
024.03	Iodine, Ion-selective electrode (ppm)	1	1	21.15							
024.52	Iodine, ICP-MS, Open vessel (ppm)	1	1	25.56							
025.43	Iron, ICP, Microwave (ppm)	24	23	5,224	566.7	5,264	528.3	137.7	10.04%	117.2	4.41%
025.41	Iron, ICP, Dry ash (ppm)	21	21	5,363	1,237	5,225	656.2	179.0	12.56%	177.0	4.41%
025.42	Iron, ICP, Open vessel (ppm)	19	19	5,158	631.0	5,205	483.0	138.5	9.28%	202.5	4.41%
025.31	Iron, AAS, Dry ash (ppm)	17	17	4,942	1,234	5,185	703.4	213.2	13.57%	71.40	4.42%
025.53	Iron, ICP-MS, Microwave (ppm)	4	3	4,973	463.9	4,973	463.9	328.1	9.33%	3.970	4.44%
025.99	Iron, Miscellaneous (ppm)	3	3	5,558	436.0	5,558	436.0	251.7	7.84%	94.67	4.37%
025.33	Iron, AAS, Microwave (ppm)	2	2	5,759	224.7						
025.52	Iron, ICP-MS, Open vessel (ppm)	2	2	2,828	2,808						
027.43	Magnesium, ICP, Microwave (%)	20	19	0.6224	0.0467	0.6225	0.0516	0.0148	8.29%	0.0181	4.30%
027.42	Magnesium, ICP, Open vessel (%)	16	16	0.6109	0.0403	0.6145	0.0363	0.0114	5.91%	0.0268	4.30%
027.41	Magnesium, ICP, Dry ash (%)	11	11	0.6165	0.0641	0.6209	0.0619	0.0233	9.97%	0.0278	4.30%
027.31	Magnesium, AAS, Dry ash (%)	9	9	0.6177	0.1278	0.6550	0.0258	0.0108	3.94%	0.0145	4.26%
027.53	Magnesium, ICP-MS, Microwave (%)	5	5	0.5886	0.0482	0.5886	0.0482	0.0216	8.20%	0.0197	4.33%
027.99	Magnesium, Miscellaneous (%)	3	3	0.6417	0.0506	0.6417	0.0506	0.0358	7.88%	0.0167	4.28%
027.32	Magnesium, AAS, Open vessel (%)	1	1	0.6450							
027.33	Magnesium, AAS, Microwave (%)	1	1	0.6630							
027.44	Magnesium, ICP, Dry ash (%)	1	1	0.6760							
027.52	Magnesium, ICP-MS, Open vessel (%)	1	1	0.6067							

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028.43	Manganese, ICP, Microwave (ppm)	26	26	838.9	81.71	840.4	89.32	21.90	10.63%	23.07	5.81%
028.42	Manganese, ICP, Open vessel (ppm)	22	21	847.9	83.24	839.9	58.60	15.99	6.98%	32.01	5.81%
028.41	Manganese, ICP, Dry ash (ppm)	19	19	817.5	101.7	825.2	94.09	26.98	11.40%	23.39	5.82%
028.31	Manganese, AAS, Dry ash (ppm)	15	15	898.7	189.3	896.1	107.6	34.72	12.00%	16.39	5.75%
028.53	Manganese, ICP-MS, Microwave (ppm)	5	4	845.1	85.26	845.1	85.26	42.63	10.09%	9.408	5.80%
028.99	Manganese, Miscellaneous (ppm)	4	4	946.3	75.88	946.3	75.88	37.94	8.02%	26.38	5.70%
028.44	Manganese, ICP, Dry ash (ppm)	2	2	1,024	238.5						
028.33	Manganese, AAS, Microwave (ppm)	1	1	795.6							
028.34	Manganese, AAS, Dry ash (ppm)	1	1	48.86							
028.52	Manganese, ICP-MS, Open vessel (ppm)	1	1	918.3							
031.01	Phosphorus, Photometric (%)	29	27	4.969	0.2510	4.951	0.1003	0.0241	2.03%	0.0786	3.14%
031.43	Phosphorus, ICP, Microwave (%)	27	26	5.110	0.3225	5.087	0.2677	0.0656	5.26%	0.1053	3.13%
031.41	Phosphorus, ICP, Dry ash (%)	20	20	4.624	1.205	4.892	0.3343	0.0934	6.83%	0.1509	3.15%
031.42	Phosphorus, ICP, Open vessel (%)	20	19	4.952	0.3039	4.960	0.3161	0.0906	6.37%	0.1535	3.14%
031.53	Phosphorus, ICP-MS, Microwave (%)	5	5	4.745	0.5056	4.745	0.5056	0.2261	10.66%	0.1911	3.16%
031.02	Phosphorus, GQMP (AOAC 935.13-Extraction) (%)	2	2	5.053	0.2440						
031.03	Phosphorus, Autoanalyzer (%)	2	2	5.116	0.2821						
031.44	Phosphorus, ICP, Dry ash (%)	2	2	4.795	0.1061						
031.99	Phosphorus, Miscellaneous (%)	4	2	5.055	0.1273	5.055	0.1273			0.0300	3.13%
031.00	Phosphorus, Vol (%)	1	1	4.565							
031.52	Phosphorus, ICP-MS, Open vessel (%)	1	1	4.463							
032.43	Potassium, ICP, Microwave (%)	19	18	0.2680	0.1071	0.2498	0.0592	0.0174	23.68%	0.0136	4.93%
032.42	Potassium, ICP, Open vessel (%)	16	16	0.2584	0.1559	0.2184	0.0411	0.0128	18.80%	0.0262	5.03%
032.41	Potassium, ICP, Dry ash (%)	13	12	0.2769	0.0571	0.2748	0.0600	0.0217	21.84%	0.0270	4.86%
032.31	Potassium, AAS, Dry ash (%)	8	8	0.2519	0.1077	0.2509	0.0936	0.0414	37.30%	0.0107	4.93%
032.53	Potassium, ICP-MS, Microwave (%)	5	5	0.1918	0.0424	0.1918	0.0424	0.0190	22.09%	0.0087	5.13%
032.99	Potassium, Miscellaneous (%)	3	3	0.2483	0.0584	0.2483	0.0584	0.0337	23.51%	0.0200	4.93%
032.32	Potassium, AAS, Open vessel (%)	1	1	0.2450							
032.44	Potassium, ICP, Dry ash (%)	1	1	0.1855							
032.52	Potassium, ICP-MS, Open vessel (%)	1	1	0.2080							
033.01	Salt as chloride, Poten Cl (%)	23	21	6.426	0.1090	6.426	0.1236	0.0337	1.92%	0.0964	3.02%
033.00	Salt as chloride, Sol Cl (%)	17	16	6.095	1.185	6.382	0.4369	0.1365	6.85%	0.0960	3.03%
033.99	Salt, Miscellaneous (%)	13	12	6.096	1.231	6.408	0.4631	0.1671	7.23%	0.0860	3.02%
033.03	Salt as chloride, Quantab (%)	6	6	7.138	0.5610	7.138	0.6361	0.3246	8.91%	0.1300	2.98%
033.05	Salt as chloride, Ion Sel Electrode (%)	3	3	7.077	0.6298	7.077	0.6298	0.3636	8.90%	0.1600	2.98%
034.53	Selenium, ICP-MS, Microwave (ppm)	11	11	12.48	1.277	12.48	1.448	0.5456	11.60%	0.3999	10.94%
034.43	Selenium, ICP, Microwave (ppm)	9	9	10.24	2.879	10.35	3.013	1.256	29.11%	0.8177	11.25%
034.41	Selenium, ICP, Dry ash (ppm)	4	4	9.511	2.288	9.511	2.288	1.144	24.06%	0.2183	11.40%
034.52	Selenium, ICP-MS, Open vessel (ppm)	4	4	11.11	1.490	11.11	1.490	0.7452	13.42%	0.3650	11.13%
034.04	Selenium, AA, Hydride (ppm)	3	3	10.60	2.076	10.60	2.076	1.199	19.59%	1.717	11.21%

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034.42	Selenium, ICP, Open vessel (ppm)	2	2	11.20	1.768						
034.99	Selenium, Miscellaneous (ppm)	2	2	8.573	0.8167						
035.43	Sodium, ICP, Microwave (%)	18	16	2.457	0.1963	2.444	0.1714	0.0535	7.01%	0.0605	3.50%
035.41	Sodium, ICP, Dry ash (%)	15	15	2.430	0.1232	2.429	0.1381	0.0446	5.69%	0.0520	3.50%
035.42	Sodium, ICP, Open vessel (%)	14	14	2.353	0.2528	2.401	0.1166	0.0389	4.85%	0.0843	3.51%
035.31	Sodium, AAS, Dry ash (%)	10	10	2.265	0.4329	2.372	0.1519	0.0600	6.40%	0.0446	3.51%
035.53	Sodium, ICP-MS, Microwave (%)	5	4	2.357	0.0394	2.357	0.0394	0.0197	1.67%	0.1010	3.52%
035.99	Sodium, Miscellaneous (%)	3	3	2.487	0.2267	2.487	0.2267	0.1309	9.12%	0.0333	3.49%
035.05	Sodium, Flame Emission (%)	2	2	3.748	2.620						
035.02	Sodium, Em Spect (%)	1	1	2.165							
035.32	Sodium, AAS, Open vessel (%)	1	1	2.270							
035.52	Sodium, ICP-MS, Open vessel (%)	1	1	2.226							
036.42	Sulfur, ICP, Open vessel (%)	15	14	0.6268	0.1478	0.6043	0.0687	0.0230	11.38%	0.0296	4.31%
036.43	Sulfur, ICP, Microwave (%)	12	12	0.6639	0.1387	0.6521	0.1275	0.0460	19.55%	0.0165	4.27%
036.04	Sulfur, LECO (%)	3	3	0.5465	0.0700	0.5465	0.0700	0.0404	12.81%	0.0137	4.38%
036.53	Sulfur, ICP-MS, Microwave (%)	2	2	0.5470	0.0028						
036.52	Sulfur, ICP-MS, Open vessel (%)	1	1	0.6292							
036.99	Sulfur, Miscellaneous (%)	1	1	0.5850							
037.43	Zinc, ICP, Microwave (ppm)	28	28	3,991	407.9	4,026	337.4	79.70	8.38%	84.97	4.59%
037.42	Zinc, ICP, Open vessel (ppm)	21	21	4,009	423.8	4,015	436.2	119.0	10.87%	157.0	4.59%
037.41	Zinc, ICP, Dry ash (ppm)	20	19	4,086	1,142	3,906	503.9	144.5	12.90%	79.78	4.61%
037.31	Zinc, AAS, Dry ash (ppm)	14	14	3,892	752.6	4,122	226.0	75.51	5.48%	78.01	4.57%
037.53	Zinc, ICP-MS, Microwave (ppm)	5	5	4,106	150.3	4,106	150.3	67.21	3.66%	132.3	4.57%
037.99	Zinc, Miscellaneous (ppm)	4	4	4,100	338.0	4,100	338.0	169.0	8.24%	176.8	4.57%
037.33	Zinc, AAS, Microwave (ppm)	3	3	3,011	2,604	3,011	2,604	1,503	86.48%	55.76	4.79%
037.44	Zinc, ICP, Dry ash (ppm)	2	2	4,178	250.6						
037.52	Zinc, ICP-MS, Open vessel (ppm)	2	2	4,039	437.5						
037.32	Zinc, AAS, Open vessel (ppm)	1	1	4,280							
038.43	Molybdenum, ICP, Microwave (ppm)	5	4	1.368	0.6744	1.368	0.6744	0.3372	49.31%	0.0364	15.26%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	4	4	1.488	0.4417	1.488	0.4417	0.2209	29.69%	0.1370	15.07%
038.42	Molybdenum, ICP, Open vessel (ppm)	3	3	1.193	0.9804	1.193	0.9804	0.5660	82.19%	0.1603	15.58%
038.41	Molybdenum, ICP, Dry ash (ppm)	2	2	1.144	0.3317						
038.52	Molybdenum, ICP-MS, Open vessel (ppm)	1	1	2.055							
040.53	Barium, ICP-MS, Microwave (ppm)	1	1	11.60							
041.53	Vanadium, ICP-MS, Microwave (ppm)	2	2	10.76	1.686						
042.00	Chloride, Titrimetric (%)	4	4	4.029	0.3756	4.029	0.3756	0.1878	9.32%	0.0225	3.24%
099.01	Menadione (form), LC (ppm)	2	2	7.855	2.143						
101.99	Choline Chloride, Miscellaneous (ppm)	2	2	10,363	1,467						
102.02	Niacin, LC (ppm)	6	6	1,014	315.9	1,059	246.4	125.7	23.25%	41.25	5.61%
102.99	Niacin, Miscellaneous (ppm)	2	2	789.1	416.6						

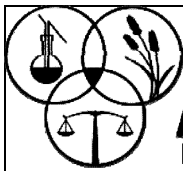
Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO ffp Robust SD	Uncertainty (U) - Robust	% RSD - Robust	Average Range (R-bar)	Thompson Horwitz %RSD
102.01	Niacin, Microbiological (ppm)	1	1	1,070							
103.02	Pantothenic Acid, LC (ppm)	5	5	580.7	48.60	580.7	48.60	21.74	8.37%	17.10	6.14%
103.99	Pantothenic Acid, Miscellaneous (ppm)	2	2	1,197	859.4						
103.01	Pantothenic Acid, Microbiological (ppm)	1	1	511.5							
104.03	Riboflavin, LC (ppm)	5	5	238.7	20.46	238.7	20.46	9.150	8.57%	9.040	7.02%
104.00	Riboflavin, Fluorometric (ppm)	2	2	200.5	50.21						
104.99	Riboflavin, Miscellaneous (ppm)	2	2	191.7	70.28						
105.00	Thiamine, LC (ppm)	1	1	1.135							
105.01	Thiamine, Fluorometer (ppm)	1	1	1.375							
106.02	Vitamin A, LC (KU / kg)	21	20	42.09	15.19	41.62	16.19	4.525	38.89%	7.380	
106.00	Vitamin A, Color (KU / kg)	1	1	54.65							
106.01	Vitamin A, UV (KU / kg)	1	1	16.05							
106.99	Vitamin A, Miscellaneous (KU / kg)	1	1	38.10							
107.99	Vitamin B12, Miscellaneous (ppb)	2	2	148.9	51.05						
107.00	Vitamin B12, Microbiological (ppb)	1	1	104.2							
108.02	Vitamin D3, LC (KU / kg)	5	4	2.433	1.561	2.433	1.561	0.7804	64.16%	0.5150	
108.99	Vitamin D3, Miscellaneous (KU / kg)	1	1	2.390							
109.02	Vitamin E, LC (IU / kg)	16	16	830.4	202.1	831.2	169.2	52.86	20.35%	47.34	
109.99	Vitamin E, Miscellaneous (IU / kg)	2	2	811.3	39.95						
111.00	Vitamin C, Phosphorylated, LC (ppm)	1		0.4400							
112.01	Pyridoxine, LC (µg / g)	1	1	2.775							
113.01	Folic Acid, Micro (ppm)	1	1	1.115							
114.01	Biotin, Microbiological (ppm)	1	1	0.0745							
118.99	Peroxide value, Miscellaneous (meq/kg)	1	1	10.50							
120.00	Alanine, Post-col Ninhydrin Der (%)	5	4	0.0166	0.0058	0.0166	0.0058	0.0029	34.64%	0.0015	7.41%
120.99	Alanine, Miscellaneous (%)	1	1	0.0100							
121.00	Arginine, Post-col Ninhydrin Der (%)	5	3	0.0136	0.0038	0.0136	0.0038	0.0022	28.05%	0.0002	7.64%
121.99	Arginine, Miscellaneous (%)	1		0.0500							
122.00	Aspartic, Post-col Ninhydrin Der (%)	5	3	0.0311	0.0069	0.0311	0.0069	0.0040	22.13%	0.0019	6.74%
122.99	Aspartic, Miscellaneous (%)	1	1	0.0300							
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin (%)	6	3	0.0106	0.0093	0.0106	0.0093	0.0067	87.92%	0.0004	7.93%
124.99	Cysteine/Cystine, Miscellaneous (%)	1		0.0100							
125.00	Glutamic, Post-col Ninhydrin Der (%)	5	4	0.0447	0.0167	0.0447	0.0167	0.0083	37.33%	0.0041	6.38%
125.99	Glutamic, Miscellaneous (%)	1	1	0.0450							
126.00	Glycine, Post-col Ninhydrin Der (%)	5	3	0.0153	0.0067	0.0153	0.0067	0.0039	44.14%	0.0009	7.51%
126.99	Glycine, Miscellaneous (%)	1	1	0.0200							
127.00	Histidine, Post-col Ninhydrin Der (%)	5	1								
127.99	Histidine, Miscellaneous (%)	1	1	0.0150							
128.00	Isoleucine, Post-col Ninhydrin Der (%)	5	3	0.0116	0.0010	0.0116	0.0010	0.0005	8.20%	0.0011	7.82%
128.99	Isoleucine, Miscellaneous (%)	1		0.0200							

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
129.00	Leucine, Post-col Ninhydrin Der (%)	5	4	0.0226	0.0059	0.0226	0.0059	0.0030	26.33%	0.0027	7.08%
129.99	Leucine, Miscellaneous (%)	1		0.0200							
130.00	L-Lysine, Post-col Ninhydrin Der (%)	5	1								
130.99	L-Lysine, Miscellaneous (%)	1	1	0.0400							
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	6	2	0.0084	0.0037	0.0084	0.0037	0.0033		0.0001	8.21%
131.99	Methionine, Miscellaneous (%)	1		0.0100							
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	5	3	0.0394	0.0268	0.0394	0.0268	0.0155	68.07%	0.0019	6.51%
132.99	Phenylalanine, Miscellaneous (%)	1		0.0300							
133.00	Proline, Post-col Ninhydrin Der (%)	5	3	0.0164	0.0127	0.0164	0.0127	0.0073	77.86%	0.0017	7.43%
133.99	Proline, Miscellaneous (%)	1		0.0500							
134.00	Serine, Post-col Ninhydrin Der (%)	5	3	0.0161	0.0032	0.0161	0.0032	0.0018	19.73%	0.0008	7.44%
134.99	Serine, Miscellaneous (%)	1	1	0.0150							
135.00	Threonine, Post-col Ninhydrin Der (%)	5	3	0.0147	0.0040	0.0147	0.0040	0.0023	26.97%	0.0014	7.55%
135.99	Threonine, Miscellaneous (%)	1		0.0200							
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	4	1								
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	3									
137.00	Tyrosine, Post-col Ninhydrin Der (%)	3	1								
137.99	Tyrosine, Miscellaneous (%)	1		0.0400							
138.00	Valine, Post-col Ninhydrin Der (%)	5	1								
138.99	Valine, Miscellaneous (%)	1		0.0200							
139.00	Taurine, Post-col Ninhydrin Der (%)	1		0.1000							
139.99	Taurine, Miscellaneous (%)	1		0.0100							
150.00	Phytase, Colorimetric (Units / kg)	4	3	13,282	10,458	13,282	10,458	6,038	78.74%	318.7	
160.99	Fructose, Miscellaneous (%)	1		0.1500							
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		0.1500							
166.99	Raffinose, Miscellaneous (%)	1		0.0500							
167.99	Stachyose, Miscellaneous (%)	1		0.0500							
400.01	Water Activity, Aqualab chilled mirror (Units)	6	6	0.4694	0.0655	0.4841	0.0243	0.0124	5.02%	0.0049	
400.99	Water Activity, Miscellaneous (Units)	2	2	0.4868	0.0096						
516.53	Arsenic, Total, ICP-MS, Microwave (ppm)	6	6	0.7392	0.1395	0.7394	0.1576	0.0804	21.32%	0.0837	16.74%
516.34	Arsenic, Total, AAS, Graphite furnace (ppm)	1	1	0.3036							
516.43	Arsenic, Total, ICP, Microwave (ppm)	2	1	0.6895							
516.52	Arsenic, Total, ICP-MS, Open vessel (ppm)	1	1	0.6675							
518.53	Cadmium, ICP-MS, Microwave (ppm)	5	5	0.8469	0.0775	0.8469	0.0775	0.0347	9.15%	0.0418	16.40%
518.43	Cadmium, ICP, Microwave (ppm)	3	3	0.9893	0.2762	0.9893	0.2762	0.1595	27.92%	0.0028	16.02%
518.41	Cadmium, ICP, Dry ash (ppm)	2	2	0.6659	0.0348						
518.52	Cadmium, ICP-MS, Open vessel (ppm)	2	2	0.8968	0.0753						

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
518.34	Cadmium, AAS, Graphite furnace (ppm)	1	1	0.7382							
520.53	Chromium, ICP-MS, Microwave (ppm)	5	5	62.89	4.567	62.89	4.567	2.042	7.26%	2.966	8.58%
520.43	Chromium, ICP, Microwave (ppm)	4	4	63.85	12.30	63.85	12.30	6.149	19.26%	0.4253	8.56%
520.41	Chromium, ICP, Dry ash (ppm)	2	2	45.49	2.708						
520.42	Chromium, ICP, Open vessel (ppm)	1	1	55.20							
520.52	Chromium, ICP-MS, Open vessel (ppm)	1	1	66.24							
526.53	Lead, ICP-MS, Microwave (ppm)	5	5	2.026	0.2212	2.026	0.2212	0.0989	10.92%	0.0786	14.38%
526.41	Lead, ICP, Dry ash (ppm)	3	3	1.165	0.3168	1.165	0.3168	0.1829	27.20%	0.0461	15.63%
526.43	Lead, ICP, Microwave (ppm)	3	3	2.392	1.291	2.392	1.291	0.7455	53.99%	0.0686	14.03%
526.34	Lead, AAS, Graphite furnace (ppm)	1	1	1.365							
526.52	Lead, ICP-MS, Open vessel (ppm)	1	1	1.780							
529.99	Mercury, Miscellaneous (ppb)	3	1								
539.43	Nickel, ICP, Microwave (ppm)	3	3	9.291	2.191	9.291	2.191	1.549	23.58%	0.4676	11.44%
539.53	Nickel, ICP-MS, Microwave (ppm)	3	3	10.47	0.4055	10.47	0.4055	0.2341	3.87%	1.443	11.23%
539.41	Nickel, ICP, Dry ash (ppm)	2	2	6.966	0.6130						
539.52	Nickel, ICP-MS, Open vessel (ppm)	1	1	10.31							
710.99	Lauric Acid (12:0), Miscellaneous (% (w/w))	1		0.0200							
714.99	Myristic Acid (14:0), Miscellaneous (% (w/w))	1		0.0200							
716.99	Palmitic Acid (16:0), Miscellaneous (% (w/w))	1	1	0.2435							
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (% (w/w))	1		0.0000							
722.99	Stearic Acid (18:0), Miscellaneous (% (w/w))	1	1	0.0670							
724.99	Oleic Acid (9c-18:1), Miscellaneous (% (w/w))	1	1	0.1885							
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (% (w/w))	2	2	0.0655	0.0262						
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (% (w/w))	2	1	0.0025							
730.99	Arachidic Acid (20:0), Miscellaneous (% (w/w))	1		0.0200							
732.99	Gondoic Acid (11c-20:1), Miscellaneous (% (w/w))	1		0.0200							
736.99	Arachidonic Acid (5c,8c,11c,14c-20:4), Miscellaneous (% (w/w))	1		0.0000							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (% (w/w))	1		0.0000							
742.99	Behenic Acid (22:0), Miscellaneous (% (w/w))	1		0.0200							
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (% (w/w))	1		0.0000							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (% (w/w))	1		0.0000							
754.99	Total n-3 Polyunsaturated (Omega-3) Fatty Acids, Miscellaneous (% (w/w))	2		0.0000							
756.99	Total n-6 Polyunsaturated (Omega-6) Fatty Acids, Miscellaneous (% (w/w))	2	2	0.0683	0.0258						
758.99	Total Saturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.3715							
762.99	Total Monounsaturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.2095							
766.99	Total Polyunsaturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.1125							
770.99	Total Fat (equivalent to NLEA), Miscellaneous (% (w/w))	1	1	0.7645							
772.99	Total Fatty Acids, Miscellaneous (% (w/w))	1	1	0.7300							

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.

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
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Animal Feed Scheme

Swine Mineral

Test Material Code # 202097

Method Precision Report

Methods Reported: 54

Labs Reporting: 157

Issue Date : 08/31/2020

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	21	1.906	0.2446	0.1696	0.1049	0.1994	8.74%	5.41%	10.28%	1.900
001.99	Loss on Drying, Miscellaneous (%)	10	9	3.309	4.074	0.5236	0.0831	0.5301	25.78%	4.09%	26.11%	6.379
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	43	39	1.620	1.235	0.2378	0.0539	0.2438	16.65%	3.77%	17.07%	4.525
003.14	Fat, Crude, Ankom (%)	13	13	0.6640	0.1537	0.1513	0.0388	0.1561	22.78%	5.84%	23.52%	4.028
004.07	Fiber, Crude, ANKOM (%)	15	13	6.559	13.99	3.531	0.1400	3.534	111.32%	4.41%	111.40%	25.24
005.00	Ash, 2h @ 600°C (%)	50	46	81.55	1.704	1.390	0.3556	1.435	1.70%	0.44%	1.76%	4.035
005.05	Ash, 3h @ 550°C (%)	13	13	82.88	0.8155	0.7987	0.2328	0.8320	0.96%	0.28%	1.00%	3.574
011.01	Loss on Drying, 135°C 2hr (%)	34	33	3.277	0.9903	0.5815	0.1059	0.5911	18.53%	3.37%	18.83%	5.582
013.02	Fat, Acid Pretreat, Mojonnier, Bak Ext (%)	10	9	1.434	0.7422	0.3604	0.0787	0.3689	29.40%	6.42%	30.09%	4.688
019.31	Calcium, AAS, Dry ash (%)	17	16	25.22	6.608	3.075	0.4376	3.106	11.54%	1.64%	11.65%	7.097
019.41	Calcium, ICP, Dry ash (%)	24	22	26.21	6.107	2.317	0.7509	2.436	8.46%	2.74%	8.89%	3.244
019.42	Calcium, ICP, Open vessel (%)	20	18	27.68	2.185	1.759	0.6417	1.873	6.31%	2.30%	6.71%	2.918
019.43	Calcium, ICP, Microwave (%)	30	28	27.51	1.843	1.279	0.5470	1.391	4.62%	1.98%	5.03%	2.543
022.31	Copper, AAS, Dry ash (ppm)	15	14	368.6	60.07	31.06	5.305	31.51	8.13%	1.39%	8.25%	5.940
022.41	Copper, ICP, Dry ash (ppm)	20	19	352.5	34.08	16.22	13.29	20.97	4.52%	3.70%	5.84%	1.577
022.42	Copper, ICP, Open vessel (ppm)	22	19	368.7	26.67	17.20	21.51	27.55	4.71%	5.89%	7.54%	1.280
022.43	Copper, ICP, Microwave (ppm)	26	23	361.7	26.95	26.22	12.78	29.17	7.25%	3.53%	8.07%	2.283
025.31	Iron, AAS, Dry ash (ppm)	17	16	4,942	1,234	750.9	73.18	754.4	14.49%	1.41%	14.56%	10.31
025.41	Iron, ICP, Dry ash (ppm)	21	20	5,363	1,237	633.7	151.7	651.6	12.35%	2.96%	12.70%	4.296
025.42	Iron, ICP, Open vessel (ppm)	19	18	5,158	631.0	419.1	186.5	458.7	7.96%	3.54%	8.71%	2.460
025.43	Iron, ICP, Microwave (ppm)	24	21	5,224	566.7	417.3	103.3	429.9	7.92%	1.96%	8.16%	4.162
027.31	Magnesium, AAS, Dry ash (%)	9	8	0.6177	0.1278	0.0157	0.0144	0.0213	2.38%	2.19%	3.23%	1.479
027.41	Magnesium, ICP, Dry ash (%)	11	10	0.6165	0.0641	0.0634	0.0200	0.0665	10.37%	3.27%	10.88%	3.329
027.42	Magnesium, ICP, Open vessel (%)	16	14	0.6109	0.0403	0.0274	0.0212	0.0346	4.44%	3.44%	5.61%	1.633
027.43	Magnesium, ICP, Microwave (%)	20	19	0.6224	0.0467	0.0454	0.0152	0.0479	7.29%	2.45%	7.69%	3.144
028.31	Manganese, AAS, Dry ash (ppm)	15	13	898.7	189.3	145.4	15.71	146.2	15.48%	1.67%	15.57%	9.306
028.41	Manganese, ICP, Dry ash (ppm)	19	18	817.5	101.7	76.12	22.71	79.44	9.14%	2.73%	9.54%	3.498
028.42	Manganese, ICP, Open vessel (ppm)	22	19	847.9	83.24	62.76	26.52	68.14	7.50%	3.17%	8.14%	2.569
028.43	Manganese, ICP, Microwave (ppm)	26	25	838.9	81.71	82.05	20.95	84.68	9.78%	2.50%	10.10%	4.042
031.01	Phosphorus, Photometric (%)	29	25	4.969	0.2510	0.1567	0.0657	0.1699	3.18%	1.33%	3.45%	2.585
031.41	Phosphorus, ICP, Dry ash (%)	20	18	4.624	1.205	0.5578	0.1329	0.5734	11.51%	2.74%	11.83%	4.315
031.42	Phosphorus, ICP, Open vessel (%)	20	19	4.952	0.3039	0.2853	0.1482	0.3215	5.76%	2.99%	6.49%	2.170
031.43	Phosphorus, ICP, Microwave (%)	27	24	5.110	0.3225	0.2192	0.0909	0.2373	4.34%	1.80%	4.70%	2.611
032.31	Potassium, AAS, Dry ash (%)	8	8	0.2519	0.1077	0.1075	0.0080	0.1078	42.68%	3.19%	42.80%	13.42
032.41	Potassium, ICP, Dry ash (%)	13	11	0.2769	0.0571	0.0567	0.0225	0.0610	20.71%	8.22%	22.28%	2.710
032.42	Potassium, ICP, Open vessel (%)	16	15	0.2584	0.1559	0.0510	0.0233	0.0561	23.02%	10.53%	25.31%	2.404

Test Material Code # 202097

Issue Date : 08/31/2020

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 (%)	19	16	0.2680	0.1071	0.0541	0.0100	0.0550	22.01%	4.08%	22.38%	5.483
033.00	Salt as chloride, Sol Cl (%)	17	15	6.095	1.185	0.8327	0.1044	0.8392	13.19%	1.65%	13.30%	8.039
033.01	Salt as chloride, Poten Cl (%)	23	20	6.426	0.1090	0.0863	0.0855	0.1215	1.35%	1.33%	1.89%	1.422
033.99	Salt, Miscellaneous (%)	13	11	6.096	1.231	0.8878	0.0830	0.8917	13.97%	1.31%	14.04%	10.75
034.43	Selenium, ICP, Microwave (ppm)	9	9	10.24	2.879	2.825	0.7835	2.932	27.59%	7.65%	28.63%	3.742
034.53	Selenium, ICP-MS, Microwave (ppm)	11	11	12.48	1.277	1.254	0.3377	1.299	10.05%	2.71%	10.41%	3.846
035.31	Sodium, AAS, Dry ash (%)	10	8	2.265	0.4329	0.1134	0.0293	0.1171	4.70%	1.22%	4.86%	3.996
035.41	Sodium, ICP, Dry ash (%)	15	15	2.430	0.1232	0.1186	0.0472	0.1277	4.88%	1.94%	5.26%	2.706
035.42	Sodium, ICP, Open vessel (%)	14	13	2.353	0.2528	0.0761	0.0827	0.1123	3.15%	3.42%	4.65%	1.359
035.43	Sodium, ICP, Microwave (%)	18	16	2.457	0.1963	0.1929	0.0514	0.1996	7.85%	2.09%	8.12%	3.886
036.42	Sulfur, ICP, Open vessel (%)	15	12	0.6268	0.1478	0.0488	0.0181	0.0520	8.08%	2.99%	8.61%	2.878
036.43	Sulfur, ICP, Microwave (%)	12	11	0.6639	0.1387	0.0989	0.0163	0.1002	15.58%	2.56%	15.79%	6.158
037.31	Zinc, AAS, Dry ash (ppm)	14	12	3,892	752.6	503.9	69.98	508.7	12.46%	1.73%	12.58%	7.270
037.41	Zinc, ICP, Dry ash (ppm)	20	17	4,086	1,142	464.2	69.09	469.3	12.13%	1.80%	12.26%	6.793
037.42	Zinc, ICP, Open vessel (ppm)	21	20	4,009	423.8	422.6	132.2	442.8	10.52%	3.29%	11.02%	3.350
037.43	Zinc, ICP, Microwave (ppm)	28	25	3,991	407.9	330.0	65.84	336.5	8.16%	1.63%	8.32%	5.111
106.02	Vitamin A, LC (KU / kg)	21	19	42.09	15.19	12.89	6.338	14.37	31.88%	15.67%	35.52%	2.267
109.02	Vitamin E, LC (IU / kg)	16	15	830.4	202.1	207.2	35.56	210.3	25.06%	4.30%	25.42%	5.913

Notes: Precision Calculations provided for methods with 8 or more labs contributing to calculations.