

MAGRUDER - Fertilizer Check Sample No. - 200512 A-UAN, B-Muriate

- Pass 1 Results for 69 Labs - - Pass 2 Results for 67 Labs -

Method	AOAC Ref.	Method Code	No. of Labs	Grand Avg.	Std. Dev.	Average Range of Dups	No. of Labs	Grand Avg.	Std. Dev.	Average Range of Dups
Ammoniacal Nitrogen, MgO Distillation	920.03	001.10	4	7.91	0.38	0.16	4	7.91	0.38	0.16
Ammoniacal Nitrogen, Other		001.99	7	8.36	1.12	0.10	7	8.36	1.12	0.10
Method Group 001.XX PCT			11	8.19	0.94	0.12	11	8.19	0.94	0.12
Nitrate Nitrogen, Jones Modified	930.02	002.20	1	7.66	0.12	0.17	1	7.66	0.12	0.17
Nitrate Nitrogen, Other		002.99	4	9.19	6.88	0.08	4	9.19	6.88	0.08
Method Group 002.XX PCT			5	8.88	6.10	0.09	5	8.88	6.10	0.09
Nitrogen From Urea, Urease (as N)	959.03	005.00	1	17.60	0.28	0.40	1	17.60	0.28	0.40
Nitrogen From Urea, Other		005.99	3	18.29	1.43	0.15	3	18.29	1.43	0.15
Method Group 005.XX PCT			4	18.12	1.25	0.21	4	18.12	1.25	0.21
Nitrogen From Biuret, Other		006.99	1	0.25	0.00	0.00	1	0.25	0.00	0.00
Percent Biuret, Spec (as Biuret)	960.04	008.10	1	0.91	0.01	0.01	1	0.91	0.01	0.01
Ammon & Nitrate N, Devarda	892.01	009.10	1	14.86	0.08	0.11	1	14.86	0.08	0.11
Total Nitrogen, Modified Comprehensive	978.02	010.11	5	32.14	0.24	0.08	5	32.14	0.24	0.08
Total Nitrogen, Salicylic	955.04D	010.12	3	31.62	0.36	0.10	3	31.62	0.36	0.10
Total Nitrogen, Raney	970.03	010.16	1	31.59	0.15	0.21	1	31.59	0.15	0.21
Total Nitrogen, Comprehensive	970.02	010.17	2	31.75	0.69	0.06	2	31.75	0.69	0.06
Total Nitrogen, Combustion		010.60	38	32.45	0.26	0.15	36	32.44	0.25	0.13
Total Nitrogen, Other		010.99	4	32.26	0.26	0.15	4	32.26	0.26	0.15
Method Group 010.XX PCT			55	32.35	0.42	0.14	52	32.37	0.39	0.12
Total Phosphate, Spectrometric	958.01	020.20	1	0.28	0.05	0.07	1	0.28	0.05	0.07
Soluble Potash, STPB Oxalate	958.02	050.00	17	62.56	0.44	0.17	16	62.58	0.45	0.15
Soluble Potash, STPB Citrate	969.04	050.10	1	61.98	0.00	0.00	1	61.98	0.00	0.00
Soluble Potash, AA (Oxalate)		050.30	12	61.82	2.02	0.40	12	61.82	2.02	0.40
Soluble Potash, AA (Citrate)		050.31	1	61.46	0.03	0.04	1	61.46	0.03	0.04
Soluble Potash, ICP (Oxalate)		050.50	5	60.89	1.56	0.48	5	60.89	1.56	0.48
Soluble Potash, ICP (Citrate)		050.51	4	61.99	1.16	0.28	4	61.99	1.16	0.28
Soluble Potash, Flame (Oxalate)	983.02(a)	050.60	4	62.77	1.34	1.00	3	63.21	0.46	0.10
Soluble Potash, Flame (Citrate)	983.02(b)	050.61	7	62.22	1.19	0.36	6	62.61	0.63	0.16
Soluble Potash, Other		050.99	12	61.98	1.35	0.34	12	61.98	1.35	0.34
Method Group 050.XX PCT			64	62.13	1.40	0.35	62	62.18	1.36	0.27
Free Water, Vacuum Oven	965.08B	060.00	3	0.06	0.04	0.01	3	0.06	0.04	0.01
Acid Soluble Calcium, ICP		101.30	4	0.00	0.00	0.00	4	0.00	0.00	0.00
Acid Soluble Magnesium, ICP		121.30	3	0.00	0.00	0.00	3	0.00	0.00	0.00
Sulfur, Other		144.99	1	0.00	0.00	0.00	1	0.00	0.00	0.00
Acid Soluble Boron, Other		165.99	2	0.001	0.000	0.000	2	0.001	0.000	0.000
Water Soluble Chlorine, Titrimetric	928.02	190.00	9	46.91	1.08	0.15	9	46.91	1.08	0.15
Water Soluble Chlorine, Other		190.99	5	46.87	2.12	0.29	5	46.87	2.12	0.29
Method Group 190.XX PCT			14	46.90	1.50	0.20	14	46.90	1.50	0.20
Acid Soluble Copper, ICP		221.30	1	0.0004	0.0000	0.0000	1	0.0004	0.0000	0.0000

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<u>Method</u>	<u>AOAC Ref.</u>	<u>Method Code</u>	<u>No. of Labs</u>	<u>Grand Avq.</u>	<u>Std. Dev.</u>	<u>Average Range of Dups</u>	<u>No. of Labs</u>	<u>Grand Avq.</u>	<u>Std. Dev.</u>	<u>Average Range of Dups</u>
Acid Soluble Iron, ICP		241.30	2	0.00	0.00	0.00	2	0.00	0.00	0.00
Acid Soluble Manganese, ICP	972.02a	261.30	1	0.001	0.000	0.000	1	0.001	0.000	0.000
Molybdenum, ICP		289.30	2	0.95	0.98	0.00	2	0.95	0.98	0.00
Sodium, Other		311.99	1	0.01	0.00	0.00	1	0.01	0.00	0.00
Acid Soluble Zinc, ICP		321.30	3	2.084	3.338	0.900	3	2.084	3.338	0.900

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index
Meth: 001.10 PCT			Meth: 002.99 PCT			Meth: 006.99 PCT			Meth: 010.17 PCT			Meth: 010.60 PCT		
Ammoniacal Nitrogen			Nitrate Nitrogen			Nitrogen From Biuret			Total Nitrogen			Total Nitrogen		
<u>MgO Distillation</u>			<u>Other</u>			<u>Other</u>			<u>Comprehensive</u>			<u>Combustion</u>		
415 8.40 1.31			434 19.52 1.50			394 0.25 .00			137 32.35 .87			426 32.28 -.74		
029 8.04 .63			Avg 9.19						Avg 31.75			232 32.25 -.77		
Avg 7.91			360 7.84 -.20			Meth: 008.10 PCT			211 31.15 -.86			023 32.23 -.85		
288 7.63 -.72			394 7.61 -.23			Percent Biuret						029 32.24 -.90		
324 7.56 -.92			288 1.80 -1.07			<u>Spec (as Biuret)</u>			Meth: 010.60 PCT			096 32.22 -.92		
						415 0.91 .71			Total Nitrogen			423 32.18 -1.07		
									<u>Combustion</u>			394 32.15 -1.16		
Meth: 001.99 PCT			Meth: 002.XX PCT			Meth: 009.10 PCT			114 33.44 s 3.90			389 32.10 -1.41		
Ammoniacal Nitrogen			Nitrate Nitrogen			Ammon & Nitrate N			073 33.27 s 3.29			360 32.08 -1.66		
<u>Other</u>			<u>Other</u>			<u>Devarda</u>			369 33.01 2.22			262 32.04 -1.72		
434 10.15 1.60			434 19.52 1.74			420 14.86 .71			106 32.80 1.46			162 31.97 -1.90		
376 9.86 1.34			Avg 8.88						136 32.79 1.38			377 30.17 s -8.92		
Avg 8.36			360 7.84 -.17						325 32.77 1.26					
234 8.07 -.26			029 7.66 -.20			Meth: 010.11 PCT			296 32.74 1.16					
200 7.93 -.39			394 7.61 -.21			Total Nitrogen			233 32.72 1.09			Meth: 010.99 PCT		
096 7.72 -.57			288 1.80 -1.16			<u>Modified Comprehensive</u>			102 32.45 R 1.08			Total Nitrogen		
394 7.65 -.64						405 32.39 1.03			428 32.55 R 1.06			<u>Other</u>		
420 7.15 -1.08			Meth: 005.00 PCT			090 32.35 .89			425 32.71 1.04			354 32.52 1.33		
			Nitrogen From Urea			Avg 32.14			095 32.67 .98			Avg 32.26		
			<u>Urease (as N)</u>			029 32.10 -.28			028 32.64 .75			376 32.25 -.20		
			288 17.60 -.71			073 32.10 -.50			037 32.58 .64			394 31.94 -1.27		
Meth: 001.XX PCT						322 31.78 -1.52			157 32.54 .64			300 28.61 S -14.22		
Ammoniacal Nitrogen			Meth: 005.99 PCT			288 24.20 s -33.64			057 32.49 .48			030 28.35 S -15.22		
434 10.15 2.10			Nitrogen From Urea						043 32.48 .47					
376 9.86 1.78			<u>Other</u>			Meth: 010.12 PCT			049 32.54 .39			Meth: 010.XX PCT		
415 8.40 .24			434 20.12 1.28			Total Nitrogen			324 32.54 .38			<u>Total Nitrogen</u>		
Avg 8.19			Avg 18.29			<u>Salicylic</u>			040 32.54 .38			114 33.44 2.72		
234 8.07 -.15			394 17.55 -.52			185 31.90 .79			055 32.48 .35			073 33.27 2.32		
029 8.04 -.27			029 17.20 -.77			416 31.78 .46			009 32.46 .34			369 33.01 1.63		
200 7.93 -.29						Avg 31.62			234 32.47 .12			106 32.80 1.13		
096 7.72 -.51			Meth: 005.XX PCT			254 31.17 -1.29			Avg 32.44			136 32.79 1.08		
394 7.65 -.59			Nitrogen From Urea			415 27.57 S -11.26			025 32.40 -.18			325 32.77 1.01		
288 7.63 -.60			<u>Other</u>						247 32.40 -.20			296 32.74 .94		
324 7.56 -.68			434 20.12 1.60			Meth: 010.16 PCT			351 32.44 -.30			233 32.72 .89		
420 7.15 -1.12			Avg 18.12			Total Nitrogen			041 32.36 -.31			425 32.71 .87		
			288 17.60 -.44			<u>Raney</u>			177 32.41 -.38			095 32.67 .81		
			394 17.55 -.46			434 31.59 .71			035 32.37 -.40			428 32.55 R .78		
			029 17.20 -.74											
			<u>Jones Modified</u>											
029 7.66 .71														

* X=Excluded from lab performance S/s=Screened Outlier R=Duplicate Range too large A=Analysis beyond 3-s limits

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	
Meth: 010.XX PCT			Meth: 010.XX PCT			Meth: 050.00 PCT			Meth: 050.50 PCT			Meth: 050.99 PCT			
<u>Total Nitrogen</u>			<u>Total Nitrogen</u>			<u>Soluble Potash</u>			<u>Soluble Potash</u>			<u>Soluble Potash</u>			
102	32.45 R	.73	394	31.94	-1.11	<u>STPB Oxalate</u>			<u>ICP (Oxalate)</u>			<u>Other</u>			
354	32.52	.68	185	31.90	-1.19	090	61.81	-1.77	426	60.41	-.41	390	64.26	1.69	
028	32.64	.67	322	31.78	-1.49	200	61.77	-1.81	324	58.64	-1.44	260	63.65	1.23	
037	32.58	.58	416	31.78	-1.50	Meth: 050.10 PCT			420	54.50 S	-4.09	177	63.56	1.18	
157	32.54	.54	434	31.59	-2.01	<u>Soluble Potash</u>			Meth: 050.51 PCT			376	62.30	.32	
049	32.54	.44	254	31.17 A	-3.07	<u>STPB Citrate</u>			<u>Soluble Potash</u>			300	62.15	.13	
040	32.54	.43	211	31.15	-3.10	322	61.98	.71	<u>ICP (Citrate)</u>			232	61.77	-.16	
324	32.54	.43	377	30.17 s	-5.60	Meth: 050.30 PCT			389	62.95	.82	360	61.74	-.32	
057	32.49	.41	300	28.61 s	-9.58	<u>Soluble Potash</u>			009	62.78	.74	432	61.98	-.36	
043	32.48	.40	030	28.35 s	-10.22	<u>AA (Oxalate)</u>			377	62.00	.05	247	61.45	-.41	
055	32.48	.34	415	27.57 s	-12.22	073	66.06	2.10	Avg 61.99			291	61.09	-.67	
009	32.46	.31	288	24.20 s	-20.78	428	63.98	1.08	423	60.24	-1.51	325	60.30	-1.25	
234	32.47	.27	Meth: 020.20 PCT			369	63.80	.99	Meth: 050.60 PCT			434	59.59	-1.79	
351	32.44	.25	<u>Total Phosphate</u>			023	62.58	.37	<u>Soluble Potash</u>			Meth: 050.XX PCT			
177	32.41	.25	<u>Spectrometric</u>			040	62.08	.31	<u>Flame (Oxalate)</u>			<u>Soluble Potash</u>			
035	32.37	.18	420	0.28	-.71	185	61.90	.06	415	69.25 S	13.18	415	69.25 s	5.19	
025	32.40	.08	Meth: 050.00 PCT			Avg 61.82	Meth: 050.61 PCT			406	63.80	1.28	073	66.06	2.85
247	32.40	.07	<u>Soluble Potash</u>			136	61.40	-.21	<u>Soluble Potash</u>			095	64.80	1.93	
405	32.39	.04	<u>STPB Oxalate</u>			351	61.08	-.38	Avg 63.21	Meth: 050.61 PCT			390	64.26	1.53
Avg 32.37			095	64.80 s	4.99	425	60.38	-.73	055	62.92	-.65	428	63.98	1.33	
041	32.36	-.02	009	63.50	2.07	137	59.98	-.92	288	62.91	-.65	369	63.80	1.21	
291	32.34	-.09	418	63.30 X	1.63	234	59.63	-1.11	157	61.45 R	-5.57	406	63.80	1.19	
090	32.35	-.11	029	62.80	.53	262	59.03	-1.39	Meth: 050.61 PCT			260	63.65	1.08	
137	32.35	-.13	211	62.79	.48	Meth: 050.31 PCT			<u>Flame (Citrate)</u>			177	63.56	1.03	
232	32.25	-.31	055	62.76	.41	<u>Soluble Potash</u>			025	63.57	1.53	025	63.57	1.02	
426	32.28	-.32	057	62.68	.32	<u>AA (Citrate)</u>			037	63.02	.69	009	63.50	.97	
376	32.25	-.33	392	62.66	.26	254	61.46	.71	029	62.91	.47	418	63.30 X	.82	
023	32.23	-.36	102	62.68	.24	Meth: 050.50 PCT			Avg 62.61	Meth: 050.61 PCT			037	63.02	.63
096	32.22	-.41	Avg 62.58			<u>Soluble Potash</u>			041	62.13	-.77	389	62.95	.57	
029	32.24	-.42	416	62.48	-.26	<u>ICP (Oxalate)</u>			024	62.11	-.83	055	62.92	.55	
423	32.18	-.50	049	62.47	-.32	106	62.51	1.05	035	61.93	-1.10	288	62.91	.54	
394	32.15	-.56	073	62.47	-.33	405	62.45	1.00	030	59.85 R	-4.55	029	62.91	.53	
029	32.10	-.71	372	62.40	-.46	Meth: 050.50 PCT			<u>Soluble Potash</u>			009	62.78	.51	
389	32.10	-.73	043	62.43	-.54	<u>Soluble Potash</u>			<u>ICP (Oxalate)</u>			029	62.80	.46	
073	32.10	-.74	028	62.27	-.71	Avg 60.89			Avg 62.61			211	62.79	.45	
360	32.08	-.91	114	62.28 R	-.93	354	60.44	-.38	Avg 62.61			055	62.76	.43	
262	32.04	-.94	* X=Excluded from lab performance			S/s=Screened Outlier			R=Duplicate Range too large			A=Analysis beyond 3-s limits			
162	31.97	-1.04													

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index
Meth: 050.XX PCT			Meth: 050.XX PCT			Meth: 165.99 PCT			Meth: 190.XX PCT			Meth: 321.30 PCT		
<u>Soluble Potash</u>			<u>Soluble Potash</u>			<u>Acid Soluble Boron</u>			<u>Water Soluble Chlori</u>			<u>Acid Soluble Zinc</u>		
057	62.68	.37	157	61.45 R	-1.46	Other			389	46.95	.05	ICP		
102	62.68	.37	137	59.98	-1.62	433	0.001	.20	Avg	46.90		009	6.250	1.31
392	62.66	.36	030	59.85 R	-1.80	Avg	0.001		291	46.85	-.05	Avg	2.084	
106	62.51	.31	234	59.63	-1.90	288	0.001	-1.21	055	46.86	-.15	433	0.001	-.62
023	62.58	.29	434	59.59	-1.92	Meth: 190.00 PCT			040	46.26	-.43	288	0.000	-.62
376	62.30	.24	262	59.03	-2.32	Water Soluble Chlori			028	45.77	-.76			
043	62.43	.23	324	58.64	-2.60	<u>Titrimetric</u>			043	45.29	-1.07			
416	62.48	.22	420	54.50 s	-5.64	372	49.10	2.03	423	43.13	-2.52			
073	62.47	.22	Meth: 060.00 PCT			102	47.55	.60	Meth: 221.30 PCT					
114	62.28	.22	Free Water			200	47.42	.47	Acid Soluble Copper					
049	62.47	.22	<u>Vacuum Oven</u>			296	47.00	.12	<u>ICP</u>					
405	62.45	.20	362	0.11	1.05	389	46.95	.06	433	0.0004	.71			
372	62.40	.18	416	0.07	.26	Avg	46.91		Meth: 241.30 PCT					
028	62.27	.07	Avg	0.06		055	46.86	-.20	Acid Soluble Iron					
Avg	62.18		247	0.01	-1.16	040	46.26	-.61	<u>ICP</u>					
300	62.15	-.04	Meth: 101.30 PCT			028	45.77	-1.06	433	0.01	.87			
041	62.13	-.05	Acid Soluble Calcium			043	45.29	-1.50	Avg	0.00				
024	62.11	-.11	<u>ICP</u>			Meth: 190.99 PCT			288	0.00	-.86			
377	62.00	-.14	009	0.01	1.35	Water Soluble Chlori			Meth: 261.30 PCT					
322	61.98	-.15	Avg	0.00		<u>Other</u>			Acid Soluble Mangane					
035	61.93	-.20	420	0.00	-.06	360	48.91	.96	<u>ICP</u>					
185	61.90	-.22	288	0.00	-.68	009	48.26	.66	433	0.001	.71			
200	61.77	-.30	433	0.00	-1.10	057	47.20	.17	Meth: 289.30 PPM					
090	61.81	-.30	Meth: 121.30 PCT			Avg	46.87		Molybdenum					
232	61.77	-.30	Acid Soluble Magnesi			291	46.85	-.03	<u>ICP</u>					
432	61.98	-.39	<u>ICP</u>			423	43.13	-1.76	009	1.80	.87			
360	61.74	-.41	433	0.00	.97	Meth: 190.XX PCT			Avg	0.95				
040	62.08	-.42	420	0.00	.22	<u>Water Soluble Chlori</u>			433	0.10	-.87			
254	61.46	-.53	Avg	0.00		372	49.10	1.47	Meth: 311.99 PCT					
247	61.45	-.54	009	0.00	-1.23	360	48.91	1.35	Sodium					
136	61.40	-.58	Meth: 144.99 PCT			009	48.26	.92	<u>Other</u>					
291	61.09	-.80	Sulfur			102	47.55	.44	009			0.01 .71		
351	61.08	-.82	<u>Other</u>			200	47.42	.35						
354	60.44	-1.31	433	0.00	.97	057	47.20	.23						
425	60.38	-1.34	420	0.00	.22	296	47.00	.10						
426	60.41	-1.34	Avg	0.00		Meth: 190.XX PCT								
325	60.30	-1.38	009	0.00	-1.23	<u>Water Soluble Chlori</u>								
423	60.24	-1.43	Meth: 144.99 PCT			372	49.10	1.47						
* X=Excluded from lab performance			S/s=Screened Outlier			360	48.91	1.35						
			R=Duplicate Range too large			009	48.26	.92						
			A=Analysis beyond 3-s limits			102	47.55	.44						

Method Evaluation - Z Values Based on 1 Reports

Method Code	Number Of Labs	Avg Bias of Labs	Std Dev of Biases	Std Dev Within Labs	Method Code	Number Of Labs	Avg Bias of Labs	Std Dev of Biases	Std Dev Within Labs
001.10	4	0.00	1.03	0.29					
001.99	7	0.00	1.04	0.06					
001.XX	11	0.00	1.02	0.09					
002.99	4	0.00	1.08	0.01					
002.XX	5	0.00	1.06	0.01					
005.99	3	0.00	1.12	0.07					
005.XX	4	0.00	1.07	0.10					
010.11	6	- 5.61	13.76	0.35					
010.12	4	- 2.81	5.70	0.26					
010.17	2	0.00	1.22	0.05					
010.60	41	- 0.03	1.85	0.39					
010.99	6	- 4.91	7.64	0.37					
010.XX	57	- 1.06	3.77	0.31					
050.00	18	0.24	1.51	0.27					
050.30	12	0.00	1.01	0.12					
050.50	6	- 0.68	1.91	0.17					
050.51	4	0.00	1.07	0.16					
050.60	5	1.87	6.58	1.81					
050.61	7	- 0.63	1.91	0.47					
050.99	12	0.00	1.01	0.17					
050.XX	62	- 0.10	1.37	0.29					
060.00	3	0.00	1.10	0.15					
060.XX	3	0.00	1.10	0.15					
101.30	4	0.00	0.93	0.47					
101.XX	4	0.00	0.93	0.47					
121.30	3	0.00	1.08	0.23					
121.XX	3	0.00	1.08	0.23					
165.99	2	0.000	0.253	0.847					
165.XX	2	0.000	0.253	0.847					
190.00	9	0.00	1.03	0.09					
190.99	5	0.00	1.06	0.07					
190.XX	14	0.00	1.02	0.08					
241.30	2	0.00	1.22	0.07					
241.XX	2	0.00	1.22	0.07					
289.30	2	0.00	1.22	0.00					
289.XX	2	0.00	1.22	0.00					
321.30	3	0.000	1.081	0.233					
321.XX	2	0.312	1.324	0.286					