



Magruder Certificate of Analysis

Magruder Sample #180411 Grade 12-24-12

Analyte	Value	± Standard Uncertainty	# Labs
Ammoniacal Nitrogen (%)	8.335	0.054	37
Nitrate Nitrogen (%)	3.373	0.054	23
Total Nitrogen (12%)	11.81	0.03	86
Total Phosphorus as P2O5 (%)	25.76	0.13	56
Direct Available Phosphorus as P2O5 (24%)	25.16	0.12	57
Soluble Potassium as K2O (12%)	12.89	0.07	97
Acid Soluble Calcium (%)	4.334	0.091	19
Acid Soluble Magnesium (1.2%)	1.451	0.020	67
Total Sulfur (1%)	1.161	0.022	39
Acid Soluble Arsenic (ppm)	8.859	0.587	21
Acid Soluble Boron (0.04%)	0.05870	0.00250	47
Acid Soluble Cadmium (ppm)	3.058	0.217	24
Acid Soluble Chromium (ppm)	64.53	2.81	24
Acid Soluble Cobalt (ppm)	3.697	0.364	23
Acid Soluble Copper (%)	0.00080	0.00020	20
Acid Soluble Iron (%)	0.6252	0.0075	25
Acid Soluble Lead (ppm)	4.099	0.402	23
Acid Soluble Manganese (%)	0.01850	0.00040	23
Acid Soluble Molybdenum (ppm)	7.586	0.485	25
Acid Soluble Nickel (ppm)	15.23	0.88	25
Acid Soluble Zinc (0.02%)	0.02660	0.00070	58

1. Data obtained from participant results in the Magruder Check Sample Program.
2. Guaranteed concentrations noted by the value preceding the unit in Analyte name.
3. Values are robust means. Standard uncertainty determined as $1.25 \times \text{robust standard deviation} / \sqrt{\text{\#Labs}}$. Results only shown for analytes tested by 16 or more labs. Values and uncertainties for analytes tested by less than 16 labs are available in Analyte Reports.
4. Technical information on Certificate of Analysis available at www.magruderchecksample.org/prod/Articles.html