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Analytical Report

E96-9431
JEFFREY M JACOBS
24 Rolling Roads, Henlopen Acres
Rehobath Beach, DE 19971

TP ID Number:	DBL250161-1	**Sample Weight (lbs):**	2.62
Product Recognized As:	Wood Chips	**Sample Received:**	3/4/2025
Sample Designation:	Pinyon Juniper White Wood Chips	**Report Date:**	3/28/2025
Sample Date:	2/20/2025	**Purchase Order:**	

Parameter	As-Received	Dry Basis	Analytical Method	ISO 17025
Total Moisture (%)	6.12		ISO 18134-1	Q
Ash (%)	2.55	2.72	ISO 18122	Q
Volatiles (%)	79.57	84.76	ISO 18123	Q
Fixed Carbon (%)	11.75	12.51	By Difference	
GCV (GJ/Tonne)	19.00	20.23	ISO 18125	Q
NCV cV (GJ/Tonne)	17.68	18.98	ISO 18125	Q
NCV cP (GJ/Tonne)	17.60	18.91	ISO 18125	Q
Carbon (%)	47.18	50.26	ISO 16948	Q
Hydrogen (%)	5.73	6.10	ISO 16948	Q
Nitrogen (%)	0.25	0.27	ISO 16948	Q
Oxygen (%)	38.15	40.64	ISO 16948	Q
Sulfur (%)	0.01	0.01	ISO 16994	Q
Chlorine (%)	0.007	0.007	ISO 16994	Q

Parameter	Oxidizing	Analytical Method	ISO 17025
Deformation Temperature - DT (°C)	1400	ISO 21404	Q
Hemispherical Temperature - HT (°C)	1400	ISO 21404	Q
Flow Temperature - FT (°C)	1450	ISO 21404	Q

Parameter	Dry Basis	Analytical Method	ISO 17025
Aluminum (Al) mg/kg	57.5	ISO 16967/16968	Q
Antimony (Sb) mg/kg	< 0.100	ISO 16967/16968	Q
Arsenic (As) mg/kg	0.021	ISO 16967/16968	Q
Barium (Ba) mg/kg	16.70	ISO 16967/16968	Q
Cadmium (Cd) mg/kg	0.011	ISO 16967/16968	Q
Calcium (Ca) mg/kg	6106	ISO 16967/16968	Q
Chromium (Cr) mg/kg	< 1.00	ISO 16967/16968	Q
Cobalt (Co) mg/kg	< 0.100	ISO 16967/16968	Q
Copper (Cu) mg/kg	1.25	ISO 16967/16968	Q

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	Dry Basis	Analytical Method	ISO 17025
Iron (Fe) mg/kg	71.6	ISO 16967/16968	Q
Lead (Pb) mg/kg	0.043	ISO 16967/16968	Q
Magnesium (Mg) mg/kg	193	ISO 16967/16968	Q
Manganese (Mn) mg/kg	< 10.0	ISO 16967/16968	Q
Mercury (Hg) mg/kg	< 0.010	ISO 16967/16968	Q
Molybdenum (Mo) mg/kg	< 0.100	ISO 16967/16968	Q
Nickel (Ni) mg/kg	< 1.00	ISO 16967/16968	Q
Phosphorus (P) mg/kg	192.9	ISO 16967/16968	Q
Potassium (K) mg/kg	671	ISO 16967/16968	Q
Selenium (Se) mg/kg	< 0.050	ISO 16967/16968	Q
Silicon (Si) mg/kg	297.9	ISO 16967/16968	Q
Sodium (Na) mg/kg	28	ISO 16967/16968	Q
Tellurium (Te) mg/kg	< 1.00	ISO 16967/16968	Q
Thallium (Tl) mg/kg	< 1.00	ISO 16967/16968	Q
Tin (Sn) mg/kg	< 1.00	ISO 16967/16968	Q
Titanium (Ti) mg/kg	23.86	ISO 16967/16968	Q
Vanadium (V) mg/kg	0.330	ISO 16967/16968	Q
Zinc (Zn) mg/kg	2.44	ISO 16967/16968	Q

Parameter	**Dry Basis**	**Analytical Method**	**ISO 17025**
Aluminum (Al) mg/kg	3725.4	Metals in Ash(550˚C)	
As (Arsenic) mg/kg	1.540	Metals in Ash(550˚C)	
Barium (Ba) mg/kg	600.09	Metals in Ash(550˚C)	
Calcium (Ca) mg/kg	238547	Metals in Ash(550˚C)	
Cd (Cadmium) mg/kg	0.178	Metals in Ash(550˚C)	
Co (Cobalt) mg/kg	2.580	Metals in Ash(550˚C)	
Cr (Chromium) mg/kg	7.38	Metals in Ash(550˚C)	
Cu (Copper) mg/kg	61.20	Metals in Ash(550˚C)	
Hg (Mercury) mg/kg	< 0.010	Metals in Ash(550˚C)	
Iron (Fe) mg/kg	2850.3	Metals in Ash(550˚C)	
Magnesium (Mg) mg/kg	8862	Metals in Ash(550˚C)	

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	Dry Basis	Analytical Method	ISO 17025
Manganese (Mn) mg/kg	257.8	Metals in Ash(550˚C)	
Mo (Molybdenum) mg/kg	1.234	Metals in Ash(550˚C)	
Ni (Nickel) mg/kg	< 1.00	Metals in Ash(550˚C)	
Pb (Lead) mg/kg	1.701	Metals in Ash(550˚C)	
Phosphorus (P) mg/kg	9783.2	Metals in Ash(550˚C)	
Potassium (K) mg/kg	24309	Metals in Ash(550˚C)	
Sb (Antimony) mg/kg	0.257	Metals in Ash(550˚C)	
Se (Selenium) mg/kg	< 0.050	Metals in Ash(550˚C)	
Silicon (Si) mg/kg	11514.6	Metals in Ash(550˚C)	
Sn (Tin) mg/kg	1.50	Metals in Ash(550˚C)	
Sodium (Na) mg/kg	1114	Metals in Ash(550˚C)	
Te (Tellurium) mg/kg	< 1.00	Metals in Ash(550˚C)	
Titanium (Ti) mg/kg	531.39	Metals in Ash(550˚C)	
Tl (Thallium) mg/kg	< 1.00	Metals in Ash(550˚C)	
V (Vanadium) mg/kg	5.867	Metals in Ash(550˚C)	
Zn (Zinc) mg/kg	110.50	Metals in Ash(550˚C)	

Parameter	As-Received	Dry Basis	Analytical Method	ISO 17025
Cellulose (%)	39.1	41.6	Extrapolation	O
Hemicellulose (%)	6.9	7.4	Extrapolation	O

Parameter	As-Received	Dry Basis	Analytical Method	ISO 17025
Lignin (%)	25.4	27.1	AOAC 973.18	O

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Method Description: Determination of Carbon, Hydrogen, and Nitrogen via High-Temperature Elemental Analysis.	**Method Code:** ISO 16948
Method Description: Direct determination on fuel via ICP-MS. Al, Ca, Fe, Mg, P, K, Si, Na, Ti, Ba, and Mn determined via ISO16967. As, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Sb, V, Zn, Sn, Se, and Tl determined via ISO 16968.	**Method Code:** ISO 16967/16968
Method Description: Determination of Sulfur via High-Temperature Elemental Analysis.	**Method Code:** ISO 16994
Method Description: Metals in Ash done in accordance with ISO 16967, and reported values are perfromed on the ashed material.	**Method Code:** Metals in Ash(550˚C)

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