

VANGUARD SOLUTIONS, INC.

CERTIFIED REFERENCE MATERIALS AND REFERENCE SAMPLES FOR COAL AND COKE LABORATORIES

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We offer a 5% discount for current customers of the Interlab programs.

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Contact Us

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The analysis listed below represents an expected value or range for a particular sample.

Call 1-606-325-1970 for exact chemistry and availability.

Certified Reference Materials Sulfur - Coal and Coke Contents: 50 grams

<u>Catalog Number</u>	<u>Type</u>	<u>% Dry Sulfur</u>
VS1-001	coal	0.35 - 0.45
VS1-021	coal	0.45 - 0.65
VS1-031	coal	0.65 - 0.90
VS1-041	coal	0.90 - 1.25
VS1-051	coal	1.25 - 1.75
VS1-061	coal	1.75 - 2.25
VS1-071	coal	2.25 - 2.75
VS1-081	coal	2.75 - 3.25
VS1-091	coal	3.25 - 3.75
VS1-101	coal	3.75 - 4.50
VS2-002	PETCOKE	0.70 - 0.90
VS2-022	PETCOKE	1.70 - 1.90

Proximate Certified Reference Standards

Coal, Coke, and Lignite

Contents: 50 grams

<u>Catalog Number</u>	<u>Type</u>	<u>% Dry Sulfur</u>	<u>% Dry Ash</u>	<u>% Dry Volatile</u>
VS3-003	coal	> 2.2	< 7.0	30 - 50
VS3-013	coal	< 2.2	< 7.0	30 - 50
VS3-023	coal	> 2.2	7.0 - 10.0	30 - 50
VS3-033	coal	< 2.2	7.0 - 10.0	30 - 50
VS3-043	coal	> 2.2	10.0 - 17.0	30 - 50
VS3-053	coal	< 2.2	10.0 - 17.0	30 - 50
VS3-063	coal	> 2.2	> 17.0	30 - 50
VS3-073	coal	< 2.2	> 17.0	30 - 50
VS3-201	coal	>2.2	7.0-10.0	>30.0
VS3-202	coal	>2.2	>15.0	>30.0

VS4-004	petcoke	0.80 - 1.20	-----	1-10
VS5-005	lignite	< 2.2	-----	30 - 50

Ash Fusion Standard - Coal

Contents: 15 grams

Catalog Number Type

Certified Values

VS7-001 coal Reducing and Oxidizing Temperatures

CERTIFIED CALIBRATION STANDARDS

The analysis listed below represents an expected value or range for a particular sample.
Call 1-606-325-1970 for exact chemistry and availability.

Complete Certified Reference Standards - Coal

Contents - 50ms

Catalog Number

VS6-006	VS6-016	VS6-026	VS6-036	VS6-046	VS6-056	VS6-066
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Ultimate Analysis (Target Values)

% Carbon	< 72.0	< 72.0	< 72.0	> 72.0	> 72.0	> 72.0	> 72.0
% Hydrogen	< 4.75	< 4.75	> 4.75	< 4.75	< 4.75	> 4.75	> 4.75
% Nitrogen	< 1.30	> 1.30	> 1.30	< 1.30	> 1.30	< 1.30	> 1.30

The ultimate and proximate analyses represent typical values for these products.

Please inquire about current values.

Ultimate Analysis (Average Values)

% Carbon	63.17	68.54	69.55	83.13	80.06	73.08	74.99
% Hydrogen	4.22	4.49	4.84	4.45	4.49	4.79	5.09
% Nitrogen	1.19	1.34	1.33	1.21	1.36	1.23	1.4
% Dry Sulfur	0.73	1.1	1.41	1.38	1.82	0.79	0.93
% Oxygen	6.86	8.97	6.31	4.07	1.97	9.63	8.11

Proximate Analysis (Dry Basis)

% Dry Ash	24.04	15.68	16.69	6.64	10.32	10.52	9.58
% Dry Volatile Matter	29.65	33.11	35.39	22.15	19	36.32	37.08
% Fixed Carbon	46.39	51.21	47.87	71.05	70.69	53.16	53.38
Dry BTU/lb	11049	12042	12269	14376	14004	12965	13285

GCV/HHV

VS3 – 1851	coal	27.62 MJ/kg
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Benzoic acid

VSI B001	Powder NIST traceable	25g		26.454 MJ/kg
VSI B003	Pills NIST traceable	1g	50 pills	26.454 MJ/kg

