



Value Beyond Measure

For Immediate Release

Contact: Alexandria Trusov

Atrusov@alpharesources.com

Certified Reference Materials Releases for Q4 2023

Stevensville, Michigan, January 23, 2024 – Alpha Resources LLC, the largest manufacturer of aftermarket consumables and reference materials, is pleased to announce the following new product offerings and updates in certified reference materials which have been released in Q4 of 2023 from their lab.

New Lots available in Q4 2023 for Organic Reference Materials include:

- AR1715 | Lot 715823 (6.64±0.22% Coal CRM)
- AR1720 | Lot 720623 (Proximate Coal CRM)
- AR1722 | Lot 722723 (Proximate Coal CRM)
- AR1723 | Lot 723823 (Proximate Coal CRM)
- AR2775 | Lot 775623 (Ultimate Coal CRM)
- AR2776 | Lot 776723 (Ultimate Coal CRM)
- AR2835 | Lot 835923 (1.02±0.03%S in Lube Oil CRM)

AR1034 | CALCIUM CARBONATE RM | LOT #1023A

<i>Uncertainty by purity</i>

Carbon= 12.00%+/-0.04 (by purity)

Assay: 99.7% (dried basis)

(Larger size available, AR1034-100)

AR1035 | CALCIUM CARBONATE CARBON CRM | LOT #923R

MEAN = 5.95

Expanded Uncertainty = ±0.12

(k=2, @ 95% confidence) (n=36)



AR-4017 | CARBON AND SULFUR IN SOIL CRM | LOT #532R

% CARBON	% SULFUR
MEAN = 0.72	MEAN = 0.51
Expanded Uncertainty = ± 0.14	Expanded Uncertainty = ± 0.08
(k=2, @ 95% confidence) (n=51)	(k=2, @ 95% confidence) (n=52)

New lots released of available Inorganic Certified Reference Materials in Q4 2023 include:

AR145 | OXYGEN & SULFUR IN COPPER PIN CRM | LOT # 823M

% OXYGEN	% SULFUR*
MEAN = 0.0187	MEAN = 0.0008
Standard Deviation = ± 0.0002	Standard Deviation = ± 0.0001
Expanded Uncertainty = ± 0.0005	Expanded Uncertainty = ± 0.0002
(k=2, @ 95% confidence) (n=31)	(k=2, @ 95% confidence) (n=31)

* Below test method scope limits

AR512 | HIGH SULFUR STEEL PIN CRM | LOT # 623Y

% CARBON	% SULFUR
MEAN = 0.083	MEAN = 0.283
Standard Deviation = ± 0.002	Standard Deviation = ± 0.011
Expanded Uncertainty = ± 0.005	Expanded Uncertainty = ± 0.023
(k=2, @ 95% confidence) (n=36)	(k=2, @ 95% confidence) (n=39)

AR555 | HYDROGEN IN STEEL CRM | LOT #923Q

TOTAL HYDROGEN (melted/fused)
MEAN VALUE = 2.0 (ug/g) (0.0002 wt. %)
Standard Deviation = ± 0.6 (ug/g) (± 0.00006 wt. %)
Expanded Uncertainty = ± 1.0 (ug/g) (± 0.0001 wt. %)
(k=2, @ 95% confidence, n=30)



AR641 | TITANIUM O/N/H CRM | LOT#823P

% OXYGEN	% NITROGEN	% HYDROGEN
MEAN = 0.195	MEAN = 0.0309	MEAN = 0.0041
Standard Deviation = ± 0.005	Standard Deviation = ± 0.0012	Standard Deviation = ± 0.0005
Expanded Uncertainty = ± 0.011	Expanded Uncertainty = ± 0.0027	Expanded Uncertainty = ± 0.0011
(k=2, @ 95% confidence) (n=35)	(k=2, @ 95% confidence) (n=35)	(k=2, @ 95% confidence) (n=36)

AR651 | TITANIUM O/N/H CRM | LOT#823K

% OXYGEN	% NITROGEN	% HYDROGEN
MEAN = 0.128	MEAN = 0.0067	MEAN = 0.0023
Standard Deviation = ± 0.007	Standard Deviation = ± 0.0009	Standard Deviation = ± 0.0002
Expanded Uncertainty = ± 0.015	Expanded Uncertainty = ± 0.0020	Expanded Uncertainty = ± 0.0005
(k=2, @ 95% confidence) (n=47)	(k=2, @ 95% confidence) (n=35)	(k=2, @ 95% confidence) (n=45)

AR660 | OXYGEN & NITROGEN STAINLESS STEEL PIN CRM | LOT #723F

% CARBON	% NITROGEN
MEAN = 0.0036	MEAN = 0.0074
Standard Deviation = ± 0.0003	Standard Deviation = ± 0.0004
Expanded Uncertainty = ± 0.0007	Expanded Uncertainty = ± 0.0008
(k=2, @ 95% confidence) (n=41)	(k=2, @ 95% confidence) (n=44)

AR869 | STAINLESS STEEL RING CRM | LOT #723E

% CARBON	% SULFUR
MEAN = 0.020	MEAN = 0.0023
Standard Deviation = ± 0.001	Standard Deviation = ± 0.0002
Expanded Uncertainty = ± 0.003	Expanded Uncertainty = ± 0.0005
(k=2, @ 95% confidence) (n=40)	(k=2, @ 95% confidence) (n=56)



AR886 | CARBON STEEL PIN CRM | LOT #923S

% CARBON	% SULFUR
MEAN = 0.727	MEAN = 0.022
Standard Deviation = ± 0.006	Standard Deviation = ± 0.001
Expanded Uncertainty = ± 0.014	Expanded Uncertainty = ± 0.002
(k=2, @ 95% confidence) (n=30)	(k=2, @ 95% confidence) (n=30)

AR890 | STAINLESS STEEL PIN | LOT #623W

% CARBON	% SULFUR
MEAN = 0.105	MEAN = 0.0048
Standard Deviation = ± 0.003	Standard Deviation = ± 0.0004
Expanded Uncertainty = ± 0.006	Expanded Uncertainty = ± 0.0013
(k=2, @ 95% confidence) (n=59)	(k=2, @ 95% confidence) (n=55)

A complete list of Alpha Resources certified reference materials maybe found online at: <https://www.alpharesources.com/current-list-of-standards.php>

About Alpha Resources

Founded in 1978, Alpha Resources, LLC is a global leader in the manufacture and distribution of consumables and creation of certified reference materials for use in elemental combustion analysis, and is ISO17034, ISO17025, ISO9001:2015 certified.