



*Value Beyond Measure*

***For Immediate Release***

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**Certified Reference Materials Releases for Q1 2023**

*Stevensville, Michigan, April 18, 2023* – 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 Q1 of 2023.

New Q1 2023 available Organic Reference Materials include:

- AR1705 | Lot 705922 (1.46±0.04%S in Coal CRM)
- AR1707 | Lot 071222 (2.51±0.06%S in Coal CRM)
- AR2895 | Lot 895123 (0.49±0.03%S in Residual Oil CRM)
- AR4105 | Lot 1122R (5.13±0.09%Loss on Ignition CRM)
- AR4108 | Lot 1122S (30.1±0.3%Loss on Ignition CRM)

*AR 4019 | CARBON AND SULFUR IN LIMESTONE CRM | LOT #922H*

% CARBON	% SULFUR
MEAN = 0.13	MEAN = 0.13
Expanded Uncertainty = ± 0.03	Expanded Uncertainty = ± 0.03
(k=2, @ 95% confidence) (n=48)	(k=2, @ 95% confidence) (n=46)

*AR 4020 | CARBON IN SOIL CRM | LOT #921J*

% CARBON
MEAN = 1.09
Expanded Uncertainty = ± 0.07
(k=2, @ 95% confidence) (n=50)



New lots of available Inorganic Certified Reference Materials in Q1 2023 include:

*AR 307 | TUNGSTEN CARBIDE CRM | LOT # 622V*

% CARBON	% SULFUR
MEAN = 6.14	MEAN = 0.005
Standard Deviation = $\pm$ 0.02	Standard Deviation = $\pm$ 0.001
Expanded Uncertainty = $\pm$ 0.05	Expanded Uncertainty = $\pm$ 0.002
(k=2, @ 95% confidence) (n=39)	(k=2, @ 95% confidence) (n=33)

*AR 628 | TITANIUM O/N/H CRM | LOT # 222B*

% OXYGEN	%NITROGEN*	%HYDROGEN*
MEAN = 0.039	MEAN = 0.0028	MEAN = 0.0007
Standard Deviation = $\pm$ 0.001	Standard Deviation = $\pm$ 0.0005	Standard Deviation = $\pm$ 0.0002
Expanded Uncertainty = $\pm$ 0.004	Expanded Uncertainty = $\pm$ 0.0012	Expanded Uncertainty = $\pm$ 0.0004
(k=2, @ 95% confidence) (n=54)	(k=2, @ 95% confidence) (n=32)	(k=2, @ 95% confidence) (n=40)

\* Indicates below test method scope limit

*KED 1022 | CARBON AND SULFUR in CATALYST | LOT # 1222Y*

% CARBON	% SULFUR
MEAN = 23.7%	MEAN = 12.1%
Standard Deviation = $\pm$ 0.5	Standard Deviation = $\pm$ 0.3
Expanded Uncertainty = $\pm$ 1.2	Expanded Uncertainty = $\pm$ 0.7
(k=2, @ 95% confidence) (n=29)	(k=2, @ 95% confidence) (n=30)

*AR 1647 | OXYGEN & NITROGEN STEEL PIN CRM | LOT # 1022P*

% OXYGEN	% NITROGEN
MEAN = 0.0033	MEAN = 0.155
Standard Deviation = $\pm$ 0.0003	Standard Deviation = $\pm$ 0.002
Expanded Uncertainty = $\pm$ 0.0006	Expanded Uncertainty = $\pm$ 0.004
(k=2, @ 95% confidence) (n=47)	(k=2, @ 95% confidence) (n=32)



*AR 1653 | OXYGEN & NITROGEN STEEL PIN CRM | LOT # 922L (NEW CRM)*

% OXYGEN	% NITROGEN
MEAN = 0.0007	MEAN = 0.0024
Standard Deviation = $\pm 0.0002$	Standard Deviation = $\pm 0.0003$
Expanded Uncertainty = $\pm 0.0003$	Expanded Uncertainty = $\pm 0.0007$
(k=2, @ 95% confidence) (n=55)	(k=2, @ 95% confidence) (n=54)

*AR 4006 | CARBON AND SULFUR IN ORE CRM | LOT # 821B*

% CARBON	% SULFUR
MEAN = 4.08	MEAN = 3.95
Standard Deviation = $\pm 0.08$	Standard Deviation = $\pm 0.06$
Expanded Uncertainty = $\pm 0.17$	Expanded Uncertainty = $\pm 0.17$
(k=2, @ 95% confidence) (n=40)	(k=2, @ 95% confidence) (n=40)

New Q1 2023 available Inorganic Reference Materials include:

- AR1034 | Lot 22040027 | CALCIUM CARBONATE RM % | %Carbon = 12.00% +/- 0.02 (by purity) | Assay: 99.8% (dried basis)

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.