



*Value Beyond Measure*

***For Immediate Release***

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**Certified Reference Materials Releases for Q3 2023**

*Stevensville, Michigan, October 10, 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 Q3 of 2023 from their lab.

New Lots available in Q3 2023 for Organic Reference Materials include:

- AR1704 | Lot 704723 (1.15±0.05%S in Coal CRM)
- AR2823 | Lot 823723 (0.52±0.02%S in Diesel CRM)
- AR747 | Lot 747723 (Green Petroleum Coke CRM)

*AR10536 | Acetanilide OAS Reference Material | LOT # 823J*

<i>Uncertainty by purity</i>	
% Carbon	= 71.09 ± 0.07
% Hydrogen	= 6.71 ± 0.01
% Nitrogen	= 10.36 ± 0.01
% Oxygen	= 11.84 ± 0.01
M.W.	= 135.16

New lots released of available Inorganic Certified Reference Materials in Q3 2023 include:

*AR147 | OXYGEN & SULFUR IN COPPER PIN CRM | LOT # 523T*

% OXYGEN	% SULFUR
MEAN = 0.0007	MEAN = 0.0007
Standard Deviation = ± 0.0001	Standard Deviation = ± 0.0001
Expanded Uncertainty = ± 0.0003	Expanded Uncertainty = ± 0.0003
(k=2, @ 95% confidence) (n=37)	(k=2, @ 95% confidence) (n=37)



*AR305 | CAST IRON CRM | LOT # 123B*

% CARBON	% SULFUR
MEAN = 2.77	MEAN = 0.018
Standard Deviation = $\pm 0.03$	Standard Deviation = $\pm 0.001$
Expanded Uncertainty = $\pm 0.08$	Expanded Uncertainty = $\pm 0.003$
(k=2, @ 95% confidence) (n=50)	(k=2, @ 95% confidence) (n=38)

*AR513 | HIGH SULFUR STEEL PIN CRM | LOT # 523S*

% CARBON	% SULFUR*
MEAN = 0.023	MEAN = 0.373
Standard Deviation = $\pm 0.002$	Standard Deviation = $\pm 0.010$
Expanded Uncertainty = $\pm 0.005$	Expanded Uncertainty = $\pm 0.023$
(k=2, @ 95% confidence) (n=37)	(k=2, @ 95% confidence) (n=34)

\* Above test method scope limits

*AR873 | CARBON STEEL RING CRM | LOT # 523V*

% CARBON	% SULFUR
MEAN = 0.470	MEAN = 0.012
Standard Deviation = $\pm 0.003$	Standard Deviation = $\pm 0.001$
Expanded Uncertainty = $\pm 0.007$	Expanded Uncertainty = $\pm 0.002$
(k=2, @ 95% confidence) (n=36)	(k=2, @ 95% confidence) (n=35)

*AR875 | CARBON STEEL RING CRM | LOT # 723B*

% CARBON	% SULFUR
MEAN = 0.787	MEAN = 0.015
Standard Deviation = $\pm 0.006$	Standard Deviation = $\pm 0.001$
Expanded Uncertainty = $\pm 0.013$	Expanded Uncertainty = $\pm 0.002$
(k=2, @ 95% confidence) (n=49)	(k=2, @ 95% confidence) (n=45)



*AR883 | CARBON STEEL PIN CRM | LOT # 622P*

% CARBON	% SULFUR
MEAN = 0.215	MEAN = 0.018
Standard Deviation = $\pm$ 0.002	Standard Deviation = $\pm$ 0.001
Expanded Uncertainty = $\pm$ 0.005	Expanded Uncertainty = $\pm$ 0.002
(k=2, @ 95% confidence) (n=54)	(k=2, @ 95% confidence) (n=55)

*AR 946 | CARBON STEEL CHIP CRM | LOT # 423N*

%CARBON	% NITROGEN	% SULFUR
MEAN = 0.0043	MEAN = 0.0046	MEAN = 0.0083
Standard Deviation = $\pm$ 0.0005	Standard Deviation = $\pm$ 0.0002	Standard Deviation = $\pm$ 0.0004
Expanded Uncertainty = $\pm$ 0.0011	Expanded Uncertainty = $\pm$ 0.0004	Expanded Uncertainty = $\pm$ 0.0008
(k=2, @ 95% confidence) (n=42)	(k=2, @ 95% confidence) (n=34)	(k=2, @ 95% confidence) (n=45)

*AR 951 | CARBON STEEL CHIP CRM | LOT # 123D*

%CARBON	% NITROGEN	% SULFUR
MEAN = 0.167	MEAN = 0.0100	MEAN = 0.022
Standard Deviation = $\pm$ 0.002	Standard Deviation = $\pm$ 0.0003	Standard Deviation = $\pm$ 0.001
Expanded Uncertainty = $\pm$ 0.005	Expanded Uncertainty = $\pm$ 0.0007	Expanded Uncertainty = $\pm$ 0.002
(k=2, @ 95% confidence) (n=32)	(k=2, @ 95% confidence) (n=37)	(k=2, @ 95% confidence) (n=34)

*AR1657 | OXYGEN & NITROGEN STAINLESS STEEL PIN CRM | LOT # 823G*

% OXYGEN	% NITROGEN
MEAN = 0.0030	MEAN = 0.0319
Standard Deviation = $\pm$ 0.0004	Standard Deviation = $\pm$ 0.0009
Expanded Uncertainty = $\pm$ 0.0008	Expanded Uncertainty = $\pm$ 0.0020
(k=2, @ 95% confidence) (n=45)	(k=2, @ 95% confidence) (n=36)



*KED 1024 | CARBON & SULFUR IN CATALYST | LOT # 423P*

% CARBON	% SULFUR
MEAN = 15.2%	MEAN = 5.9%
Standard Deviation = $\pm 0.4$	Standard Deviation = $\pm 0.4$
Expanded Uncertainty = $\pm 1.1$	Expanded Uncertainty = $\pm 0.9$
(k=2, @ 95% confidence) (n=30)	(k=2, @ 95% confidence) (n=30)

*AR4014 | CARBON & SULFUR IN LIMESTONE | LOT # 523Q*

% CARBON	% SULFUR
MEAN = 5.89	MEAN = 0.031
Expanded Uncertainty = $\pm 0.29$	Expanded Uncertainty = $\pm 0.011$
(k=2, @ 95% confidence) (n=74)	(k=2, @ 95% confidence) (n=59)

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.