



*Value Beyond Measure*

**For Immediate Release**

Contact: Alexandria Trusov

**Certified Reference Materials Releases for Q4 2022**

*Stevensville, Michigan, January 11, 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 Q4 of 2022.

New Q4 2022 available Organic Reference Materials include:

- AR100 | Lot 100622 (Residual Oil CRM)
- AR745 | Lot 745722 (Green Petroleum Coke CRM)
- AR1701 | Lot 011022 (0.51%S in Coal CRM)
- AR2713 | Lot 131022 (0.55% S in Green Pet Coke CRM)
- AR2812 | Lot 812922 (0.60%±0.04% S in Residual Oil CRM)
- AR2814 | Lot 814822 (0.0108% S in Residual Oil)
- AR5029 | Lot 522M (Calcium Oxalate CRM)

*AR 4010 | CARBON AND SULFUR IN SOIL CRM | LOT #121A*

% CARBON	% SULFUR
MEAN = 0.23	MEAN = 0.12
Expanded Uncertainty = ± 0.06	Expanded Uncertainty = ± 0.04
(k=2, @ 95% confidence) (n=62)	(k=2, @ 95% confidence) (n=54)

*AR 4013 | CARBON AND SULFUR IN LIMESTONE CRM | LOT #422H*

% CARBON	% SULFUR
MEAN = 3.01	MEAN = 0.024
Expanded Uncertainty = ± 0.10	Expanded Uncertainty = ± 0.010
(k=2, @ 95% confidence) (n=53)	(k=2, @ 95% confidence) (n=52)



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AR2017 | Lot 222C Corn Gluten CRM

**DRIED BASIS VALUES**

Feed Analysis	n=	k=	AOAC	Ultimate Analysis	n=	k=	AOAC
% Ash (5.97)	11	--	942.05	% Carbon 50.0 ± 1.6	38	2.0	972.43
% Crude Fat 2.44 ± 0.53	17	2.1	920.39	% Hydrogen 7.21 ± 0.09	20	2.1	CHNOS
% Crude Fiber (1.99)	6	--	978.10	% Nitrogen 10.28 ± 0.29	26	2.1	990.03
% ADF Fiber (8.4)	8	--	973.18	% Sulfur 0.95 ± 0.10	38	2.0	985.01
% Crude Protein 65.0 ± 1.3	22	2.1	990.03				
% Starch 15.42 ± 1.78	16	2.1	2014.10				
% Sugar 2.07 ± 0.41	4	3.2	985.29				
Mineral Analysis	n=	k=	AOAC	Mineral Analysis	n=	k=	AOAC
mg/kg Copper 26 ± 7	15	2.1	2011.14	% Sodium 0.16 ± 0.02	18	<b>2.1</b>	<b>2011.14</b>
mg/kg Aluminum (40)	14	--	ICP	mg/kg Boron (2.8)	18	--	<b>975.03b</b>
mg/kg Chromium 1.8 ± 0.3	8	2.4	ICP	% Phosphorus 0.52 ± 0.06	18	<b>2.1</b>	<b>2011.14</b>
mg/kg Iron 189 ± 34	16	2.1	2011.14	mg/kg Zinc 186 ± 34	16	2.1	2011.14
% Calcium 0.35 ± 0.05	18	2.1	2011.14	% Chlorine (0.26)	<b>4</b>	--	<b>915.01</b>
% Magnesium 0.10 ± 0.01	18	2.1	2011.14	mg/kg Manganese (36)	13	--	<b>2011.14</b>
% Potassium 0.24 ± 0.05	18	2.1	2011.14	mg/kg Strontium 2.5 ± 0.4	<b>8</b>	<b>2.4</b>	<b>ICP</b>

**Items shown in () are given for informational or reference purposes. Dried per AOAC methods.**



New Q4 2022 available Inorganic Certified Reference Materials include:

*AR 300 | CAST IRON CRM | LOT #722D*

% CARBON	% SULFUR
MEAN = 3.29	MEAN = 0.021
Standard Deviation = $\pm 0.01$	Standard Deviation = $\pm 0.002$
Expanded Uncertainty = $\pm 0.04$	Expanded Uncertainty = $\pm 0.005$
(k=2, @ 95% confidence) (n=31)	(k=2, @ 95% confidence) (n=32)

*AR 304 | CAST IRON CRM | LOT #822F*

% CARBON	% SULFUR
MEAN = 4.22	MEAN = 0.022
Standard Deviation = $\pm 0.03$	Standard Deviation = $\pm 0.001$
Expanded Uncertainty = $\pm 0.06$	Expanded Uncertainty = $\pm 0.003$
(k=2, @ 95% confidence) (n=48)	(k=2, @ 95% confidence) (n=45)

*AR 586 | TITANIUM CRM | LOT #722T*

% CARBON	% HYDROGEN
MEAN = 0.019	MEAN = 0.0016
Standard Deviation = $\pm 0.001$	Standard Deviation = $\pm 0.0002$
Expanded Uncertainty = $\pm 0.002$	Expanded Uncertainty = $\pm 0.0005$
(k=2, @ 95% confidence) (n=30)	(k=2, @ 95% confidence) (n=42)

*AR 654 | OXYGEN & NITROGEN STAINLESS STEEL PIN CRM | LOT #821D*

% OXYGEN	% NITROGEN
MEAN = 0.0037	MEAN = 0.0569
Standard Deviation = $\pm 0.0003$	Standard Deviation = $\pm 0.0014$
Expanded Uncertainty = $\pm 0.0006$	Expanded Uncertainty = $\pm 0.0031$
(k=2, @ 95% confidence) (n=36)	(k=2, @ 95% confidence) (n=50)



*AR 660 | OXYGEN & NITROGEN STAINLESS STEEL PIN CRM | LOT #522K*

% OXYGEN	% NITROGEN
MEAN = 0.0038	MEAN = 0.0075
Standard Deviation = $\pm 0.0001$	Standard Deviation = $\pm 0.0002$
Expanded Uncertainty = $\pm 0.0004$	Expanded Uncertainty = $\pm 0.0005$
(k=2, @ 95% confidence) (n=42)	(k=2, @ 95% confidence) (n=42)

*AR 668 | OXYGEN & NITROGEN STAINLESS STEEL PIN CRM | LOT #922J*

% OXYGEN	% NITROGEN
MEAN = 0.0010	MEAN = 0.0028
Standard Deviation = $\pm 0.0002$	Standard Deviation = $\pm 0.0005$
Expanded Uncertainty = $\pm 0.0003$	Expanded Uncertainty = $\pm 0.0010$
(k=2, @ 95% confidence) (n=54)	(k=2, @ 95% confidence) (n=35)

*AR 675 | OXYGEN & NITROGEN STAINLESS STEEL PIN CRM | LOT #1122T*

% OXYGEN	% NITROGEN
MEAN = 0.172	MEAN = 0.268
Standard Deviation = $\pm 0.014$	Standard Deviation = $\pm 0.014$
Expanded Uncertainty = $\pm 0.030$	Expanded Uncertainty = $\pm 0.030$
(k=2, @ 95% confidence) (n=52)	(k=2, @ 95% confidence) (n=53)

*AR 882 | STAINLESS STEEL PIN CRM | LOT #322E*

% CARBON	% SULFUR
MEAN = 0.059	MEAN = 0.0187
Standard Deviation = $\pm 0.001$	Standard Deviation = $\pm 0.0008$
Expanded Uncertainty = $\pm 0.002$	Expanded Uncertainty = $\pm 0.0018$
(k=2, @ 95% confidence) (n=36)	(k=2, @ 95% confidence) (n=37)



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AR 888 | HIGH SULFUR STAINLESS STEEL PIN CRM | LOT #722D

% CARBON	% SULFUR
MEAN = 0.131	MEAN = 0.228
Standard Deviation = $\pm 0.001$	Standard Deviation = $\pm 0.005$
Expanded Uncertainty = $\pm 0.004$	Expanded Uncertainty = $\pm 0.012$
(k=2, @ 95% confidence) (n=30)	(k=2, @ 95% confidence) (n=30)

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.