

# ALPHA Resources LLC - USA

## Hydrogen, Nitrogen, Oxygen in Metals

Last Updated: 4/2/2020

Steel Pin Standards for Oxygen/Nitrogen

Part #	17034	17025	Size	% Oxygen	Standard Deviation	Expanded Uncertainty	% Nitrogen	Standard Deviation	Expanded Uncertainty	Lot #	Pieces per Bottle
<a href="#">AR644</a>			1g	0.0003	0.0001	0.0002	0.0140	0.0010	0.0020	718B	100
<a href="#">AR645</a>			1g	0.0035	0.0004	0.0009	0.0089	0.0004	0.0009	1119B	100
<a href="#">AR646</a>			1g	0.0035	0.0004	0.0008	0.0738	0.0006	0.0014	318A	100
<a href="#">AR1647</a>			1g	0.0031	0.0002	0.0004	0.140	0.003	0.007	419K	100
<a href="#">AR1648</a>			1g	<b>SOLD OUT</b>	<b>AND</b>	<b>DISCONTINUED</b>	<b>SEE AR1650</b>	<b>OR AR659</b>			100
<a href="#">AR1650</a>			1g	0.0100	0.0004	0.0008	0.0102	0.0004	0.0009	519C	100
<a href="#">AR1651</a>			1g	0.0031	0.0002	0.0005	0.0202	0.0003	0.0007	419G	100
<a href="#">AR1652</a>			1g	0.0034	0.0002	0.0004	0.0530	0.0011	0.0024	719D	100
<a href="#">AR1653</a>			1g	0.0007	0.0002	0.0004	0.0030	0.0005	0.0010	819D	100
<a href="#">AR1657</a>			1g	0.0034	0.0002	0.0005	0.0319	0.0009	0.0018	115B	100
<a href="#">AR1658</a>			1g	0.0009	0.0002	0.0004	0.0756	0.0013	0.0031	717D	100
<a href="#">AR654</a>			0.5g	0.0045	0.0002	0.0005	0.0532	0.0007	0.0015	1218B	100
<a href="#">AR655</a>			0.5	0.0037	0.0003	0.0006	0.392	0.013	0.029	618B	100

<a href="#">AR656</a>			0.5g	0.0036	0.0003	0.0007	0.0192	0.0008	0.0019	618A	100
<a href="#">AR657</a>			0.5g	0.0099	0.0003	0.0006	0.0102	0.0004	0.0008	916A	100
<a href="#">AR658</a>			0.5g	0.0013	0.0002	0.0005	0.0771	0.0007	0.0015	717C	100
<a href="#">AR659</a>			0.5g	0.0110	0.0005	0.0011	0.0056	0.0004	0.0009	219B	100
<a href="#">AR660</a>			0.5g	0.0040	0.0005	0.0011	0.0074	0.0003	0.0007	1018A	100
<a href="#">AR661</a>			0.5g	0.0008	0.0001	0.0002	0.0091	0.0008	0.0016	517C	100
<a href="#">AR662</a>			0.5g	0.0032	0.0003	0.0006	0.0754	0.0012	0.0024	517B	100
<a href="#">AR663</a>			0.5g	0.0031	0.0002	0.0004	0.144	0.003	0.006	319F	100
<a href="#">AR667</a>			0.5g	0.0034	0.0004	0.0008	0.0323	0.0008	0.0016	315B	100
<a href="#">AR668</a>			0.5g	0.0010	0.0001	0.0003	0.0024	0.0002	0.0005	719A	100
<a href="#">AR670</a>			0.5g	<b>SOLD</b>	<b>OUT</b>	<b>AND</b>	<b>DISCONTINUED</b>				100
<a href="#">AR675</a>			0.5g	0.158	0.012	0.025	0.225	0.015	0.033	1018B	100
<a href="#">AR676</a>			0.5	0.046	0.005	0.010	0.1099	0.0042	0.0090	419H	100

Chip Standards for Carbon / Sulfur / Nitrogen

Part #	17034	17025	%C	Std Dev	Expanded Deviation	%S	Std Dev	Expanded Deviation	%N	Std Dev	Expanded Deviation	Lot #	Weight
<a href="#">AR945</a>			0.017	0.001	0.002	0.0004	0.0001	0.0004	0.341	0.007	0.018	418A	150g
<a href="#">AR946</a>			0.0051	0.0004	0.0008	0.0083	0.0004	0.0009	0.0049	0.0003	0.0006	619C	150g

<a href="#">AR947</a>			0.389	0.008	0.016	0.117	0.002	0.004	0.0090	0.0004	0.0008	1114B	150g
<a href="#">AR948</a>			0.498	0.005	0.010	0.0780	0.0011	0.0025	0.0090	0.0003	0.0008	817D	150g
<a href="#">AR949</a>			0.0178	0.0007	0.0016	0.0266	0.0011	0.0025	0.0364	0.0009	0.0019	317D	150g
<a href="#">AR950</a>			0.054	0.001	0.003	0.011	0.001	0.002	0.0034	0.0002	0.0004	1118B	150g
<a href="#">AR951</a>			0.161	0.002	0.005	0.0221	0.0013	0.0031	0.0073	0.0005	0.0012	918C	150g
<a href="#">AR952</a>			0.482	0.003	0.006	0.020	0.001	0.002	0.0114	0.0005	0.0010	914A	150g
<a href="#">AR953</a>			0.953	0.006	0.012	0.0026	0.0002	0.0005	0.0081	0.0006	0.0013	118C	150g
<a href="#">AR954</a>			0.417	0.003	0.007	0.027	0.001	0.003	0.0083	0.0003	0.0008	218B	150g
<a href="#">AR955</a>			0.201	0.002	0.004	0.025	0.001	0.003	0.0071	0.0003	0.0009	719F	150g
<a href="#">AR956</a>			0.401	0.005	0.010	0.256	0.006	0.014	0.0067	0.0002	0.0006	817A	150g
<a href="#">AR957</a>			0.182	0.002	0.004	0.107	0.003	0.007	0.0086	0.0003	0.0007	219E	150g
<a href="#">AR958</a>			0.015	0.001	0.002	0.023	0.002	0.004	0.068	0.002	0.004	212A	150g
<a href="#">AR960</a>			0.121	0.003	0.006	0.0221	0.0009	0.0018	0.036	0.001	0.002	814B	150g
<a href="#">AR961</a>			0.0242	0.005	0.0014	0.0100	0.0004	0.0010	0.046	0.001	0.003	719B	150g

Zirconium Pin Standards for Hydrogen/Nitrogen/Oxygen

Part #	17034	17025	Size	%O	Std Dev	Expanded Uncertainty	%N	Std Dev	Expanded Uncertainty	%H	Std Dev	Expanded Uncertainty	Lot #	Pieces per Bottle

<a href="#">AR630</a>			0.1g	0.149	0.006	0.012	0.0020	0.0005	0.0005	0.0010	0.0002	0.0004	815B	100
<a href="#">AR640</a>			<b>Sold Out</b>	<b>and</b>	<b>Discontinued</b>	<b>See</b>	<b>AR630</b>	<b>as</b>	<b>Possible</b>	<b>Alternative</b>				100

### Steel Pin Standards for Hydrogen

Part #	17034	17025	Size	% Hydrogen	Standard Deviation	Expanded Uncertainty	Lot #	Pieces per Bottle
<a href="#">AR546</a>			1g	0.000095	0.000013	0.000029	917C	100
<a href="#">AR555</a>			1g	0.00023	0.00004	0.00011	219C	100
<a href="#">AR556</a>			1g	0.00045	0.00005	0.0001	517A	100
<a href="#">AR558</a>			1g	Sold	Out			100

### Titanium Pin Standards for Hydrogen/Oxygen/Nitrogen

Part #	17034	17025	Size	% O	Std Dev	Expanded Uncertainty	% N	Std Dev	Expanded Uncertainty	% H	Std Dev	Expanded Uncertainty	Lot #	Pieces per Bottle
<a href="#">AR631</a>			0.1g	0.361	0.006	0.015	0.0058	0.0011	0.0024	0.0016	0.0001	0.0003	1019A	100
<a href="#">AR635</a>			0.1g	0.147	0.006	0.012	0.014	0.001	0.002	0.0043	0.0004	0.0008	719E	100
<a href="#">AR637</a>			0.1g	0.152	0.004	0.009	0.008	0.001	0.002	0.0015	0.0003	0.0006	1018F	100
<a href="#">AR641</a>			0.1g	0.195	0.004	0.008	0.0309	0.0012	0.0026	0.0041	0.0003	0.0006	219A	100

<a href="#">AR642</a>			0.1g	0.149	0.003	0.006	0.019	0.002	0.004	0.0050	0.0004	0.0009	319B	100
<a href="#">AR647</a>			0.1g	0.1300	0.0040	0.0080	0.0080	0.0006	0.0014	0.0103	0.0004	0.0009	917A	100
<a href="#">AR648</a>			0.1g	Sold	Out									100
<a href="#">AR649</a>			0.1g	0.115	0.004	0.009	0.0067	0.0007	0.0015	0.0191	0.0003	0.0007	319G	100
<a href="#">AR650</a>			0.1g	0.089	0.006	0.013	0.0087	0.0009	0.0021	0.0068	0.004	0.0010	718A	100
<a href="#">AR651</a>			0.1g	0.1262	0.0021	0.0053	0.0065	0.0011	0.0025	0.0029	0.0002	0.0004	1018C	100

Titanium/Zirconium Pin Standards for Hydrogen/Carbon

Part #	17034	17025	Type	Size	% Hydrogen	Standard Deviation	Expanded Uncertainty	% Carbon	Standard Deviation	Expanded Uncertainty	Lot #	Pieces per Bottle
<a href="#">AR582</a>			Ti	0.25g	0.0052	0.0004	0.0008	0.025	0.001	0.002	319A	000
<a href="#">AR585</a>			Ti	0.25g	0.0068	0.0005	0.0011	0.0063	0.0007	0.0019	618C	100
<a href="#">AR586</a>			Ti	0.25g	0.0018	0.0002	0.0005	0.019	0.001	0.002	315D	100
<a href="#">AR587</a>			Ti	0.25g	0.0099	0.0004	0.0009	0.008	0.001	0.002	619A	100
<a href="#">AR588</a>			Ti	0.25g	0.0137	0.0004	0.0008	0.008	0.0015	0.0030	714E	100
<a href="#">AR589</a>			Ti	0.25g	0.0207	0.0008	0.0017	0.0083	0.0006	0.0012	519B	100
<a href="#">AR590</a>			Zr	0.25g	0.0010	0.0002	0.0004	0.016	0.001	0.002	815C	100
<a href="#">AR591</a>			Ti	0.25g	0.0017	0.0002	0.0004	0.047	0.0006	0.0012	1216C	100
<a href="#">AR592</a>			Ti	0.25g	0.0290	0.0015	0.0030	0.0072	0.0006	0.0012	616A	100

### Copper Pin Standards for Oxygen/Sulfur

Part #	17034	17025	Size	% Oxygen	Standard Deviation	Expanded Uncertainty	% Sulfur	Standard Deviation	Expanded Uncertainty	Lot #	Pieces per Bottle
<a href="#">AR146</a>			1g	0.0235	0.0006	0.0014	0.0014	0.0002	0.0004	318C	
<a href="#">AR147</a>			1g	0.0007	0.0001	0.0003	0.0010	0.0002	0.0004	918B	100
<a href="#">AR148</a>			1g	0.0493	0.0009	0.0020	0.0013	0.0002	0.0005	518B	100
<a href="#">AR149</a>			1g	0.0312	0.0005	0.0012	0.0005	0.0001	0.0002	619F	100

### Iron Powder Standards for Oxygen/Nitrogen

Part #	% Oxygen	Standard Deviation	Expanded Uncertainty	% Nitrogen	Standard Deviation	Expanded Uncertainty	Lot #	Unit Weight
<a href="#">KED1025</a>	Sold	Out	Targeted	Replacement	Date	April 24,	2020	50g
<a href="#">AR6101</a>				1.11	0.05	0.18	118D	25G
<a href="#">AR6102</a>				1.96	0.07	0.28	118E	25G
<a href="#">AR6103</a>				2.93	0.11	0.31	118F	25G

### Hydrogen in Carbon Matrix

Part #	17034	17025	% Hydrogen	Expanded Uncertainty	Lot #	Unit Weight
<a href="#">AR6121</a>			0.105	0.006	319C	25g
<a href="#">AR6122</a>			0.205	0.012	319D	25g

<a href="#">AR6123</a>			0.300	0.043	319E	25g
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