

Hydrogen, Nitrogen, Oxygen in Metals

Steel Pin Standards for Oxygen/Nitrogen

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

Part #	Size	% Oxygen	Standard Deviation	Expanded Uncertainty	% Nitrogen	Standard Deviation	Expanded Uncertainty	Lot #	Pieces per Bottle
AR656	0.5g	0.0036	0.0003	0.0007	0.0192	0.0008	0.0019	618A	100
AR658	0.5g	0.0013	0.0002	0.0005	0.0771	0.0007	0.0015	717C	100
AR659	0.5g	0.0110	0.0005	0.0011	0.0056	0.0004	0.0009	219B	100
AR660	0.5g	0.0040	0.0005	0.0011	0.0074	0.0003	0.0007	1018A	100
AR661	0.5g	0.0008	0.0001	0.0002	0.0091	0.0008	0.0016	517C	100
AR662	0.5g	0.0026	0.0002	0.0005	0.073	0.001	0.002	919B	100
AR663	0.5g	0.0031	0.0002	0.0004	0.144	0.003	0.006	319F	100
AR667	0.5g	0.0034	0.0004	0.0008	0.0323	0.0008	0.0016	315B	100
AR668	0.5g	0.0010	0.0001	0.0003	0.0024	0.0002	0.0005	719A	100
AR675	0.5g	0.158	0.012	0.025	0.225	0.015	0.033	1018B	100
AR676	0.5	0.046	0.005	0.010	0.1099	0.0042	0.0090	419H	100

Chip Standards for Carbon / Sulfur / Nitrogen

Part #	%C	Std Dev	Expanded Deviation	%S	Std Dev	Expanded Deviation	%N	Std Dev	Expanded Deviation	Lot #	Weight
AR945	0.017	0.001	0.002	0.0004	0.0001	0.0004	0.341	0.007	0.018	418 ^a	150g
AR946	0.0051	0.0004	0.0008	0.0083	0.0004	0.0009	0.0049	0.0003	0.0006	619C	150g
AR947	0.389	0.008	0.016	0.117	0.002	0.004	0.0090	0.0004	0.0008	1114B	150g
AR948	0.498	0.005	0.010	0.0780	0.0011	0.0025	0.0090	0.0003	0.0008	817D	150g
AR949	0.0178	0.0007	0.0016	0.0266	0.0011	0.0025	0.0364	0.0009	0.0019	317D	150g
AR950	0.054	0.001	0.003	0.011	0.001	0.002	0.0034	0.0002	0.0004	1118B	150g
AR951	0.161	0.002	0.005	0.0221	0.0013	0.0031	0.0073	0.0005	0.0012	918C	150g
AR952	0.482	0.003	0.006	0.020	0.001	0.002	0.0114	0.0005	0.0010	914 ^a	150g
AR953	0.953	0.006	0.012	0.0026	0.0002	0.0005	0.0081	0.0006	0.0013	118C	150g
AR954	0.417	0.003	0.007	0.027	0.001	0.003	0.0083	0.0003	0.0008	218B	150g
AR955	0.201	0.002	0.004	0.025	0.001	0.003	0.0071	0.0003	0.0009	719F	150g
AR956	0.401	0.005	0.010	0.256	0.006	0.014	0.0067	0.0002	0.0006	817 ^a	150g
AR957	0.182	0.002	0.004	0.107	0.003	0.007	0.0086	0.0003	0.0007	219E	150g
AR958	0.015	0.001	0.002	0.023	0.002	0.004	0.068	0.002	0.004	212 ^a	150g

Part #	%C	Std Dev	Expanded Deviation	%S	Std Dev	Expanded Deviation	%N	Std Dev	Expanded Deviation	Lot #	Weight
AR960	0.121	0.003	0.006	0.0221	0.0009	0.0018	0.036	0.001	0.002	814B	150g
AR961	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 #	Size	%O	Std Dev	Expanded Uncertainty	%N	Std Dev	Expanded Uncertainty	%H	Std Dev	Expanded Uncertainty	Lot #	Pieces per Bottle
AR630	0.1g	0.149	0.006	0.012	0.0020	0.0005	0.0005	0.0010	0.0002	0.0004	815B	100

Steel Pin Standards for Hydrogen

Part #	Size	% Hydrogen	Standard Deviation	Expanded Uncertainty	Lot #	Pieces per Bottle
AR546	1g	0.000095	0.000013	0.000029	917C	100
AR555	1g	0.00023	0.00004	0.00011	219C	100
AR556	1g	Sold	Out			100
AR558	1g	Sold	Out			100

Titanium Pin Standards for Hydrogen/Oxygen/Nitrogen

Part #	Size	% O	Std Dev	Expanded Uncertainty	% N	Std Dev	Expanded Uncertainty	% H	Std Dev	Expanded Uncertainty	Lot #	Pieces per Bottle
<u>AR631</u>	0.1g	0.361	0.006	0.015	0.0058	0.0011	0.0024	0.0016	0.0001	0.0003	1019A	100
<u>AR635</u>	0.1g	0.147	0.006	0.012	0.014	0.001	0.002	0.0043	0.0004	0.0008	719E	100
<u>AR641</u>	0.1g	0.195	0.004	0.008	0.0309	0.0012	0.0026	0.0041	0.0003	0.0006	219A	100
<u>AR642</u>	0.1g	0.149	0.003	0.006	0.019	0.002	0.004	0.0050	0.0004	0.0009	319B	100
<u>AR648</u>	0.1g	0.115	0.005	0.012	0.0060	0.0008	0.0017	0.0153	0.0004	0.0008	1219A	100
<u>AR649</u>	0.1g	0.115	0.004	0.009	0.0067	0.0007	0.0015	0.0191	0.0003	0.0007	319G	100
<u>AR651</u>	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 #	Type	Size	% Hydrogen	Standard Deviation	Expanded Uncertainty	% Carbon	Standard Deviation	Expanded Uncertainty	Lot #	Pieces per Bottle
AR582	Ti	0.25g	0.0052	0.0004	0.0008	0.025	0.001	0.002	319 ^a	000
AR585	Ti	0.25g	0.0068	0.0005	0.0011	0.0063	0.0007	0.0019	618C	100
AR586	Ti	0.25g	0.0019	0.0002	0.0005	0.020	0.001	0.003	120D	100
AR587	Ti	0.25g	0.0099	0.0004	0.0009	0.008	0.001	0.002	619 ^a	100
AR588	Ti	0.25g	0.0137	0.0004	0.0008	0.008	0.0015	0.0030	714E	100
AR589	Ti	0.25g	0.0207	0.0008	0.0017	0.0083	0.0006	0.0012	519B	100
AR590	Zr	0.25g	0.0010	0.0002	0.0004	0.016	0.001	0.002	815C	100
AR591	Ti	0.25g	0.0017	0.0002	0.0004	0.047	0.0006	0.0012	1216C	100
AR592	Ti	0.25g	0.0290	0.0015	0.0030	0.0072	0.0006	0.0012	616 ^a	100

Copper Pin Standards for Oxygen/Sulfur

Part #	Size	% Oxygen	Standard Deviation	Expanded Uncertainty	% Sulfur	Standard Deviation	Expanded Uncertainty	Lot #	Pieces per Bottle
AR146	1g	0.0235	0.0006	0.0014	0.0014	0.0002	0.0004	318C	
AR147	1g	0.0007	0.0001	0.0003	0.0010	0.0002	0.0004	918B	100
AR148	1g	0.0493	0.0009	0.0020	0.0013	0.0002	0.0005	518B	100
AR149	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
KED1025	0.91	0.04	0.08	0.0133	0.0013	0.0037	419E	50g
AR6101				1.11	0.05	0.18	118D	25G
AR6102				1.96	0.07	0.28	118E	25G
AR6103				2.93	0.11	0.31	118F	25G

Hydrogen in Carbon Matrix

Part #	% Hydrogen	Expanded Uncertainty	Lot #	Unit Weight
<u>AR6121</u>	0.105	0.006	319C	25g
<u>AR6122</u>	0.205	0.012	319D	25g
<u>AR6123</u>	0.300	0.043	319E	25g