



ANALYTICAL REFERENCE MATERIALS INTERNATIONAL

Proficiency Testing Program (PTP)

Certificate of Performance

Subscriber: TQA Metals Laboratory

Material Grade: AISI 1018 / IARM 28B

Code: PT# 15155

Sorted	Al	As	B	C	Ca	Co	Cr	Cu	Mn	Mo	N	Nb	Ni	O	P	S	Si	Sn	Ti	V	
1	0.0004	0.0065	0.0001	0.1727	0.001	0.009	0.126	0.342	0.73	0.025	0.0078	0.0006	0.119	0.0066	0.008	0.0233	0.2	0.012	0.0001	0.001	
2	0.0006	0.007	0.0001	0.175	0.0014	0.0094	0.126	0.349	0.73	0.026	0.00793	0.001	0.119	0.0068	0.0085	0.026	0.21	0.013	0.0003	0.001	
3	0.001	0.007	0.0001	0.177	0.0015	0.0096	0.128	0.35	0.73	0.027	0.0087	0.001	0.1193	0.0068	0.0085	0.0261	0.216	0.013	0.0009	0.0012	
4	0.0017	0.0077	0.0001	0.178	0.0018	0.0097	0.1289	0.351	0.7338	0.027	0.0089	0.0012	0.12	0.0068	0.0086	0.0272	0.217	0.0133	0.001	0.0015	
5	0.002	0.0078	0.0001	0.1786	0.00185	0.0099	0.13	0.3549	0.7349	0.028	0.0089	0.002	0.1202	0.00703	0.0088	0.0277	0.2179	0.0136	0.001	0.0018	
6	0.002	0.0078	0.00015	0.179	0.002	0.01	0.13	0.3557	0.74	0.028	0.009	0.002	0.121	0.0071	0.0089	0.028	0.221	0.0139	0.001	0.002	
7	0.002	0.0078	0.00017	0.179	0.0024	0.01	0.13	0.357	0.744	0.0286	0.009	0.002	0.123	0.0074	0.009	0.028	0.222	0.014	0.0012	0.002	
8	0.002	0.008	0.00019	0.18	0.0024	0.01	0.13	0.36	0.745	0.029	0.009	0.002	0.123	0.0075	0.009	0.028	0.2228	0.014	0.002	0.002	
9	0.0028	0.0082	0.0002	0.18	0.0025	0.01	0.13	0.362	0.7453	0.029	0.0091	0.002	0.124		0.009	0.028	0.224	0.014	0.002	0.002	
10	0.003	0.009	0.0002	0.18	0.0026	0.0108	0.1304	0.365	0.747	0.029	0.0091	0.0027	0.125		0.0091	0.0284	0.2244	0.014	0.002	0.002	
11	0.0032	0.009	0.0002	0.183	0.0026	0.011	0.131	0.366	0.748	0.029	0.0092	0.003	0.126		0.0092	0.0286	0.2262	0.0141	0.0021	0.0022	
12	0.0038	0.0092	0.00026	0.183	0.00274	0.012	0.1314	0.3687	0.748	0.0296	0.0093		0.1269		0.0095	0.029	0.229	0.0146	0.00219	0.0029	
13	0.004	0.01	0.0003	0.1834	0.0035	0.012	0.133	0.369	0.75	0.03	0.0094		0.127		0.0096	0.029	0.23	0.0147	0.0022	0.003	
14	0.004		0.00034	0.184		0.013	0.133	0.369	0.751	0.03	0.0094		0.1286		0.01	0.0295	0.231	0.0148	0.0023	0.0034	
15	0.0043			0.184		0.015	0.134	0.3696	0.7526	0.0302	0.0095		0.13		0.01	0.03	0.235	0.015	0.00231	0.0035	
16	0.0043			0.1846		0.016	0.1343	0.37	0.7554	0.0303	0.0096		0.13		0.0105	0.0304	0.239	0.015	0.0024	0.0035	
17	0.005			0.186			0.1349	0.3708	0.756	0.031	0.0097		0.13		0.011	0.0307	0.24	0.0156	0.0025	0.004	
18	0.0069			0.1873			0.139	0.372	0.757	0.0311	0.0099		0.1317		0.011	0.031	0.241	0.0158	0.00251		
19	0.007			0.188			0.14	0.377	0.77	0.033	0.01		0.132		0.0112	0.032	0.2411	0.016	0.004		
20	0.0072			0.189			0.14	0.38	0.77	0.034	0.0102		0.133		0.012	0.0328	0.244	0.016	0.004		
Mean	0.0032	0.0080	0.0002	0.1817	0.0021	0.0110	0.1319	0.3640	0.7464	0.0291	0.0092	0.0016	0.1254	0.0070	0.0096	0.0290	0.2267	0.0144	0.0020	0.0023	
Std Dev	0.0019	0.0010	0.0001	0.0044	0.0007	0.0021	0.0042	0.0091	0.0119	0.0022	0.0006	0.0009	0.0049	0.0003	0.0011	0.0018	0.0118	0.0011	0.0010	0.0009	
Z-Score	2.11	1.20	0.00	-0.61	0.57	0.48	0.26	-2.42	0.81	0.86	-0.50	0.44	0.12	-0.67	-0.64	-3.17	-0.23	-1.27	-1.90	-0.89	

Note 1: Subscriber data is inserted and sorted without recalculation of the mean and standard deviation.

Note 2: In order to provide PTP subscribers with a larger population of data for comparison, effective June 15, 1994, the "Certificate of Performance" may contain up to twenty data points for each element. These data points are a combination of the original "Benchmark" data acquired during the ARMI certification process as well as data that has been submitted by PTP subscribers which is statistically acceptable in accordance with the established ARMI/ILAP protocol.

CAUTION! Since the test samples are actual Certified Reference Materials, they may also be used for calibrations, type standards, etc.. If used as CRMs, use only the data labeled "Certified" on the "Certificate of Analyses".

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