

Popular Carbon & Low-Alloy Steels Set

*THE LEADER IN "APPLICATION-SPECIFIC"
CERTIFIED REFERENCE MATERIALS*



IARMS
***INTERNATIONAL ANALYTICAL
REFERENCE MATERIALS***

“Application-Specific” means just that, IARMs that are readily available in the physical forms necessary to supply the calibration needs of your laboratory. In addition to our original **thin disks** for X-ray methods, all CRMs are available in physical forms tailored to your specific applications; **thick solid disk** for Optical Emission and Glow Discharge spectrometry, and **chips** for wet chemical or solution instrumental techniques (ICP, AA, etc.). Also, for combustion analysis, **chips** are available for carbon and sulfur analysis. Please see the reverse side of this brochure for a list of the specific list of alloy CRMs selected for this set, and their typical chemistries.



Part of LGC Standards

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25-Piece Pre-Selected Carbon, and Low-Alloy Steel Set

Analytical Reference Materials International's (ARMI) primary objective has been to develop and implement an industry acceptable system for the characterization and certification of metal alloy materials. The resulting Certified Reference Materials (CRMs) afford the scientific community an **unequivocal level of confidence**. Equally important is our desire that the final certified results be traceable to national and/or international certifying bodies with emphasis on NIST.

Grade UNS#	Al Ni	As O	B P	C Pb	Co S	Cr Si	Cu Sn	Mn Ti	Mo V	N W	Nb
Pure Iron K00095	(0.001) (0.003)	(0.001) (0.01)	<0.001 (0.001)	(0.002) <0.0005	(0.004) (0.001)	(0.002) (0.003)	(0.001) (0.001)	(0.001) (0.001)	(0.001) <0.0005	(0.001) (0.002)	(0.001) ---
AISI 1018 G10180	0.027 0.070	0.0071 0.0015	0.0002 0.015	0.175 <0.001	0.0051 0.031	0.129 0.26	0.120 0.0059	0.82 0.0023	0.034 0.0015	0.0076 0.003	0.0015 ---
AISI 1045 G10450	0.003 0.089	0.005 0.004	0.0001 0.013	0.452 0.0004	0.007 0.026	0.132 0.219	0.228 0.009	0.755 0.002	0.018 0.024	0.0097 0.002	0.001 ---
AISI 1117 G11170	0.0033 0.042	0.0046 (0.0082)	(0.0003) 0.018	0.17 ---	(0.023) 0.1153	0.076 0.050	0.085 0.0072	1.07 0.0014	0.016 0.0018	0.0057 (0.0030)	(0.0027) ---
AISI 1144 G11440	0.003 0.035	0.005 (0.0048)	0.002 0.009	0.45 (<0.01)	0.007 0.29	0.048 0.18	0.089 0.005	1.45 0.002	0.008 0.003	0.0059 0.002	(0.002) ---
AISI 1215 Bi ** G12150	0.002 0.037	0.004 0.013	(0.001) 0.071	0.081 0.003	0.005 0.30	0.045 0.009	0.093 0.010	0.86 0.001	0.010 0.002	0.0058 0.002	(0.001) 0.16
AISI 12L14 G12144	0.003 0.024	0.002 0.014	<0.002 0.061	0.073 0.28	0.005 0.32	0.046 <0.005	0.020 0.002	1.06 0.001	<0.01 (0.003)	0.024 (0.002)	<0.002 ---
AISI 1215 G12150	0.003 0.044	0.008 (0.019)	0.0006 0.069	0.068 ---	0.009 0.26	0.041 (0.019)	0.098 0.005	0.90 0.0015	0.012 0.002	0.0119 ---	(0.002) ---
AISI 4140 G41400	0.026 0.023	0.005 0.003	0.0002 0.013	0.407 0.001	0.005 0.018	1.02 0.24	0.033 0.007	0.79 0.002	0.204 0.004	0.0045 0.002	0.0014 ---
AISI 4340 G43400	0.023 1.71	0.006 0.0013	(0.0002) 0.009	0.4120 <0.005	0.012 0.0053	0.830 0.264	0.171 0.010	0.79 0.003	0.238 0.005	0.0084 0.009	0.006 ---
AISI 4620 G46200	0.026 1.78	0.0035 0.0013	0.0002 0.009	0.209 <0.001	0.008 0.023	0.139 0.207	0.072 0.005	0.593 0.003	0.229 0.002	0.0053 <0.005	0.002 ---
AISI 4820 G48200	0.027 3.36	0.004 0.0018	0.0002 0.009	0.204 (0.001)	0.011 0.025	0.099 0.286	0.130 0.007	0.550 0.0019	0.265 0.002	0.0079 <0.01	0.002 ---
AISI E52100 G52986	0.016 0.064	0.004 (0.0012)	(0.0001) 0.009	1.04 (<0.001)	0.007 0.013	1.35 0.26	0.082 0.005	0.31 0.003	0.015 0.008	0.0078 (<0.005)	0.001 ---
AISI E6150 G61506	0.024 0.14	0.006 0.0018	0.0002 0.021	0.48 (<0.01)	0.009 0.021	0.94 0.29	0.21 0.012	0.81 0.002	0.053 0.16	0.0089 (<0.01)	0.002 ---
AISI 8620 G86200	0.038 0.44	0.005 0.0030	0.0002 0.016	0.20 (<0.01)	0.009 0.024	0.54 0.25	0.14 0.011	0.81 0.001	0.15 0.004	0.0078 (<0.01)	0.003 ---
AISI 86L20 N/A	0.020 0.50	--- 0.0014	0.0003 0.028	0.20 0.14	0.011 0.023	0.56 0.25	0.23 0.012	0.90 0.005	0.18 0.005	0.0067 (0.01)	0.003 ---
AISI 8740 G87400	0.017 0.505	0.004 (0.002)	(0.0001) 0.025	0.416 0.001	0.008 0.008	0.501 0.248	0.109 0.007	0.92 0.001	0.205 0.005	0.0083 <0.005	0.002 ---
AISI E9310 G93106	0.037 2.97	0.006 0.0016	0.0003 0.017	0.11 (0.002)	0.031 0.016	1.30 0.26	0.17 0.009	0.52 0.002	0.12 0.006	0.0088 0.076	0.003 ---
1¼Cr-½Mo K11572	0.029 0.047	0.003 (0.001)	0.0002 0.008	0.124 <0.0005	0.006 0.017	1.20 0.57	0.061 0.005	0.51 0.002	0.46 0.004	0.047 0.004	0.003 ---
C-½Mo, F1 K12822	0.027 0.029	(0.002) 0.0013	0.0002 0.008	0.218 (0.001)	0.011 0.010	0.015 0.331	0.014 0.002	0.86 0.002	0.493 0.006	0.0071 (0.003)	0.002 ---
2¼Cr-1Mo K21590	0.030 0.18	0.009 0.0018	(0.0002) 0.010	0.14 (0.003)	0.012 0.038	2.18 0.21	0.13 0.008	0.49 0.003	0.95 0.006	0.0102 (<0.01)	0.004 ---
NIT 135M ** K24065	1.09 0.143	0.005 0.002	0.0004 0.006	0.40 ---	0.034 0.001	1.61 0.38	0.0981 0.005	0.62 0.003	0.41 0.013	0.0044 0.010	0.003 ---
5Cr-½Mo K42544	0.025 0.11	0.006 0.0024	0.0002 0.011	0.119 (0.0003)	0.017 0.016	4.82 0.235	0.137 0.008	0.431 0.0021	0.470 0.012	0.0155 0.013	0.005 ---
F 91 ** K90901	0.03 0.257	0.012 0.003	0.0003 0.007	0.11 (0.0003)	0.027 0.010	8.24 0.32	0.17 0.013	0.40 0.003	0.94 0.22	0.047 <0.01	0.086 ---
9Cr-1Mo K90941	0.032 0.15	0.01 0.0030	0.0004 0.023	0.130 <0.001	0.017 0.013	8.84 0.78	0.119 0.010	0.427 0.004	0.94 0.014	0.0192 (0.01)	0.007 ---
() Indicates Non-Certified Value							** Certification in progress		Note: Chemistries listed are typical		

Certificates of Analysis, for each CRM, can be downloaded from the ARMI website: www.ARMl.com.

Today, ARMI's inventory consists of more than 600 different CRMs that include carbon steels, low alloy steels, stainless and high temperature steels, nickel, cobalt, copper, aluminum, titanium, and hydrocarbon based materials. ARMI's CRMs (IARMs) can be found in the application laboratories of most of the major instrument manufacturers around the world.

ARMI will also create 'custom' alloy sets chosen from any of ARMI's CRMs to meet your specific needs.

Finally, one of the major factors contributing to the success of the ARMI/ILAP program over the years has been "you", the analytical consumer. You have voiced your opinions as well as your needs. The personnel at ARMI, as well as the ILAP members, wish to sincerely thank you for your continued suggestions and support.