
ALCOA
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ALCOA SPECTROCHEMICAL STANDARDS
ALCOA

오디랩 www.odlab.co.kr 제품구입문의 02-809-7847~8, 엄영록

ALCOA SPECTROCHEMICAL STANDARDS

FOR THE ANALYSIS OF ALUMINUM
AND ALUMINUM ALLOYS

ALCOA INC.
SPECIALTY METALS DIVISION
100 Technical Drive
Alcoa Center, PA 15069-0001 USA

Registered to ISO 9001:2000 – ANSI/ISO/ASQ Q9001-2000
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An Introduction to Alcoa

Alcoa is the world's leading producer of aluminum and alumina, serving customers in the packaging, automotive, aerospace, construction and other markets with basic materials and a variety of fabricated and finished products.

Alcoa's business is truly global, with more than 350 facilities around the world. Our mining, refining, smelting and manufacturing operations are located in 40 countries.

Alcoa refines bauxite to alumina, smelts it to create raw aluminum, then fabricates it into a wide variety of products. Building on our fundamental strength as a supplier of primary aluminum and alumina, we've developed into a flexible, diversified manufacturer that is highly valued for materials science, process technology and product design capabilities, as well.

An integral and invaluable supplement to the capabilities of Alcoa's worldwide operations is the detailed experience of Alcoa's Spectrochemical Standards business personnel in the production and use of aluminum spectrochemical standards.

Alcoa Spectrochemical Standards

Alcoa spectrochemical standards are a necessary accompaniment to the spectro- chemical methods developed and used by Alcoa. With the widespread adoption of these methods, the standards have been made available by Alcoa as a service to the industry. With more than 50 years of experience supplying aluminum alloy standards, Alcoa spectrochemical standards have become recognized for their uniformity and certification accuracy.

Because many laboratories depend on Alcoa standards, a quantity and variety of standards are maintained to meet customer demands. Should the standards listed in the catalog not meet the specific requirements of a particular customer, Alcoa experts may suggest alternative standards or the purchase of custom standards made to the customer's own specifications.

This catalog lists the standards available at the time of printing. However, Alcoa reserves the right to discontinue any standard, to limit the quantity supplied to any customer, to modify compositions within registered alloy limits and to change prices at any time.

Applications and Limitations of Alcoa Spectrochemical Standards

Alcoa spectrochemical standards are intended primarily for use in methods employing point-to-plane spark excitation and chill-cast sample disks as described in certain ASTM procedures. Because of the effects of macro and micro segregation and structure on spectral behavior in these methods, metal in any other form (ingot, sheet, extrusion, castings, etc.) should be remelted and cast in disk form, prior to analysis. Some exceptions to this rule may be made in determining minor impurities or in any analysis where errors arising from structural or segregation effects can be tolerated. The magnitude of such errors is difficult to predict and should be determined experimentally for each situation.

Alcoa recognizes that the compositional uniformity and accuracy of certification may make these standards useful in the calibration and control of other analytical methods including classical wet chemical approaches, inductively coupled plasma and atomic absorption spectroscopy, Xray fluorescence spectroscopy, etc. To support these methods, all standards included in the catalog are available as lathe turnings in 100 gram bottles.

Regardless of the methods employed, it is recommended that the zone lying within a 12 mm radius of the center of the specimen be avoided because of the slight segregation that occurs (rather rarely) in that zone.

Form, Preparation, and Certification

Standards are prepared in the form of 64mm diameter, circular disks. Thickness is approximately 25mm, with the few exceptions indicated in the catalog listings. All standards are stenciled to show catalog number, production lot and section number. Metallurgical structure is controlled to produce spectral behaviors matching that of chill-cast disks when used according to the methods cited. Most of the standards for hypoeutectic aluminum-silicon alloys such as 356 are modified by the addition of strontium to the melts.

Compositions are determined using two or more independent analytical methods which may include wet chemical analysis, inductively-coupled plasma and atomic absorption spectroscopy, X-ray fluorescence, point-to-plane spark excitation, glow discharge mass spectroscopy or other approaches deemed appropriate for a specific application. All standards are evaluated for uniformity both within and among specimens by xtensive spectrochemical testing. Spectral behavior is measured by comparison with Alcoa master standards. Extensive statistical analysis is used to ensure the accuracy of thefinal composition certification, the chemical and physical uniformity, and the performance of the standards in use.

Traceability To National Institute of Standards and Technology

During the certification process NIST traceable standards, both solid and liquid, are employed, as

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well as NIST traceable weights for the calibration of balances used both in the standards production and the analytical methods used for certification. All standard certification documentation contain the following statement of traceability:

"These certified reference materials (CRM's) are prepared and certified for the spectrochemical analyses of aluminum alloys using methodology similar to that described in ASTM methods E607, E716 and E1251. All certifications are produced using at least two independent methods and detailed statistical analysis to assure homogeneity. Traceability to the National Institute of Standards and Technology (NIST) is maintained through the use of NIST standard reference materials (SRM) or reference materials directly traceable to NIST SRMs. Balances used during production and analyses are calibrated with and traceable to NIST standard weight sets."

Selection of Standards

Tables 1 through 16 list standards classified by alloy using Aluminum Association designations when available and Alcoa designations in other cases. Under each alloy are listed those standards specifically prepared for that alloy. Among them, one will have a catalog number consisting of "SS" followed by the alloy designation. This SS standard has a composition typical of the alloy and is used both in the preparation of analytical curves and for the periodic adjustment of these curves. When only an SS standard is listed, it is to be assumed that the analytical curves can be established by this SS standard and a combination of standards of other alloys for which standards are listed or from the standards listed for single elements in Table 16. Range standards for wrought alloys are identified with a two letter prefix beginning with W (WA,WB, etc.). Range standards for casting alloys have a two letter prefix beginning with K (KA, KB, etc.). Table 16 includes standards for use in preparing primary working curves and for a number of elements not adequately covered by the alloy standards in Tables 1 through 13.

Compositions listed in this catalog are only approximate since successive lots under a given catalog number vary to some degree. The composition specifically applying to a given standard section is furnished when the standard is shipped. Certified compositions are usually reported utilizing the Aluminum Association rules for reporting compositions. Concentrations listed in parentheses indicate matrix type and are not certified.

Trace Metal Standards

Building on our capabilities to produce and analyze 99.9995% to 99.9999% aluminum, Alcoa is able to offer a series of trace metal standards. These standards supplement our regular alloy standards and are made with 99.9999% pure aluminum. A unique method for trace metal additions allows alloys to be produced with highly controlled trace metal concentrations. Trace metal concentrations have been picked to provide both low end calibration points (<0.0001%) and points that are typical for trace metal content and that can be measured with good precision and accuracy by today's modern instrumentation. Table 14 provides a list of trace metal standards along with typical concentrations. Actual concentrations may vary from those shown but will always be certified using a combination of analytical techniques including Optical Emission Spectroscopy, Inductively Coupled Plasma, Graphite Furnace Atomic Absorption and Glow Discharge Mass Spectroscopy.

Standards designated by the prefix "ST" have been made to be similar to a specific alloy family which is indicated by the number following the "ST" designation, e.g. ST1-2000. For some of the most sought after aluminum standards, our nominal alloy standard has been modified to include trace metals of interest.

Note: Values given as less than, denoted by "<", indicate that those elements are typically below this value. No attempt is made to modify the base metal composition for these elements. However, these elements will be certified to the actual composition observed. Actual compositions may vary either above or below those indicated.

Drift Correction Standards

Table 15 shows a highly specialized series of standards used for maintaining calibrations when instruments are kept in continuous calibration for a variety of alloys. These "SQ" standards do not correspond, except fortuitously, to any particular alloy matrix, and their structures may not match that of chill cast disks. They are useful only in providing reproducible spectral intensities, and their relationship to analytical curves must be determined by the user under the particular conditions of use. The compositions are designed to provide convenient check points on a large number of analytical curves with a minimum of tests. They are checked carefully for reproducibility of spectral response but are not certified with respect to true composition. Only approximate values such as given in Table 15 will be issued with these standards.

Standards for Chemical Analysis

With the proliferation of techniques such as inductively coupled plasma and X-ray fluorescence spectroscopy, Alcoa recognizes the need to supply its standards in a form more suitable for use with these and similar techniques. All standards in the catalog are available in lathe turnings for subsequent dissolution. Other sizes may be available upon special request.

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Custom Standards

Every effort is made to supply our customers with a wide variety of alloy standards. However, in order to serve our customers' special needs, standards can be made to customer specifications. These custom standards are made to the same exacting quality as our catalog standards. (Minimum order quantities are required). Experts in the production and use of Alcoa Spectrochemical Standards are available to discuss special needs at the phone numbers listed in the section on Purchase Procedures in this catalog.

ASTM References

"Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-To-Plane Technique Nitrogen Atmosphere," ASTM designation E607.

"Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Argon Atmosphere, Point-To-Plane, Unipolar Self- Initiating Capacitor Discharge," ASTM Designation E1251.

"Standard Practices for Sampling Aluminum and Aluminum Alloys for Spectrochemical Analysis," ASTM Designation E716.

PURCHASE PROCEDURE

Where to Order

All orders can be placed through:

Alcoa Inc.
Specialty Metals Division
100 Technical Drive
Alcoa Center, PA 15069-0001 USA

Telephone (724) 337-5816 or 1-800-858-4638
Fax (724) 337-4090

Wording of Orders

All orders for spectrochemical standards must include thefollowing:

1. Customer order Number and Date
2. Address for Invoicing
3. Address for Shipping
4. Name and Address of Person to Receive Letter of Standard Composition.
5. Description of Required Standards including catalog number.
6. Additional Information:
   a. State whether partial shipments are permitted.
   b. Indicate taxes, shipping date, etc. as required.

Pricing and Shipping

Prices are quoted by the sales office and are subject to change without notice. Standards are shipped F.O.B. destination via U.P.S. (domestic sales only). Requests of special handling on domestic orders and for shipments outside the United States will be subject to the discretion of Alcoa. Permission for partial shipment will insure prompt delivery of available standards in case some of the standards are out of stock. This catalog lists the standards available at this printing ,but Alcoa reserves the right to discontinue any standard, to limit the quantity supplied to any customer, to modify compositions within registered alloy limits and to change prices at any time.

American Express,
VISA and MasterCard Accepted

Inquiries and Technical Assistance

It is urged that inquiry be made before placing an order if the availability, description, and applicability of the standards are not clear. Experts in the production and application of standards are available to assist on technical questions concerning the use of Alcoa standards and the analysis of aluminum and its alloys. Inquiries for technical assistance can be placed to the following:

Phone (724) 337-5816 or 1-800-858-4638
Fax (724) 337-4090

Email standards@alcoa.com

Visit us on the web at: www.alcoa.com/smd/scs

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INTERNATIONAL SALES OFFICES

Alcoa Europe, SA
61 Avenue d'Ouchy
CH-1000
Lausanne 6, Switzerland
PHONE: (41) 21-619 22 80
FAX: (41) 21-619 22 65

Alcoa Japan Limited
427 Fuji Building
2-3 Marunouchi 3-Chome
Chiyoda-Ku, Tokyo 100
Japan
PHONE: (81-3) 3287-1751
FAX: (81-3) 3287-1754

Alcoa International
Asia Limited
Alcoa Asia Bejing Office
Unit 1717, China World Tower
China World Trade Center
1 Jianguomenwai Avenue
Bejing 100004 P.R.C.
PHONE: (86-10) 6505 3308
FAX: (86-10) 6505-2659

Alcoa International
Asia Limited
Room 1301, Admiralty Center
Tower 1, 18 Harcourt Road
Hong Kong
PHONE: 852-2529-2333
FAX: 852-2529-2322

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Table 1 - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

HIGH PURITY ALUMINUM

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
1000	SS-1000*	0.0002	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	WA-1000	0.10x	0.10x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x			
	WB-1000	0.10x	0.10x	0.03x	0.03x	0.03x	0.03x	0.03x	0.03x	0.03x	0.02x	0.03x	0.03x			
	WC-1000	0.10x	0.10x	0.08x	0.08x	0.08x	0.08x	0.08x	0.08x	0.08x	0.04x	0.08x	0.08x			
	WD-1000	0.004x	0.004x	0.004x	0.004x	0.004x	0.004x	0.004x	0.004x	0.004x	0.004x	0.004x	0.004x			
	WE-1000	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x	0.01x			
	SS-1050	0.12x	0.30	0.04x	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.01x	<0.003x	<0.001x	<0.0005	0.0005	0.008x
	SS-1075	0.07x	0.12x	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.03x	<0.003x	<0.001x	<0.0005	0.0015	<0.0005

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
1000	SS-1000*	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	WA-1000			0.01x											
	WB-1000			0.03x											
	WC-1000			0.08x											
	WD-1000			0.004x	0.004x										
	WE-1000			0.01x	0.01x										
	SS-1050	<0.0005	<0.0005	0.001x	0.02x	0.001x	0.001x	0.001x	<0.0005	<0.0005	0.001x	0.001x	0.001x	<0.0005	<0.0005
	SS-1075	<0.0005	<0.0005	<0.0050	0.02x	0.003x	0.003x	0.003x	<0.0005	<0.0005	0.003x	0.003x	0.003x	<0.0005	<0.0005

* SS-1000 is greater than 99.9995% pure. No analysis is issued for those elements listed as less than for this standard.

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 2 - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

11XX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
1100	SS-1100	0.18x	0.50	0.15x	0.04x	0.03x	<0.0050	<0.0050	0.08x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-1100	0.12x	0.30	0.20x	0.08x	0.05x	<0.0050	<0.0050	0.02x	0.04x						
	WB-1100	0.22x	0.60	0.10x	0.02x	0.01x	<0.0050	<0.0050	0.04x	0.01x						
1188	SS-1188	0.04x	0.06x	<0.0050	0.005x	0.01x	<0.0050	<0.0050	0.01x	0.01x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
1199	WA-1199	0.002x	0.002x	0.001x	0.001x	0.001x	0.001x	0.001x	0.001x	0.001x	0.001x	0.003x	0.001x	<0.0010	0.0005	

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
1100	SS-1100	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-1100														
	WB-1100														
1188	SS-1188	<0.0005	<0.0005	<0.0010	0.02x	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
1199	WA-1199	<0.0005	<0.0005	0.001x	0.001x	0.001x	0.001x	0.001x		<0.0005	0.001x	<0.0010	0.001x		

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 3 - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

2XXX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
2011	SS-2011	0.30	0.55	5.5x	0.04x	0.04x	0.04x	0.04x	0.10x	<0.0050	0.01x	0.50	<0.0010	<0.0010	<0.0005	<0.0010
	WA-2011	0.20x	0.70	4.9x	0.06x	0.02x	0.06x	0.02x	0.15x	<0.0050	0.01x	0.40				
	WB-2011	0.40	0.25	6.0x	0.02x	0.06x	0.02x	0.06x	0.05x	<0.0050	0.01x	0.60				
2014	SS-2014	1.0x	0.50	4.5x	0.80	0.55	0.04x	0.04x	0.12x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
2017	SS-2017	0.60	0.45	4.0x	0.60	0.60	0.05x	0.03x	0.07x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-2017	0.75	0.65	3.5x	0.40	0.75	0.02x	0.06x	0.03x	0.05x	0.01x					
	WB-2017	0.35	0.25	4.5x	0.80	0.45	0.10x	0.01x	0.12x	0.01x	0.01x					
2018	SS-2018	0.70	0.40	4.2x	0.05x	0.65	0.05x	2.1x	0.12x	0.04x	0.01x	0.05x	<0.0010	<0.0010	<0.0005	<0.0010
2024	SS-2024	0.20x	0.35	4.6x	0.65	1.6x	0.06x	0.04x	0.10x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-2024	0.30	0.30	4.0x	0.70	1.6x	0.06x	0.04x	0.06x	0.03x					0.001x	
	WB-2024	0.30	0.30	5.0x	0.70	1.6x	0.06x	0.04x	0.25	0.03x					0.000x	
	WC-2024	0.20x	0.30	4.6x	0.70	1.2x	0.06x	0.04x	0.06x	0.03x					0.004x	

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
2011	SS-2011	<0.0005	<0.0005	0.50	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-2011			0.60	0.02x										
	WB-2011			0.40	0.02x										
2014	SS-2014	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
2017	SS-2017	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-2017				0.02x										
	WB-2017				0.02x										
2018	SS-2018	<0.0005	<0.0005	0.05x	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
2024	SS-2024	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	WA-2024														
	WB-2024														
	WC-2024														

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

Values given as less than, denoted by "<", indicate that those elements are typically below this value. No attempt is made to modify the base metal composition for these elements. However, these elements will be certified to the actual composition observed. Actual certified values may vary either above or below those indicated.

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Table 3 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

2XXX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
2024	WD-2024	0.20x	0.30	4.6x	0.70	1.8x	0.06x	0.04x	0.06x	0.03x					0.004x	
	WE-2024	0.45	0.20x	4.6x	0.45	1.6x	0.10x	0.02x	0.25	0.01x					0.007x	
	WF-2024	0.15x	0.45	4.6x	0.80	1.6x	0.02x	0.07x	0.03x	0.06x					0.002x	
2025	SS-2025	0.80	0.55	4.6x	0.80	0.05x	0.04x	0.04x	0.10x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
2036	SS-2036	0.35	0.35	2.6x	0.25	0.45	0.05x	0.02x	0.12x	0.06x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
2117	SS-2117	0.50	0.40	2.6x	0.05x	0.30	0.03x	0.03x	0.05x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
2219	SS-2219	0.15x	0.20x	6.3x	0.28	0.02x	0.01x	0.01x	0.03x	0.06x	0.12x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
2324	SS-2324	0.05x	0.05x	4.2x	0.50	1.5x	0.01x	0.01x	0.01x	0.01x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
2618	SS-2618	0.20x	1.2x	2.2x	0.05x	1.6x	<0.0050	1.1x	0.05x	0.07x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
2024	WD-2024														
	WE-2024														
	WF-2024														
2025	SS-2025	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
2036	SS-2036	<0.0005	<0.0005	<0.0010	0.012	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
2117	SS-2117	<0.0005	<0.0005	<0.0010	0.020	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
2219	SS-2219	<0.0005	<0.0005	<0.0010	0.015	0.16x	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
2324	SS-2324	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
2618	SS-2618	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005

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Table 4 - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

3XXX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
3003	SS-3003	0.20x	0.50	0.15x	1.2x	0.03x	<0.0050	<0.0050	0.08x	0.02x	0.01x	0.001x	<0.0010	<0.0010	<0.0005	<0.0010
	WA-3003	0.40	0.65	0.09x	0.95	0.01x	0.03x	0.03x	0.05x	0.03x	0.01x	0.006x			0.001x	
	WB-3003	0.15x	0.30	0.20x	1.5x	0.05x	<0.0050	<0.0050	0.02x	0.01x	0.01x	0.02x				
3004	SS-3004	0.18x	0.50	0.15x	1.2x	1.1x	<0.0050	<0.0050	0.05x	0.02x	0.01x	0.001x	<0.0010	<0.0010	<0.0005	<0.0010
	WA-3004	0.22x	0.60	0.10x	1.0x	1.3x	0.01x	0.01x	0.15x	<0.0050	0.01x	0.006x				
	WB-3004	0.10x	0.40	0.20x	1.4x	0.90	0.02x	0.02x	0.10x	0.05x	0.01x	0.02x				
3005	SS-3005	0.22x	0.60	0.15x	1.2x	0.40	0.02x	0.01x	0.03x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
3102	SS-3102	0.25	0.45	0.07x	0.18x	0.02x	0.02x	0.02x	0.10x	0.02x	0.01x	0.001x	<0.0010	<0.0010	<0.0005	<0.0010
3105	SS-3105	0.20x	0.50	0.15x	0.40	0.50	0.05x	0.02x	0.20x	0.01x	0.01x	0.001x	<0.0010	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
3003	SS-3003	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0005	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-3003				0.02x		0.001x								
	WB-3003				0.02x		0.003x								
3004	SS-3004	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0005	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-3004			0.005x	0.02x		0.001x								
	WB-3004			0.002x	0.02x		0.003x								
3005	SS-3005	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0005	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
3102	SS-3102	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0005	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
3105	SS-3105	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0005	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 5 - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

5XXX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
5005	SS-5005	0.15x	0.50	0.06x	0.03x	0.85	0.02x	0.02x	0.06x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-5005	0.12x	0.55	0.03x	0.01x	0.35	0.01x	0.01x	0.03x	0.01x	0.01x	0.03x	0.01x			
	WB-5005	0.01x	0.01x	<0.0050	<0.0050	0.80	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050					
5042	SS-5042	0.10x	0.23x	0.03x	0.30	3.5x	<0.0050	<0.0050	0.01x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
5050	SS-5050	0.18x	0.45	0.05x	0.04x	1.4x	0.03x	0.03x	0.04x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
5052	SS-5052	0.15x	0.20x	0.06x	0.05x	2.6x	0.25	0.05x	0.08x	0.01x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-5052	0.25	0.10x	0.10x	0.02x	2.2x	0.30	0.01x	0.12x	<0.0050						
	WB-5052	0.08x	0.30	0.02x	0.10x	2.8x	0.15x	0.03x	0.03x	0.03x						
5056	SS-5056	0.15x	0.20x	0.08x	0.10x	5.3x	0.11x	0.05x	0.05x	0.01x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-5056	0.15x	0.20x	0.08x	0.10x	4.7x	0.11x	0.05x	0.05x	<0.0050	0.01x				0.0001	
	WB-5056	0.15x	0.20x	0.08x	0.10x	5.8x	0.11x	0.05x	0.05x	<0.0050	0.01x				0.003x	
	WC-5056	0.25	0.40	0.01x	0.05x	5.3x	0.20x	0.02x	0.02x	<0.0050	0.01x	0.08x			0.008x	

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
5005	SS-5005	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-5005			0.03x											
	WB-5005														
5042	SS-5042	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
5050	SS-5050	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
5052	SS-5052	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-5052														
	WB-5052														
5056	SS-5056	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-5056				0.02x										
	WB-5056				0.02x										
	WC-5056				0.02x										

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Table 5 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

5XXX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
5056	WD-5056	0.07x	0.13x	0.12x	0.15x	5.3x	0.05x	0.08x	0.10x	0.05x	0.01x	0.02x			0.001x	
5082	SS-5082	0.12x	0.25	0.04x	0.04x	4.5x	0.04x	0.01x	0.04x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
5083	SS-5083	0.15x	0.20x	0.05x	0.80	4.5x	0.10x	0.01x	0.05x	0.05x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
5086	SS-5086	0.15x	0.25	0.05x	0.50	4.0x	0.12x	0.03x	0.05x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
5154	SS-5154	0.15x	0.25	0.05x	0.03x	3.6x	0.25	0.03x	0.05x	0.08x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
5182	SS-5182	0.15x	0.20x	0.05x	0.35	4.6x	0.03x	0.02x	0.05x	0.03x	0.01x	0.001x	<0.0010	<0.0010	<0.0005	<0.0010
	WA-5182	0.20x	0.30	0.01x	0.30	4.8x	0.05x	0.01x	0.02x	0.04x	0.01x	0.02x			0.001x	
	WB-5182	0.08x	0.10x	0.07x	0.45	4.4x	0.01x	0.04x	0.10x	0.01x	0.01x	0.006x			0.001x	
5252	SS-5252	0.03x	0.05x	0.04x	0.01x	2.5x	<0.0050	<0.0050	0.01x	0.02x	<0.0050	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
5357	SS-5357	0.05x	0.08x	0.08x	0.25	1.1x	0.01x	0.01x	0.02x	0.01x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
5454	SS-5454	0.15x	0.20x	0.07x	0.80	2.8x	0.10x	0.01x	0.05x	0.04x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-5454	0.08x	0.10x	0.02x	0.50	2.5x	0.05x	0.03x	0.15x	0.02x	0.01x				0.001x	

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
5056	WD-5056				0.02x										
5082	SS-5082	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
5083	SS-5083	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
5086	SS-5086	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
5154	SS-5154	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
5182	SS-5182	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-5182				0.02x		0.003x								
	WB-5182				0.02x		0.001x								
5252	SS-5252	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
5357	SS-5357	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
5454	SS-5454	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-5454				0.02x										

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Table 5 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

5XXX ALLOYS

Typical Analysis - Weight Percent																
Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
5456	SS-5456	0.15x	0.20x	0.06x	0.80	5.2x	0.10x	0.01x	0.05x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-5456	0.10x	0.25	0.10x	0.50	5.5x	0.15x	0.01x	0.25	0.05x	0.01x				0.001x	
5657	SS-5657	0.04x	0.06x	0.04x	0.02x	0.80	0.01x	0.01x	0.02x	0.01x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent															
Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
5456	SS-5456	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-5456				0.02x										
5657	SS-5657	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005

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Table 6 - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

6000 ALLOYS RANGE STANDARDS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
6000 Range Stds	WA-6000	0.60	0.30	0.10x	0.03x	0.45	0.03x	0.03x	0.03x	0.03x						
	WB-6000	0.60	0.30	0.10x	0.03x	0.60	0.03x	0.03x	0.03x	0.03x						
	WC-6000	0.60	0.30	0.10x	0.03x	0.75	0.03x	0.03x	0.03x	0.03x						
	WD-6000	0.60	0.30	0.10x	0.03x	0.95	0.03x	0.03x	0.03x	0.03x						
	WE-6000	0.60	0.30	0.10x	0.03x	1.1x	0.03x	0.03x	0.25	0.03x						
	WF-6000	0.60	0.30	0.10x	0.03x	1.2x	0.03x	0.03x	0.03x	0.03x						
	WG-6000	0.60	0.30	0.10x	0.03x	1.4x	0.03x	0.03x	0.03x	0.03x						
	WH-6000	0.25	0.30	0.10x	0.03x	0.90	0.03x	0.03x	0.03x	0.03x						
	WJ-6000	0.35	0.30	0.10x	0.03x	0.90	0.03x	0.03x	0.03x	0.03x						
	WK-6000	0.50	0.30	0.10x	0.03x	0.90	0.03x	0.03x	0.03x	0.03x						
	WL-6000	0.70	0.30	0.10x	0.03x	0.90	0.03x	0.03x	0.03x	0.03x						
	WM-6000	0.90	0.30	0.10x	0.03x	0.90	0.03x	0.03x	0.03x	0.03x						

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
6000 Range Stds	WA-6000														
	WB-6000														
	WC-6000														
	WD-6000														
	WE-6000														
	WF-6000														
	WG-6000														
	WH-6000														
	WJ-6000														
	WK-6000														
	WL-6000														
	WM-6000														

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Table 6 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

6000 ALLOYS RANGE STANDARDS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
6000 Range Stds	WN-6000	1.1x	0.30	0.10x	0.03x	0.90	0.03x	0.03x	0.03x	0.03x						
	WP-6000	1.3x	0.30	0.10x	0.03x	0.90	0.03x	0.03x	0.03x	0.03x						
	WR-6000	0.60	0.25	0.02x	0.08x	0.90	0.01x	0.05x	0.08x	0.03x						
	WS-6000	0.60	0.35	0.05x	0.02x	0.90	0.03x	0.01x	0.04x	0.08x						
	WT-6000	0.60	0.15x	0.10x	0.04x	0.90	0.08x	0.03x	0.02x	0.01x						
	WU-6000	0.60	0.65	0.18x	0.04x	0.90	0.35	0.03x	0.15x	0.02x						
	WV-6000	0.60	0.80	0.30	0.15x	0.90	0.15x	0.01x	0.08x	0.10x						
	WW-6000	0.60	0.50	0.45	0.08x	0.90	0.25	0.05x	0.04x	0.05x						
	WX-6000	0.42	0.20x	0.03x	0.02x	0.65	0.32	0.01x	0.02x	0.01x						
	WY-6000	1.5x	0.30	0.30	0.02x	0.50	0.02x	0.25	0.03x	0.05x						
	WZ-6000	0.40	0.15x	0.03x	0.01x	0.70	<0.0050	<0.0050	<0.0050	<0.0050	0.005x			<0.0005		

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
6000 Range Stds	WN-6000														
	WP-6000														
	WR-6000														
	WS-6000														
	WT-6000														
	WU-6000														
	WV-6000														
	WW-6000														
	WX-6000														
	WY-6000														
	WZ-6000														

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 6 - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

6XXX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
6010	SS-6010	1.0x	0.25	0.32	0.32	0.80	0.04x	0.03x	0.12x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
6053	SS-6053	0.70	0.30	0.05x	0.02x	1.2x	0.25	0.03x	0.05x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
6061	SS-6061	0.65	0.35	0.30	0.05x	1.0x	0.23	0.05x	0.08x	0.04x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	WA-6061	0.60	0.35	0.30	0.05x	1.0x	0.05x	0.05x	0.12x	0.05x	0.01x					
6063	SS-6063	0.48	0.25	0.06x	0.02x	0.65	0.02x	0.02x	0.05x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
6066	SS-6066	1.5x	0.35	1.0x	0.90	1.2x	0.03x	0.03x	0.10x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
6070	SS-6070	1.3x	0.25	0.30	0.70	0.80	0.06x	0.02x	0.15x	0.05x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
6101	WZ-6000	0.40	0.15x	0.03x	0.01x	0.70	<0.0050	<0.0050	<0.0050	<0.0050	0.005x			<0.0005		
6151	SS-6151	1.0x	0.45	0.25	0.06x	0.65	0.22x	0.04x	0.08x	0.03x	0.01x	<0.0030	<0.0010	<0.001	<0.0005	<0.0010
6201	SS-6201	0.75	0.25	0.03x	0.01x	0.75	<0.0050	<0.0050	0.02x	<0.0050	<0.0050	<0.0030	<0.0010	0.02x	<0.0005	<0.0010
6253	SS-6253	0.70	0.25	0.05x	0.02x	1.3x	0.22x	0.01x	2.0x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
6262	SS-6262	0.60	0.35	0.30	0.05x	1.0x	0.04x	0.03x	0.05x	0.05x	0.01x	0.58	<0.0010	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
6010	SS-6010	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6053	SS-6053	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6061	SS-6061	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-6061				0.02x										
6063	SS-6063	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6066	SS-6066	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6070	SS-6070	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6101	WZ-6000				0.02x										
6151	SS-6151	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6201	SS-6201	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6253	SS-6253	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6262	SS-6262	<0.0005	<0.0005	0.58	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 6 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

6XXX ALLOYS

Typical Analysis - Weight Percent																
Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
6351	SS-6351	1.0x	0.30	0.05x	0.70	0.65	0.03x	0.02x	0.03x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
6951	SS-6951	0.40	0.40	0.30	0.03x	0.70	0.02x	0.02x	0.10x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent															
Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
6351	SS-6351	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
6951	SS-6951	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 7 - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

7XXX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
7001	SS-7001	0.10x	0.15x	2.1x	0.04x	3.1x	0.21x	0.01x	7.6x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	0.003x	<0.0010
7005	SS-7005	0.15x	0.20x	0.10x	0.50	1.3x	0.10x	0.02x	4.5x	0.02x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
7021	SS-7021	0.12x	0.30	0.08x	0.05x	1.5x	0.03x	<0.0050	5.4x	0.04x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
7029	SS-7029	0.10x	0.10x	0.75	0.02x	1.7x	<0.0050	<0.0050	4.8x	0.02x	0.02x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
7039	SS-7039	0.15x	0.20x	0.08x	0.25	3.0x	0.20x	0.02x	4.0x	0.05	0.01x	<0.0030	<0.0010	<0.0010	0.003x	<0.0010
7046	SS-7046	0.12x	0.14x	0.15x	0.20x	1.3x	0.10x	<0.0050	7.1x	0.04x	0.01x	<0.0030	<0.0010	<0.0010	0.002x	<0.0010
7050	SS-7050	0.08x	0.15x	2.4x	0.03x	2.3x	0.02x	0.02x	6.2x	0.04x	<0.0050	<0.0030	<0.0010	<0.0010	0.001x	<0.0010
7072	SS-7072	0.14x	0.28	0.03x	0.04x	0.03x	0.03x	0.03x	1.1x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
7075	SS-7075	0.16x	0.25	1.6x	0.08x	2.6x	0.22x	<0.0050	5.8x	0.04x	0.01x	<0.0030	<0.0010	<0.001	<0.0005	<0.0010
	WA-7075	0.15x	0.25	1.2x	0.10x	2.6x	0.25	<0.0050	5.8x	0.05x					0.001x	
	WB-7075	0.15x	0.25	2.0x	0.10x	2.6x	0.25	<0.0050	5.8x	0.05x					0.002x	
	WC-7075	0.15x	0.25	1.6x	0.10x	2.2x	0.25	<0.0050	5.8x	0.05x					0.004x	

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
7001	SS-7001	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7005	SS-7005	<0.0005	<0.0005	<0.0010	0.02x	0.14x	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7021	SS-7021	<0.0005	<0.0005	<0.0010	0.02x	0.13x	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7029	SS-7029	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7039	SS-7039	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7046	SS-7046	<0.0005	<0.0005	<0.0010	0.02x	0.12x	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7050	SS-7050	<0.0005	<0.0005	<0.0010	0.02x	0.12x	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7072	SS-7072	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7075	SS-7075	<0.0005	<0.0005	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
	WA-7075														
	WB-7075														
	WC-7075														

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 7 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR WROUGHT ALLOYS

7XXX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
7075	WD-7075	0.15x	0.25	1.6x	0.10x	2.9x	0.25	<0.0050	5.8x	0.05x					0.004x	
	WE-7075	0.15x	0.25	1.6x	0.10x	2.6x	0.25	<0.0050	5.3x	0.05x					<0.0005	
	WF-7075	0.15x	0.25	1.6x	0.10x	2.6x	0.25	<0.0050	6.2x	0.05x					<0.0005	
	WG-7075	0.30	0.15x	1.6x	0.20x	2.6x	0.18x	<0.0050	5.8x	0.08x					0.001x	
	WH-7075	0.10x	0.35	1.6x	0.03x	2.6x	0.30	<0.0050	5.8x	0.01x					0.008x	
7076	SS-7076	0.15x	0.35	0.65	0.55	1.7x	0.02x	0.02x	7.6x	0.05x	0.01x	<0.0030	<0.0010	<0.0010	0.002x	<0.0010
7079	SS-7079	0.15x	0.22x	0.65	0.20x	3.5x	0.16x	<0.0050	4.6x	0.03x	0.01x	<0.0030	<0.0010	<0.0010	0.003x	<0.0010
7178	SS-7178	0.15x	0.20x	2.0x	0.08x	2.9x	0.25	0.02x	6.8x	0.05x	0.01x	<0.0030	<0.0010	<0.0010	0.0001	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
7075	WD-7075														
	WE-7075														
	WF-7075														
	WG-7075														
	WH-7075														
7076	SS-7076	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7079	SS-7079	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005
7178	SS-7178	<0.0005	<0.0005	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

Values given as less than, denoted by "<", indicate that those elements are typically below this value. No attempt is made to modify the base metal composition for these elements. However, these elements will be certified to the actual composition observed. Actual certified values may vary either above or below those indicated.

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Table 8 - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

2XX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
206	SS-206	0.06x	0.08x	4.6x	0.35	0.28	0.01x	0.01x	0.03x	0.20x	0.01x	<0.0030	0.02x	<0.0010	<0.0005	<0.0010
208	SS-208	3.0x	0.60	4.0x	0.15x	0.05x	<0.0050	0.08x	0.15x	0.12x	0.01x	0.10x	0.10x	<0.0010	<0.0005	<0.0010
213	KA-213	2.0x	1.0x	7.0x	0.30	0.05x	<0.0050	0.20x	1.0x	0.05x			0.55			
	KB-213	3.5x	1.0x	7.0x	0.35	0.15x	<0.0050	0.30	1.2x	0.10x						
222	KA-222	0.75	1.0x	10.0	0.15x	0.30	<0.0050	0.15x	0.25	0.10x		0.20x	0.12x			
224	REFER TO ALLOY 2219															
238	SS-238	4.0x	1.0x	10.2	0.20x	0.30	<0.0050	0.20x	0.20x	0.05x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
242	SS-242	0.50	0.55	4.0x	0.08x	1.5x	0.03x	2.0x	0.10x	0.12x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
	KA-242	0.25	0.40	3.6x	0.02x	1.8x	<0.0050	2.2x	0.03x	0.06x		0.02x	0.02x			
	KB-242	0.40	0.20x	4.4x	0.05x	1.2x	<0.0050	1.8x	0.05x	0.15x		0.05x	0.05x			
A242	SS-A242	0.30	0.45	4.1x	0.05x	1.6x	0.20x	2.0x	0.10x	0.12x	0.01x	<0.0030	<0.0010	<0.0010	<0.0005	<0.0010
295	SS-295	0.90	0.70	4.5x	0.12x	0.05x	<0.0050	0.05x	0.10x	0.12x	0.01x	<0.0030	0.003x	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
206	SS-206	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
208	SS-208	<0.0010	<0.0030	<0.0010	0.012	0.04x	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
213	KA-213														
	KB-213														
222	KA-222														
224	REFER TO ALLOY 2219														
238	SS-238	<0.0010	<0.0030	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
242	SS-242	<0.0010	<0.0030	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	KA-242			0.02x											
	KB-242			0.05x											
A242	SS-A242	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
295	SS-295	<0.0010	<0.0030	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

For trace element standards see ST1-2000 , ST2-2000 Table 14

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 8 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

2XX ALLOYS

Typical Analysis - Weight Percent																
Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
295	KA-295	0.55	1.0x	4.1x	0.10x	0.01x	<0.0050	0.02x	0.15x	0.07x		0.02x	0.004x			
	KB-295	1.3x	0.35	4.9x	0.03x	0.01x	<0.0050	0.08x	0.05x	0.17x		0.05x	0.01x			
296	SS-296	2.8x	0.60	4.5x	0.20x	0.06x	<0.0050	0.15x	0.25	0.10x	0.01x	<0.0030	0.01x	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent															
Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
295	KA-295														
	KB-295														
296	SS-296	<0.0010	<0.0030	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

For trace element standards see ST1-2000 , ST2-2000 Table 14

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 9 - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

3XX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
305	REFER TO KC-355															
308	SS-308	5.5x	0.65	4.5x	0.10x	0.08x	<0.0050	0.10x	0.25	0.06x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010
319	SS-319	6.2x	0.85	3.8x	0.40	0.10x	0.01x	0.20x	0.35	0.15x	0.02x	0.20x	0.20x	<0.0010	<0.0005	<0.0010
332	SS-332	9.2x	0.70	3.2x	0.25	1.0x	<0.0050	0.50	0.25	0.14x	0.02x	0.10x	0.10x	<0.0010	<0.0005	<0.0010
336	SS-336	12.0	0.65	1.0x	0.06x	1.2x	<0.0050	2.5x	0.05x	0.04x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010
	KA-A332	12.4	0.50	1.0x	0.06x	<0.0050	<0.0050	2.7x	<0.0050	0.06x						
354	SS-354	9.0x	0.15x	1.8x	0.05x	0.55	0.01x	0.01x	0.05x	0.12x	0.01x	0.02x	0.02x	<0.0010	<0.0005	<0.0010
355	SS-355	5.1x	0.35	1.3x	0.08x	0.54	0.04x	0.05x	0.10x	0.12x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010
	KA-355	4.5x	0.65	1.0x	0.05x	0.63	0.01x	0.03x	0.05x	0.18x						
	KB-355	5.5x	0.15x	1.5x	0.15x	0.40	0.02x	0.01x	0.15x	0.08x						
	KC-355	5.0x	0.15x	1.3x	0.08x	0.03x	0.03x	0.05x	0.03x	0.12x						
356	SS-356	7.1x	0.35	0.12x	0.05x	0.35	<0.0050	0.03x	0.10x	0.12x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
305	REFER TO KC-355														
308	SS-308	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
319	SS-319	<0.0010	<0.0030	0.05x	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
332	SS-332	<0.0010	<0.0030	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
336	SS-336	<0.0010	<0.0030	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	0.001x	0.003x	<0.0010
	KA-A332											0.02x	0.003x	0.005x	
354	SS-354	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
355	SS-355	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
	KA-355											0.02x			
	KB-355											0.02x			
	KC-355											0.02x			
356	SS-356	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 9 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

3XX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
356	KA-356	6.5x	0.50	0.20x	0.03x	0.22x	<0.0050	<0.0050	0.18x	0.05x	0.01x					
	KB-356	7.5x	0.15x	0.05x	0.12x	0.45	<0.0050	<0.0050	0.04x	0.16x	0.01x	0.06x	0.06x			
	KC-356	7.0x	0.08x	0.04x	0.02x	0.35	<0.0050	0.01x	0.03x	0.12x	0.01x					
A357	SS-A357	7.1x	0.10x	0.05x	0.02x	0.60	0.02x	0.02x	0.03x	0.12x	0.01x	<0.0030	<0.0030	<0.0010	0.06x	<0.0010
358	KA-358	8.0x	0.20x	0.08x	0.05x	0.65	0.02x	0.02x	0.06x	0.12x	0.01x				0.22	
360	SS-360	9.6x	0.60	0.25	0.15x	0.55	<0.0050	0.17x	0.17x	0.06x	0.01x	0.05x	0.07x	<0.0010	<0.0005	<0.0010
	KA-360	10.0	0.35	0.40	0.10x	0.45	<0.0050	0.25	0.25	0.02x		0.20x	0.03x			
	KB-360	9.0x	1.0x	0.10x	0.25	0.65	<0.0050	0.10x	0.10x	0.10x		0.10x	0.10x			
	KC-360	9.6x	1.1x	0.30	0.15x	0.58	<0.0050	0.20x	0.25	0.02x			0.12x			
	KD-360	9.0x	0.10x	0.75	0.05x	0.52	0.01x	0.02x	0.03x	0.12x						
364	SS-364	8.8x	0.90	0.15x	0.06x	0.35	0.40	0.05x	0.05x	<0.0050	0.01x	0.02x	0.05x	<0.0010	0.03x	<0.0010
380	SS-380	8.9x	0.90	3.6x	0.40	0.20x	<0.0050	0.30	0.35	0.08x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
356	KA-356				0.02x							0.05x	0.001x	0.003x	
	KB-356				0.02x							0.02x			
	KC-356				0.02x							0.02x			
A357	SS-A357	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
358	KA-358				0.02x							0.02x			
360	SS-360	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
	KA-360											0.02x			
	KB-360											0.02x			
	KC-360											0.02x			
	KD-360											<0.0050	0.10x	0.003x	
364	SS-364	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
380	SS-380	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 9 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

3XX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
380	KA-380	9.4x	1.1x	3.1x	0.15x	0.45	0.05x	0.45	0.15x	0.12x		0.10x	0.20x			
	KB-380	7.6x	0.65	4.1x	0.60	0.05x	0.03x	0.10x	0.90	0.03x		0.20x	0.10x			
	KC-380	9.0x	1.2x	3.6x	0.30	0.20x	0.06x	0.20x	0.60	0.07x		0.05x	0.06x			
	KD-380	9.2x	1.1x	3.6x	0.30	0.20x	0.06x	0.20x	2.7x	0.06x		0.05x	0.06x			
	KE-380	9.6x	1.1x	3.6x	0.20x	<0.0050	0.02x	0.03x	<0.0050	0.03x						
	KF-380	8.4x	0.70	2.6x	0.45	0.30	0.02x	0.10x	3.5x	0.11x		0.10x	0.15x			
	KG-380	9.2x	0.90	3.2x	0.30	0.10x	0.01x	0.30	3.0x	0.05x		0.20x	0.10x			
	KH-380	9.6x	1.2x	3.8x	0.15x	0.05x	<0.0050	0.40	2.2x	0.02x		0.05x	0.05x			
383	SS-383	11.0	1.0x	2.5x	0.35	0.25	0.06x	0.10x	2.5x	0.08x	0.01x	0.20x	0.15x	<0.0010	<0.0005	<0.0010
384	SS-384	11.5	1.0x	3.5x	0.30	0.10x	0.02x	0.25	0.60	0.05x	0.01x	0.12x	0.12x	<0.0010	<0.0005	<0.0010
390	SS-390	16.5	0.90	4.5x	0.25	0.60	0.05x	0.10x	0.50	0.10x	0.01x	0.08x	0.08x	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
380	KA-380											0.02x			
	KB-380			0.10x								0.02x			
	KC-380											0.02x			
	KD-380											0.02x			
	KE-380											0.02x			
	KF-380			0.10x								0.02x			
	KG-380			0.05x								0.02x			
	KH-380			0.15x								0.02x			
383	SS-383	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.03x	<0.0010	<0.0010	<0.0010
384	SS-384	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
390	SS-390	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	0.01x	<0.0010

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 10 - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

4XX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
413	SS-413	12.0	0.60	0.12x	0.08x	0.05x	<0.0050	0.10x	0.15x	0.05x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010
	KA-413	11.0	0.75	0.08x	0.15x	0.02x	<0.0050	0.03x	0.03x	0.03x		0.04x	0.04x			
	KB-413	12.6	0.30	0.05x	0.05x	0.03x	<0.0050	0.05x	0.08x	0.10x		0.12x	0.12x			
	KC-413	11.8	1.2x	0.20x	0.10x	0.05x	<0.0050	0.15x	0.15x	0.05x			0.08x			
443	SS-443	5.5x	0.50	0.08x	0.10x	0.05x	<0.0050	0.05x	0.10x	0.11x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010
	KA-443	4.5x	0.65	0.05x	0.15x	0.08x	<0.0050	0.08x	0.15x	0.04x		0.02x	0.02x			
	KB-443	6.0x	0.30	0.15x	0.05x	0.03x	<0.0050	0.03x	0.05x	0.15x		0.05x	0.05x			
	KC-443	5.1x	1.1x	0.15x	0.10x	0.05x	<0.0050	0.10x	0.15x	0.10x		0.20x	0.15x			
444	SS-A444	7.1x	0.15x	0.12x	0.05x	<0.0050	<0.0050	0.03x	<0.0050	0.12x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
413	SS-413	<0.0010	<0.0030	<0.0010	0.012	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
	KA-413											0.02x			
	KB-413											0.02x			
	KC-413											0.02x			
443	SS-443	<0.0010	<0.0030	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010
	KA-443											0.02x			
	KB-443											0.02x			
	KC-443											0.02x			
444	SS-A444	<0.0010	<0.0030	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.02x	<0.0010	<0.0010	<0.0010

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Table 11 - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

5XX ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
513	SS-513	0.20x	0.30	0.05x	0.08x	4.0x	0.03x	0.03x	1.8x	0.03x	0.01x	<0.0030	<0.0030	<0.0010	0.0001	<0.0010
514	SS-514	0.15x	0.25	0.05x	0.12x	4.1x	0.03x	0.03x	0.08x	0.12x	0.01x	<0.0030	<0.0030	<0.0010	<0.0005	<0.0010
	KA-514	0.08x	0.35	0.10x	0.05x	3.5x	<0.0050	<0.0050	<0.0050	0.16x		0.03x	0.03x		0.001x	
	KB-514	0.25	0.10x	0.02x	0.20x	4.5x	<0.0050	<0.0050	<0.0050	0.05x		0.06x	0.06x		0.003x	
518	KA-518	0.20x	1.0x	0.08x	0.05x	8.1x	<0.0050	0.05x	0.10x	0.01x			0.05x		0.004x	
520	SS-520	0.15x	0.20x	0.12x	0.05x	10.2	<0.0050	<0.0050	0.04x	0.10x	0.01x	<0.0030	<0.0030	<0.0010	0.0001	<0.0010
	KA-520	0.20x	0.10x	0.17x	0.02x	9.5x	<0.0050	<0.0050	0.08x	0.05x					0.002x	
	KB-520	0.08x	0.30	0.08x	0.08x	10.6			0.02x	0.01x					0.005x	
535	SS-535	0.10x	0.10x	0.03x	0.18x	7.0x	0.02x	0.02x	0.03x	0.18x	0.01x	<0.0030	<0.0030	<0.0010	0.0001	<0.0010

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
513	SS-513	<0.0010	<0.0010	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	<0.0010
514	SS-514	<0.0010	<0.0010	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	KA-514														
	KB-514					0.06x									
518	KA-518														
520	SS-520	<0.0010	<0.0010	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	KA-520														
	KB-520														
535	SS-535	<0.0010	<0.0010	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 12 - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

7XX ALLOYS

Typical Analysis - Weight Percent																
Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
711	SS-711	0.15x	0.90	0.50	0.03x	0.40	0.03x	0.03x	6.5x	0.10x	0.01x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010
712	SS-712	0.20x	0.50	0.15x	0.10x	0.65	0.50	<0.0050	5.9x	0.15x	0.01x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010
713	SS-713	0.12x	0.55	0.80	0.20x	0.40	0.06x	0.05x	7.6x	0.20x	0.01x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010

Typical Analysis - Weight Percent															
Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
711	SS-711	<0.0010	<0.0010	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
712	SS-712	<0.0010	<0.0010	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
713	SS-713	<0.0010	<0.0010	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

For trace elements in 7XX Alloys see ST1-7000, ST2-7000 Table14

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

Values given as less than, denoted by "<", indicate that those elements are typically below this value. No attempt is made to modify the base metal composition for these elements. However, these elements will be certified to the actual composition observed. Actual certified values may vary either above or below those indicated.

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Table 13 - ALCOA SPECTROCHEMICAL STANDARDS FOR CASTING ALLOYS

8XX ALLOYS

Typical Analysis - Weight Percent															
Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
850	SS-850	0.50	0.40	1.1x	0.05x	<0.0050	<0.0050	1.1x	<0.0050	0.12x	0.01x	<0.0030	6.3x	<0.0010	<0.0010	
851	SS-851	2.5x	0.45	1.0x	0.05x	0.03x	<0.0050	0.50	0.03x	0.08x	0.01x	<0.0030	6.3x	<0.0010	<0.0010	
852	SS-852	0.22x	0.35	2.0x	0.05x	0.84	<0.0050	1.2x	0.05x	0.04x	0.01x	<0.0030	6.3x	<0.0010	<0.0010	

Typical Analysis - Weight Percent															
Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
850	SS-850	<0.0010	<0.0010	<0.0010	0.012	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
851	SS-851	<0.0010	<0.0010	<0.0010	0.015	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
852	SS-852	<0.0010	<0.0010	<0.0010	0.02x	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 14 - ALCOA SPECTROCHEMICAL STANDARDS FOR TRACE METALS

TRACE METALS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
1000	SS-1000	0.0002	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
1050	ST1-1050	0.015	0.33	0.03x	0.04x	0.03x	0.02x	0.01x	0.04x	0.03x	0.025	0.02x	0.02x	<0.0010	0.0002	0.0005
2XXX	ST1-2000	0.50	0.45	4.5x	0.50	1.2x	0.05x	0.01x	0.15x	0.03x	0.01x	0.003x	0.001x	<0.0005	0.0005	
	ST2-2000	0.50	0.45	2.5x	0.50	0.50	0.05x	0.01x	0.15x	0.03x	0.01x	0.003x	0.001x	<0.0005	0.0005	
3XXX	ST1-3000	0.20x	0.50	0.15x	1.2x	1.0x	0.01x	0.01x	0.05x	0.02x	0.01x	0.003x	0.001x	<0.0005	0.0005	
	ST2-3000	0.20x	0.50	0.15x	1.2x	0.03x	0.01x	0.01x	0.05x	0.02x	0.01x	0.003x	0.001x	<0.0005	0.0005	
3003	ST1-3003	0.30	0.33	0.15x	1.2x	<0.0010	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010
	ST2-3003	0.30	0.65	0.15x	1.2x	0.01x	0.015	0.02x	0.02x	0.02x	0.015	0.02x	0.02x	<0.0010	0.0002	0.0005
5XXX	ST1-5000	0.15	0.30	0.05x	0.05x	1.8x	0.15x	0.03x	0.04x	0.02x	0.01x	0.003x	0.001x	<0.0005	0.0005	
5052	ST1-5052	0.15x	0.30	0.10x	<0.0010	2.7x	0.25	<0.0010	<0.0010	<0.0010	<0.0010	<0.0030	<0.0010	<0.0010	<0.0005	
	ST2-5052	0.15x	0.30	0.10x	0.05x	2.7x	0.25	0.02x	0.03x	0.03x	0.015	0.02x	0.02x	<0.0010	0.0002	
6XXX	ST1-6000	0.55	0.30	0.15x	0.05x	0.80	0.15x	0.05x	0.08x	0.04x	0.01x	0.003x	0.001x	<0.0005	0.0005	

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
1000	SS-1000	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
1050	ST1-1050	0.0015	0.002x	0.03x	0.025	0.004x	0.0005	0.0005		0.001x		0.0012	0.003x	0.0005	0.0002
2XXX	ST1-2000			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.001x	0.001x		
	ST2-2000			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.001x	0.001x		
3XXX	ST1-3000			0.001x	0.02x	0.001x	0.001x	0.0001			0.001x	0.001x	0.001x		0.003x
	ST2-3000			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.001x	0.001x		0.003x
3003	ST1-3003	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	ST2-3003	0.0015	0.002x	0.02x	0.002x	0.004x	0.0005	0.0005		0.001x		0.0012	0.003x	0.0005	0.0002
5XXX	ST1-5000			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.001x	0.001x		0.003x
5052	ST1-5052	<0.0005	<0.0005		<0.0010	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010	<0.0010	<0.0010	
	ST2-5052	0.0015	0.002x	0.02x	0.025	0.004x	0.0005	0.0005		0.001x		0.0012	0.003x	0.0005	
6XXX	ST1-6000			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.001x	0.001x		

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Table 14 (cont'd) - ALCOA SPECTROCHEMICAL STANDARDS FOR TRACE METALS

TRACE METALS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
6063	ST1-6063	0.45	0.22x	<0.0010	<0.0010	0.55	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0030	<0.0010	<0.0010	<0.0005	
	ST2-6063	0.45	0.22x	0.05x	0.05x	0.05x	0.015	0.03x	0.03x	0.03x	0.03x	0.02x	0.02x	<0.0010	0.0002	
7XXX	ST1-7000	0.15x	0.25	1.5x	0.25	2.5x	0.15x	0.02x	6.5x	0.04x	0.01x	0.003x	0.001x	<0.0005	0.0005	
	ST2-7000	0.15x	0.25	0.15x	0.20x	1.3x	0.10x	0.02x	3.5x	0.04x	0.01x	0.003x	0.001x	<0.0005	0.0005	
8079	ST1-8079	0.13x	1.2x	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	ST2-8079	0.13x	1.2x	0.03x	0.003x	0.003x	0.003x	0.004x	0.015x	0.004x	0.002x	0.004x	0.005x	<0.0010	0.0002	0.0005
3XX	ST1-300	7.5x	0.60	0.80	0.15x	0.30	0.01x	0.10x	0.10x	0.10x	0.01x	0.003x	0.001x		0.0005	
	ST2-300	9.0x	1.1x	3.5x	0.50	0.20x	0.03x	0.10x	2.5x	0.10x	0.01x	0.003x	0.001x		0.0005	

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
6063	ST1-6063	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010	<0.0010	<0.0010	
	ST2-6063	0.0015	0.002x	0.02x	0.025	0.004x	0.0005	0.0005		0.001x		0.0012		0.0005	
7XXX	ST1-7000			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.001x	0.001x		0.003x
	ST2-7000			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.001x	0.001x		
8079	ST1-8079	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010	<0.0010	<0.0010	<0.0010
	ST2-8079	0.0015	0.002x	0.004x	0.016	0.004x	0.0005	0.0005		0.001x		0.0012		0.0005	0.0002
3XX	ST1-300			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.02x	0.001x		
	ST2-300			0.001x	0.02x	0.001x	0.001x	0.001x			0.001x	0.02x	0.001x		

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 15 - ALCOA SPECTROCHEMICAL STANDARDS FOR CALIBRATION AND DRIFT CORRECTION

SQ STANDARDS ALLOYS

Typical Analysis - Weight Percent

Alloy	Catalog Number	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	V	Pb	Sn	B	Be	As
CALIBRATION	SQ-10															
	SQ-11	0.2	0.2	0.5	0.4	3.0	0.25		6.6	0.10					0.005	
	SQ-12	1.1	0.6	4.8	1.1	0.15		0.25	0.20		0.10	0.06	0.06		0.005	
	SQ-13	0.5	0.6	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04		0.005	
	SQ-14	0.1	0.1	0.5	0.4	0.9		0.4	1.2	0.1		0.5	0.1		0.002	
	SQ-15	12.0	0.7	0.5	0.05	1.2	0.05	2.5		0.1						
	SQ-16	4.0	1.0	10.0	0.2	0.3		0.2	0.2							
	SQ-17	0.7	0.4	0.35	0.12	1.6	0.25	0.12	0.12	0.08	0.03	0.1	0.1		0.005	
	SQ-18													0.02		

Typical Analysis - Weight Percent

Alloy	Catalog Number	Na	Ca	Bi	Ga	Zr	Cd	Co	Sc	Li	Ag	Sr	Sb	P	Hg
CALIBRATION	SQ-10														
	SQ-11		0.02		0.03			0.01							
	SQ-12			0.06	0.03	0.15	0.20	0.01			0.05				0.01
	SQ-13			0.04	0.03	0.04	0.04	0.01							
	SQ-14			0.5											
	SQ-15											0.02			
	SQ-16														
	SQ-17			0.08	0.03										
	SQ-18	0.02								0.02					

Note: SQ Standards are 64mm diameter, 37mm thick except SQ-18 which is 25mm thick

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 16 - ALCOA SPECTROCHEMICAL STANDARDS FOR INDIVIDUAL ELEMENTS

Silicon Series in Unalloyed Aluminum

Catalog Number	Si	Fe
SI-1	0.50	(0.5)
SI-2	1.0x	(0.5)
SI-3	1.6x	(0.5)
SI-4	2.2x	(0.5)
SI-5	3.0x	(0.5)
SI-6	5.0x	(0.5)
SI-7	7.0x	(0.5)
SI-8	10.0	(0.5)
SI-9	12.5	(0.5)
SS-390	16.5	(0.9)

Iron Series in Unalloyed Aluminum

Catalog Number	Si	Fe	Cu
FE-1	(0.1)	0.04x	(0.01)
FE-2	(0.1)	0.08x	(0.01)
FE-3	(0.1)	0.16x	(0.01)
FE-4	(0.1)	0.25	(0.01)
FE-5	(0.1)	0.40	(0.01)
FE-6	(0.1)	0.60	(0.01)
FE-7	(0.1)	0.80	(0.01)
FE-8	(0.1)	1.0x	(0.01)
FE-9	(0.1)	1.2x	(0.01)
FE-10	(0.1)	1.5x	(0.01)
FE-11	(0.1)	2.0x	(0.01)
FE-12	(0.1)	2.5x	(0.01)
SS-A2800	0.25	3.0x	0.03x

Copper Series in Unalloyed Aluminum

Catalog Number	Si	Fe	Cu
CU-1	0.15	0.25	1.0x
CU-2	0.15	0.25	2.5x
CU-3	0.15	0.25	4.5x
CU-4	0.15	0.25	7.0x
CU-5	0.15	0.25	10.0
CU-6	0.15	0.25	14.0
CU-7	0.15	0.25	20.0

Manganese Series in 3000 Alloy

Catalog Number	Mn
MN-1	0.25
MN-2	0.50
MN-3	0.70
WA-3003	1.0x
SS-3003	1.2x
WB-3003	1.5x

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 16 - ALCOA SPECTROCHEMICAL STANDARDS FOR INDIVIDUAL ELEMENTS

Nickel Series in 242 Alloy

Catalog Number	Ni
NI-1	0.01x
NI-2	0.25
NI-3	0.50
NI-4	1.0x
NI-5	1.5x
SS-242	2.0x

Zinc Series in 7072 Alloy

Catalog Number	Zn
ZN-1	0.25
ZN-2	0.60
SS-7072	1.1x
ZN-4	2.6x
ZN-5	4.0x
ZN-6	7.0x
ZN-7	10.0

Titanium Series in Unalloyed Aluminum

Catalog Number	Ti
WC-1000	0.08x
TI-2	0.15x
TI-3	0.30

Boron Series in 1075 Alloy

Catalog Number	B
BN-1	0.0005 - 0.0034
BN-2	0.0035 - 0.0074
BN-3	0.0075 - 0.014
BN-4	0.015 - 0.025
BN-5	0.026 - 0.034

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 16 - ALCOA SPECTROCHEMICAL STANDARDS FOR INDIVIDUAL ELEMENTS

Boron Series in 7.5% Silicon Alloy

Catalog Number	B
BN-11	0.0005 - 0.0034
BN-12	0.0035 - 0.0074
BN-13	0.0075 - 0.014
BN-14	0.015 - 0.025

Beryllium Series in 1100 Alloy

Catalog Number	Be
BE-1	0.0005 - 0.0025
BE-2	0.0035 - 0.0065

Sodium Series in 1075 Alloy

Catalog Number	Na
NA-1	0.0005 - 0.0024
NA-2	0.0025 - 0.0064
NA-3	0.0065 - 0.012
NA-4	0.013 - 0.020
NA-5	0.021 - 0.030

Sodium Series in 7.5% Silicon Alloy

Catalog Number	Na
NA-11	0.0005 - 0.0024
NA-12	0.0025 - 0.0064
NA-13	0.0065 - 0.012
NA-14	0.013 - 0.020
NA-15	0.021 - 0.030

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 16 - ALCOA SPECTROCHEMICAL STANDARDS FOR INDIVIDUAL ELEMENTS

Calcium Series in 1075 Alloy

Catalog Number	Ca
CA-1	0.0005 - 0.0034
CA-2	0.0035 - 0.0084
CA-3	0.0085 - 0.024
CA-4	0.025 - 0.060

Calcium Series in 7.5% Silicon Alloy

Catalog Number	Ca
CA-11	0.0005 - 0.0024
CA-12	0.0025 - 0.0064
CA-13	0.0065 - 0.012
CA-14	0.013 - 0.020
CA-15	0.021 - 0.040

Cadmium Series in 1075 Alloy

Catalog Number	Cd
CD-1	0.0005 - 0.0044
CD-2	0.0045 - 0.010
CD-3	0.015 - 0.034
CD-4	0.035 - 0.060

Antimony Series in 1075 Alloy

Catalog Number	Sb
AN-1	0.005x
AN-2	0.015
AN-3	0.04
AN-4	0.09

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

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Table 16 - ALCOA SPECTROCHEMICAL STANDARDS FOR INDIVIDUAL ELEMENTS

Antimony Series in 356 Alloy

Catalog Number	Sb
AN-11	0.05x
AN-12	0.10x

Cobalt Series in 1075 Alloy

Catalog Number	Co
CO-1	0.001x
CO-2	0.007x

Phosphorus in 10.5% Silicon

Catalog Number	P
P-1	0.005

Lithium Series in 1075 Alloy

Catalog Number	Li
LI-1	0.0002 - 0.0009
LI-2	0.0010 - 0.0024
LI-3	0.0025 - 0.0064
LI-4	0.0065 - 0.010
LI-5	0.011 - 0.020
LI-6	0.021 - 0.030

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

Effective: 3/22/2004

오디랩 www.odlab.co.kr 제품구입문의 02-809-7847~8, 엄영록
Call 724-337-5816 or 1-800-858-4638 for pricing and availability.

Table 16 - ALCOA SPECTROCHEMICAL STANDARDS FOR INDIVIDUAL ELEMENTS

Gallium Series in 1000 Alloy

Catalog Number	Ga
WD-1000	0.004x
WE-1000	0.01x
SS-1050	0.02x

Zirconium Series in 1050 Alloy

Catalog Number	Zr
ZR-1	0.0035 - 0.014
ZR-2	0.015 - 0.044
ZR-3	0.045 - 0.070

Zirconium Series in 6151 Alloy

Catalog Number	Zr
ZR-11	0.01x
ZR-12	0.02x
ZR-13	0.08x
ZR-14	0.16x
ZR-15	0.26

Note: The 'x' shown as part of the typical analysis concentration is used as a decimal place holder. Actual certified values are reported to the number of digits shown, with a numerical value in place of the 'x'.

Effective: 3/22/2004

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