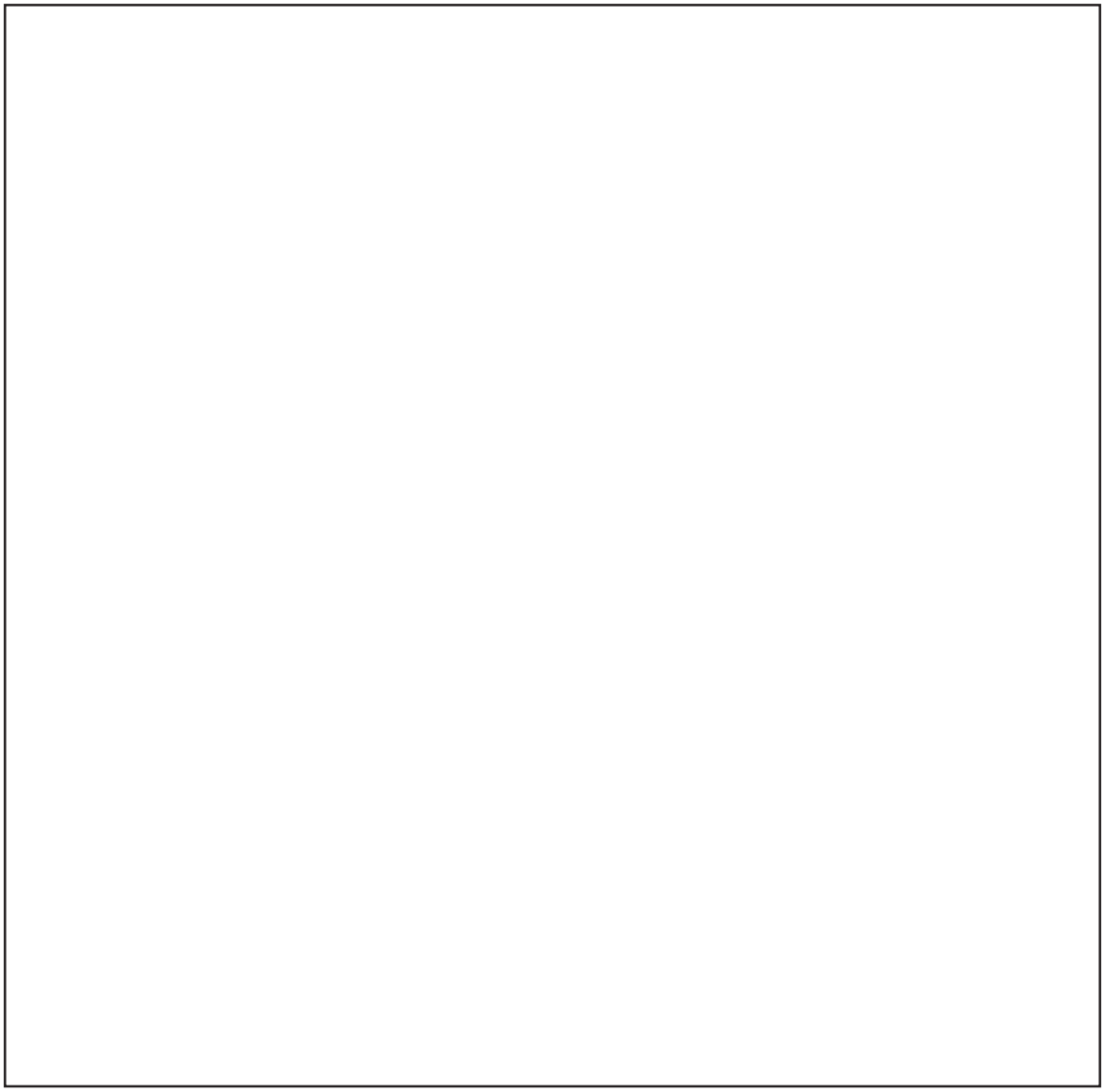
Atlas Metal Sales was founded in 1975 as an aluminum ingot distributor and has steadily grown to a specialty metals warehouse distributing aluminum, brass, bronze, copper, lead, nickel, pewter, tin and zinc in various forms.

Atlas has established a reputation for quality and competitive pricing carrying bronze sheet, plate, rod, bar, tubing, welding rod, etc.

Atlas is also a distributor of foundry alloys for casting purposes. The Company stocks lead-free American Pewter, pure tin, tin/lead alloys, lead sheet and solders.

Atlas has provided a unique service for many years to the art community throughout the U.S. by supplying specialty alloys in a variety of shapes and forms required by bronze sculptors, fabricators, foundries, blacksmiths, artists and craftsmen. Located in Denver, Atlas serves customers in all 50 states, as well as Canada and Mexico. Customer satisfaction, prompt shipment, personal service and locating the hard-to-find items are the primary goals of the company. Shipments are generally made within 24 hours after receipt of order.



COPPER ALLOY No. C65500 (HIGH SILICON BRONZE A)*

Composition - percent

	Nominal	Minimum	Maximum
Copper	97	Remainder	
Lead	. . . .	. . . .	.05
Iron	. . . .	. . . .	0.80
Zinc	. . . .	. . . .	1.50
Manganese	. . . .	0.50	1.30
Silicon	3	2.80	3.80
Nickel	. . . .	. . . .	0.60

Nearest Applicable A S T M Specifications

Bolts	F468
Flat Products	B96, B98, B100, B124, B432
Nuts	F467
Pipe	B315
Rod	B98, B124
Screws	F468
Shapes	B98, B124, B283
Studs	F468
Tube	B315
Wire	B99, B105

Physical Properties

	English Units		C.G.S. Units	
Melting Point (Liquidus)	1880	F	1025	C
Melting Point (Solidus)	1780	F	970	C
Density	.308	lb / cu in @ 68 F	8.53	gm / cu cm @ 20 C
Specific Gravity	8.53		8.53	
Coefficient of Thermal Expansion		per ^{O} F from 68 F to 212 F		per ^{O} C from 20 C to 100 C
Coefficient of Thermal Expansion		per ^{O} F from 68 F to 392 F		per ^{O} C from 20 C to 200C
Coefficient of Thermal Expansion	.0000100	per ^{O} F from 68 F to 572 F	.0000180	per ^{O} C from 20 C to 300 C
Thermal Conductivity	21	Btu /sq ft /ft /hr /^{O}F @ 68 F	0.9	cal /sq cm /cm /sec /^{O}C @ 20 C
Electrical Resistivity (Annealed)	148	Ohms (circ mil /ft) @ 68 F	24.6	Microhm-cm @ 20 C
Electrical Conductivity* (Annealed)	7.0	% IACS @ 68 F	.0406	Megmho-cm @ 20 C
Thermal Capacity (Specific Heat)	09	Btu /lb ^{O}F @ 68 F	.09	cal /gm / ^{O}C @ 20 C
Modulus of Elasticity (Tension)	15,000	ksi	10,500	Kg /sq mm
Modulus of Rigidity	5,600	ksi	3,900	Kg /sq mm

*Volume Basis

Typical Uses

AIRCRAFT: hydraulic pressure lines

HARDWARE: bolts, burrs, butts, clamps, cotter pins, hinges, marine hardware, nails, nuts, pole line hardware, screws

INDUSTRIAL: bearing plates, bushings, cable, channels, chemical equipment, heat exchanger tubes, kettles, piston rings, tanks, rivets, screen cloth and wire, screen plates, shafting

MARINE: propeller shafts

Common Fabrication Processes

Blanking, drawing, forming and bending, heading and upsetting, hot forging and pressing, roll threading and knurling, shearing, squeezing and swaging

Fabrication Properties

Capacity for Being Cold Worked ..... Excellent
Capacity for Being Hot Formed ..... Excellent
Hot Forgeability Rating (Forging Brass = 100) 40
Hot Working Temperature ..... 1300-1600 F or 700-875 C
Annealing Temperature ..... 900-1300 F or 475-700 C
Machinability Rating (Free Cutting Brass = 100) 30

Suitability for being joined by:
Soldering ..... Good
Brazing ..... Excellent
Oxyacetylene Welding ..... Good
Gas Shielded Arc Welding ..... Excellent
Coated Metal Arc Welding ..... Fair
Resistance Welding { Spot ..... Excellent; Seam ..... Excellent; Butt ..... Excellent

The values listed above represent reasonable approximations suitable for general engineering use. Due to commercial variations in composition and to manufacturing limitations, they should not be used for specification purposes. See applicable A.S.T.M. specification references.

* Source: Standards Handbook published by the Copper Development Association, Inc.

SILICON BRONZE SHEET AND PLATE - CDA 655

Thickness	Weight Per Sq. Ft.	Weight Per Sheet	Standard Sheet Size
.025" (22 ga.)	1.1 lbs.	22 lbs.	24 x 120
.047" (3/64")	2.2 lbs.	44 lbs.	24 x 120
.063" (1/16")	2.9 lbs.	58 lbs.	24 x 120
.094" (3/32")	4.2 lbs.	84 lbs.	24 x 120
.125" (1/8")	5.7 lbs.	114 lbs.	24 x 120
.187" (3/16")	8.6 lbs.	172 lbs.	24 x 120
.250" (1/4")	11.4 lbs.	228 lbs.	24 x 120
.125" (1/8")	5.7 lbs.	182 lbs.	48 x 96
.187" (3/16")	8.6 lbs.	276 lbs.	48 x 96
.250" (1/4")	11.4 lbs.	365 lbs.	48 x 96
.375" (3/8")	17.1 lbs.	547 lbs.	48 x 96
.500" (1/2")	22.8 lbs.	730 lbs.	48 x 96
.750" (3/4")	34.2 lbs.	1,075 lbs.	48 x 96

SILICON BRONZE - CDA 655

ROUND ROD

Size	Lbs. Per Foot	Lbs. Per Length
1/16"	.012	**.036
3/32"	.027	**.081
1/8"	.046	**.138
3/16"	.103	**.309
1/4"	.181	2.170
5/16"	.285	3.420
3/8"	.408	4.900
7/16"	.555	6.660
1/2"	.726	8.710
9/16"	.943	11.33
5/8"	1.134	13.610
3/4"	1.632	19.580
7/8"	2.261	27.132
1"	2.890	34.720
1-1/8"	3.740	44.880
1-1/4"	4.520	54.230
1-3/8"	5.587	67.046
1-1/2"	6.510	78.100
1-3/4"	8.860	106.32
2"	11.580	138.910

Standard Length - 12 Ft.

SQUARE ROD

Size	Lbs. Per Foot	Lbs. Per Length
1/2" x 1/2"	.96	11.52
5/8" x 5/8"	1.49	17.90
3/4" x 3/4"	2.16	25.92
1" x 1"	3.79	45.48
1.5" x 1.5"	8.68	104.16

Standard Length - 12 Ft.

**Denotes: Available in 3 Ft. Lengths only

Standard Length - 12 Ft.

SILICON BRONZE ROUND PIPE - CDA 655

Size	Wt. Per Ft.
.500 OD x .078 Wall x .344 ID	.40 lbs./ft.
.750 OD x .094 Wall x .562 ID	.73 lbs./ft.
1.000 OD x .125 Wall x .750 ID	1.31 lbs./ft.
1.250 OD x .125 Wall x 1.000 ID	1.71 lbs./ft.
1.500 OD x .156 Wall x 1.188 ID	2.50 lbs./ft.
1.750 OD x .156 Wall x 1.438 ID	2.92 lbs./ft.
2.000 OD x .172 Wall x 1.656 ID	3.75 lbs./ft.
2.500 OD x .172 Wall x 2.156 ID	4.83 lbs./ft.

Standard Length - 12 Ft.

SILICON BRONZE SQUARE TUBING - CDA 655

Size Wt.	Per Ft.
1.0" X 1.0" X .100" Wall	1.5 lbs./ft.
1.5" X 1.5" X .100" Wall	2.3 lbs./ft.
2.0" X 2.0" X .100" Wall	3.2 lbs./ft.

Standard Lengths - 12 Ft.
6 Ft. Increments Required

SILICON BRONZE RECTANGULAR FLAT BAR - CDA 655

Size	Weight Per. Ft.	Weight Per. Length
1/8" x 1"	.48	5.7 lbs.
3/16" x 1"	.72	8.6 lbs.
3/16" x 1-1/2"	1.07	12.8 lbs.
1/4" x 1"	.98	11.5 lbs.
1/4" x 2"	1.94	23.3 lbs.
1/2" x 1"	1.94	23.3 lbs.
1/2" x 2"	3.88	46.5 lbs.

Standard Lengths - 12 Ft.
6 Ft. Increments Required
Will cut to length

SILICON BRONZE WELDING ROD

Size	Wt. / Ft.
1/16"	.012 lb.
3/32"	.027 lb.
1/8"	.046 lb.
3/16"	.103 lb.

Standard Lengths - 36"

SILICON BRONZE WIRE FOR MIG

Size	Ft. Per Lb.	Coil Sizes
.035" diam.	289 ft.	10 lb. spool
.035" diam.	289 ft.	25 lb. spool

"NICKEL-SILVER" WELDING ROD - CDA 773

Size	Wt. Per Ft.
3/32"	.025 lb.
1/8"	.042 lb.
3/16"	.094 lb.
1/4"	.188 lb.

EVERDUR - SILICON BRONZE INGOT - CDA 873

Composition - Nominal

Copper	95
Silicon	4
Manganese	1

Physical Properties

Melting Point (Liquidus)	1790F
Melting Point (Solidus)	1590F
Pouring Temperture (Light)	2000-2150F
Pouring Temperture (Heavy)	1850-1950F
Density	.302 lb/cu. in.

Suitability for Being Joined by:

Brazing	Good
Oxyacetylene Welding	Good
Carbon Arc Welding	Fair
Gas Shield Arc Welding	Good
Coated Metal Arc Welding	Good
Machinability Rating	40
Patternmakers' Shrinkage (in./ft)	1/4"

SIZES: Polished Shot, 1/2" Cubes, 2" Cut Lengths, 5 lb Bars, 20 lb Ingots

HERCULOY - SILICON BRONZE INGOT - CDA 876

Composition - Nominal

Copper	92
Silicon	4
Zinc	4

Physical Properties

Melting Point (Liquidus)	1780F
Melting Point (Solidus)	1580F
Pouring Temperature (Light)	1975-2100F
Pouring Temperature (Heavy)	1850-1950F
Density	.301 lb/cu. in.

Suitability for Being Joined by:

Brazing	Fair
Oxyacetylene Welding	Good
Carbon Arc Welding	Poor
Gas Shield Arc Welding	Fair
Coated Metal Arc Welding	Fair
Machinability Rating	40
Patternmakers' Shrinkage (in./ft)	3/16"

SIZES: Polished Shot, 1/2" Cubes, 2" Cut Lengths, 5 lb Bars, 20 lb Ingots

BRASS AND BRONZE ALLOYS

FOUNDRY ALLOYS:

No.	C.D.A. No.
115	836
205	907
245	922
305	937
315	932
403	854

FOUNDRY ALLOYS:

No.	C.D.A. No.
415 "9C"	954
415 "9D"	955
421	865
423	862
424	863
Everdur Silicon Bronze (501)	873
Herculoy Silicon Bronze	876
Silicon Brass	875
White Tombasil	997.0

SPECIAL COPPER-BASE ALLOYS

• Art Casters Yellow Brass	Shot and 1/2″ cubes
• Jewelers Manganese Bronze	Shot and 1/2″ cubes
• Phos. Copper Shot (15% Phos)	
• Silicon Bronze	Shot and 1/2″ cubes
• White Bronze	Shot and 1/2″ cubes

COPPER SHEET

Ounces Per Sq. Ft.	Gauge	Size In Inches	Weight Per Sq. Ft.	Weight Per Sheet - Lbs
16	24	.021" x 36" x 96"	1.00 lbs.	24 lbs.
32	18	.043" x 36" x 96"	2.00 lbs.	48 lbs.

AMERICAN PEWTER SHEETS - LEAD FREE

Gauge	Size	Weight Per Sheet
22	.025" x 12" x 24"	1 lbs. 15 ozs.
20	.032" x 12" x 24"	2 lbs. 8 ozs.
18	.040" x 12" x 24"	3 lbs. 4 ozs.
16	.050" x 12" x 24"	3 lbs. 15 ozs.
14	.063" x 12" x 24"	4 lbs. 13 ozs.

Standard Chemical Composition: (Nominal)

Tin: 91.75%

Antimony: 8.00%

Copper: .25%

NOTE: Circles and Squares are available on special order.

PEWTERS, TIN/LEAD ALLOYS & BABBITTS

For Casting Purposes

5877	(Sn 3%;	Sb 10%;	Pb 87%)	
7722	(Sn 72%;	Sb 3.5%;	Pb 23%;	Cd 2%)
592*	(Sn 92%;	Sb 7.75%;	Cu .25%)	
902*	(Sn 90%;	Sb 8.00%;	Cu 2%)	
No. 2 Babbitt	(Sn 89%;	Sb 7.5%	Cu 3.5%)	
No. 3 Babbitt	(Sn 84%;	Sb 8.0%	Cu 8%)	
No. 7 Babbitt	(Sn 10%;	Sb 15%	Pb 75%)	

*Denotes Lead Free Pewters

ALUMINUM

Foundry Alloys

319.1	(Al 90.5%;	Si 6%;	Cu 3.5%)	
356.1	(Al 92.5%;	Si 7%;	Fe .30%)	
A356.2	(Al 93%;	Si 7%;	Fe .10%)	
360.1	(Al 90%;	Si 9.5%;	Mg .50%)	
380.1	(Al 85.5%;	Si 8.5%;	Cu 3.5%;	Zn 2.5%)
383.1	(Al 84.5%;	Si 10.5%;	Cu 2.5%;	Zn 2.5%)
535.2	(Al 93%;	Mg 7%;	Mn .20%)	
713.1	(Al 91.5%;	Zn 9.5%;	Cu .70%;	Mg .40%)

356 ALUMINUM CASTING ALLOY

Fabricating Characteristics	Rating
Resistance to Hot Cracking	E
Pressure Tightness	E
Fluidity	E
Solidification Shrinkage	E
Elev. Temperature Strength	G
Corrosion Resistance	VG
Machining	F
Polishing	G
Gas Welding	E
Arc Welding	E
Brazing	No
Normally Heat Treated	Yes

Chemical Composition	
Silicon	6.5% to 7.5%
Iron	.50% max.
Copper	.25% max.
Manganese	.35% max.
Magnesium	.25% to .45%
Zinc	.35% max.
Titanium	.25% max.
Aluminum	91.0% to 93.0%

Ratings

E - Excellent VG - Very Good G - Good F - Fair P - Poor

OUTSTANDING CHARACTERISTICS:

EXCELLENT CASTABILITY, WELDABILITY AND PRESSURE TIGHTNESS.

PURE METALS (99.9% Purity)

Lead	Ingot
Tin	1 # Bars
Zinc	Balls

MISCELLANEOUS METALS AND ALLOYS

Lead Sheet and Plate	from.032 to 3/4" thickness
No. 77 Degassifier	for Silicon Bronze
Stainless Steel Ingots	316 L
Zinc Alloys	No. 2, 3, 5, 8, 12 and 27

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