

# ALUMINUM

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## ALUMINUM SHEET AND PLATE

Aluminum in its various forms is stocked in a range of strengths varying from that of Specification 1100-0 (which has a yield strength of around 5000 lbs. per square inch) to that of Specification 7075-T6 (yield strength of about 70,000 lbs per square inch).

Here are a few typical applications within the range of these specifications –

**Utility Sheet**, is used for all general sheet metal work such as flashings, ductwork, lining walls, etc.

**1100-0** is used primarily for spinning and deep drawing operations such as utensils, ornaments, etc.

**1100-H14** and **3003-H14** are specification alloys used for general forming operations.

**2024-O ALCLAD** and **2024-T3 ALCLAD** are used primarily in the aircraft industry, where a high strength weight ratio is required.

**5005-H14** similar in physical characteristics to 3003-H14 with superior corrosion resistance and a homogenous smooth surface finish suitable for anodizing. This alloy is suitable for curtain walls, decorative trim, control panel boxes and signs, etc.

**5083-H321** and **H323** is one alloy of different tempers that produces high weld joint efficiencies. It is used for tank work, heavy transport, etc., where its welded properties can be used to advantage.

**5083-H116** is an alloy that produces high weld joint efficiencies. It is used in marine applications where it's welded properties can be used to advantage. The H116 condition is a special hardness with mechanical characteristics close to H321. It's special nature derives from the fact that it affords a guaranteed resistance to exfoliation corrosion on delivery, as controlled by a standard test.

**5052-H32** and **H34** is a superior strength alloy of good forming qualities and is especially suited for Marine applications.

**5454-H32** is a sister alloy to 5083 with a lower rating to stress corrosion when functioning in the 150°F to 300°F range. Typical uses are truck dump bodies, tanker trucks, exhaust stacks, chemical handling tanks on vessels, etc.

**6061-T6** is an excellent all purpose alloy, having high strength and good corrosion resistance. It is used for all structural applications such as mine cars, logging chutes, and ship construction.

**7075-O ALCLAD** and **7075-T6 ALCLAD** are the highest strength alloys produced and are used primarily for aircraft.

All the above alloys have good welding properties by the argon tungsten arc or inert gas metal arc process with the exception of 2024 and 7075.

**Painted Aluminum:** 1100, 3003, 3105, 5005 and 5052 are just some of common alloys available in painted product. Painted aluminum is produced in a broad range of mechanical properties and the spectrum of finishes includes high durability exterior coatings, specialized epoxies, polyesters, textured polyesters, fluorocarbons and metallics as well as washcoat primers. Standard colours can be selected from or custom colour matching can be done to specification. Most coatings are available on one and two sides.

## **ALUMINUM ASSOCIATION ALLOY AND TEMPER DESIGNATION SYSTEMS – WROUGHT ALLOYS**

The numbers used to describe aluminum wrought alloys conform to a code developed by the ALUMINUM ASSOCIATION. The first four figures in the grouping describe the alloys used. Other code figures or letters indicate the form of the product and the type of heat-treatment given.

*Here is how it works.*

### **Four Digit Numerical Designations**

1st Digit – Indicates alloy group.

2nd Digit – Indicates modifications in impurity limits.

3rd & 4th Digits – Identify the different alloys in a group.

### **Alloy Groups**

#### **Alloy Number**

#### **Major Alloying Elements**

1 XXX – Aluminum – 99.00% minimum and greater

2 XXX – Copper

3 XXX – Manganese

4 XXX – Silicon

5 XXX – Magnesium

6 XXX – Magnesium & Silicon

7 XXX – Zinc

8 XXX – Other elements

9 XXX – Unused series

The letter "X" preceding a 4 digit series indicates experimental –

Example – X7004.

### **Tempers**

These designations follow the above alloy numbers.

F – as fabricated – Products which have no special control over final temper.

O – Annealed

H – Strain-hardened – where increased strength is obtained by cold work.

T – Thermally treated to produce stable tempers other than "F", "O" or "H".

W – Solution heat treated resulting in an unstable temper.

The first number "5" identifies the alloy group – in this case **MAGNESIUM**.

The second number "0" indicates any modification of the original alloy. "0" means there was no modification.

**5052-H34**

The third and fourth numbers, (52), indicate the alloy in the group.

"H" indicates temper – strain hardened. The "3" means "hardened and stabilized" and the "4" means to a "half hard" condition.

### **Subdivision of H. Temper**

The first digit following an H indicates the specific combination of basic operations:

- H1 – Strain-hardened only.
- H2 – Strain-hardened and partially annealed.
- H3 – Strain-hardened and stabilized.
- H4 – Strain-hardened and laquered or painted.

The second digit following an H indicates the degree of strain-hardening:

- H x 1 – Eighth hard
- H x 2 – Quarter hard
- H x 4 – Half hard
- H x 6 – Three-quarter hard
- H x 8 – Hard
- H x 9 – Extra hard

A third digit is sometimes used when the degree of control of temper or mechanical properties are different from but close to those for the two-digit H temper designation.

- H111 – Applies to products, which are strain hardened less than the amount required for a controlled H11 temper.
- H112 – Applies to products, which acquire some temper from shaping processes not having special control over the amount of strain-hardening or thermal treatment, but for which there are mechanical property limits.
- H311 – Applies to products, which are strain-hardened less than the amount required for a controlled H31 temper.
- H321 – Applies to products, which are strain-hardened less than the amount required for a controlled H32 temper.
- H323-H343 – Applies to products, which are specially fabricated to have acceptable resistance to stress corrosion cracking.

### **Subdivisions of T Temper**

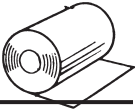
- T1 – Cooled from an elevated temperature shaping process and naturally aged to a substantially stable condition.
- T2 – Annealed (cast products only).
- T3 – Solution heat-treated and then cold worked.
- T4 – Solution heat-treated and naturally aged to a substantially stable condition.
- T5 – Cooled from an elevated temperature shaping process and then artificially aged.
- T6 – Solution heat-treated and then artificially aged.
- T7 – Solution heat-treated and then overaged/stabilized.
- T8 – Solution heat-treated, cold worked, and then artificially aged.
- T9 – Solution heat-treated, artificially aged, and then cold worked.
- T10 – Cooled from an elevated temperature shaping process, cold worked and then artificially aged.

Additional digits may be added to indicate a variation in treatment, which significantly alters the characteristics of the product.

- T x 51 – Stress-relieved by stretching.
- T x 510 – Products that receive no further straightening after stretching.
- T x 511 – Products that may receive minor straightening after stretching to comply with standard tolerances.
- T x 52 – Stress-relieved by compressing.

# ALUMINUM IN COIL

## UTILITY SHEET – PLAIN AND EMBOSSED



### Patterns in Stock

Thickness & Width Inches	Plain	Stucco
.016 x 36	✓	
x 48	✓	
.020 x 36	✓	
x 48	✓	
.025 x 36	✓	✓
x 48	✓	✓
.032 x 36	✓	✓
x 48	✓	✓
.040 x 36	✓	✓
x 48	✓	✓
.051 x 36	✓	
x 48	✓	✓
.064 x 36	✓	
x 48	✓	✓
x 60	✓	
.081 x 36	✓	
x 48	✓	
x 60	✓	
.091 x 48	✓	
x 60	✓	
.102 x 36	✓	
x 48	✓	
x 60	✓	
.125 x 36	✓	
x 48	✓	
x 60	✓	
x 72	✓	
.187 x 48	✓	
x 60	✓	
x 72	✓	

*The above coils can be cut to length or slit to desired width on inquiry.*

# ALUMINUM IN COIL



## MILL FINISH

Thickness & Width Inches	Specifications in Stock	
	1100 0*	5052-H32
.025 x 36 x 48		✓
.032 x 36 x 48	✓	✓
.040 x 36 x 48	✓	✓
.051 x 36 x 48	✓	✓
.064 x 36 x 48	✓	✓
.081 x 36 x 48	✓	
.091 x 36 x 48		✓
.102 x 48 x 60		✓
.125 x 48 x 60 x 72		✓
.187 x 48 x 60 x 72		✓

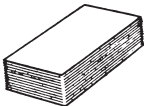
The above coils can be cut to length or slit to desired width on inquiry.

\*Deep drawing quality.

## WEIGHTS OF ALUMINUM STRIP

Thickness Inches	Weight per Foot Per Inch of Width Pounds	Feet Per Pound Per Inch of Width Feet
.016	.0189	52.9
.020	.0236	42.4
.025	.0295	33.9
.032	.0378	26.5
.040	.0472	21.2
.051	.0593	16.9
.064	.0762	13.1
.081	.0978	10.2

**ALUMINUM SHEET**  
**ALUMINUM UTILITY SHEET**  
*Plain Finish – Rectangular*

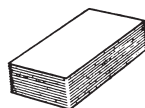


Utility Sheet is a general purpose aluminum sheet and is particularly recommended for heating and ventilating ducts, and general sheet metal work.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.016	36 x 96	0.224	5.14
	36 x 96		6.8
	36 x 120		8.5
.020	48 x 96	0.282	9.0
	36 x 96		8.5
	36 x 120		10.6
.025	48 x 96	0.352	11.3
	48 x 120		14.0
	48 x 144		16.9
.032	36 x 96	0.451	10.8
	36 x 120		13.5
	48 x 96		14.5
.040	48 x 120	0.563	18.2
	48 x 144		21.6
	36 x 96		13.5
.051	36 x 120	0.718	16.9
	48 x 96		20.3
	48 x 120		18.0
.064	48 x 144	0.901	22.5
	36 x 96		27.0
	36 x 120		21.5
.081	48 x 96	1.141	23.0
	48 x 120		29.0
	48 x 144		34.5
.102	60 x 96	1.436	36.0
	60 x 120		43.0
	36 x 96		21.6
.125	36 x 120	1.762	27.0
	48 x 96		28.9
	48 x 120		36.0
.187	48 x 144	2.641	43.0
	60 x 96		36.0
	60 x 120		45.0
	36 x 96		27.4
	48 x 96		36.5
	48 x 120		45.6
	48 x 144		54.8
	60 x 120		57.0
	36 x 96		34.5
	48 x 96		46.0
	48 x 144		69.0
	60 x 120		71.8
	36 x 96		42.3
	36 x 120		52.9
	48 x 96		56.4
	48 x 120		70.5
	48 x 144		84.6
	60 x 120		88.1
	60 x 144		105.7
	48 x 96		84.5
	48 x 120		105.6
	48 x 144		126.8
	60 x 120		132.0

Cont'd

# ALUMINUM SHEET



## ALUMINUM UTILITY SHEET – Rectangular

### Stucco Pattern

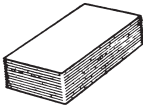
Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.025	36 x 96	0.352	8.5
	48 x 96		11.3
.032	36 x 96	0.451	10.8
	48 x 96		14.5
	48 x 144		21.6
.040	36 x 96	0.563	13.5
	48 x 96		18.0
	48 x 144		27.0
.051	36 x 96	0.718	23.0
	48 x 120		28.7
	48 x 144		34.5
.064	48 x 96	0.901	28.9
	48 x 120		36.0
	48 x 144		43.0

## ALUMINUM UTILITY PLATE

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.250	48 x 96	3.521	112.7
	48 x 120		140.8
	48 x 144		169



# ALUMINUM SHEET AND PLATE



## 1100.0 ALUMINUM SHEET – MILL FINISH

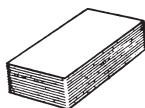
This is 99% minimum purity aluminum – noted for excellent resistance to corrosion; for easy workability including deep drawing; for weldability and high thermal conductivity. Also used for spinning requirements.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.032	48 x 96	0.452	14.46
.040	48 x 96	0.565	18.08
.051	48 x 96	0.706	22.59
.064	48 x 96	0.889	28.45
.081	48 x 96	1.13	36.16

## ALUMINUM 1100-0 CIRCLES

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.040	x 7" dia	—	.1520 lbs each
.040	x 7½" dia	—	.1745 lbs each
.040	x 8" dia	—	.1986 lbs each
.040	x 8½" dia	—	.2242 lbs each
.040	x 12" dia	—	.4468 lbs each
.050	x 14" dia	—	.7668 lbs each
.064	x 12" dia	—	.7108 lbs each
.064	x 18" dia	—	1.5990 lbs each

## ALUMINUM SHEET



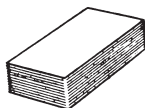
### 1100-H14 ALUMINUM SHEET\* – MILL FINISH

This is 99% minimum purity aluminum – noted for excellent resistance to corrosion; for easy workability and weldability. Suitable for sheet metal work, decorative and architectural uses.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.025	48 x 144	0.353	16.94
.032	48 x 96 48 x 144	0.452	14.43 21.7
.040	48 x 96 48 x 120	0.563	18.08 22.6
.051	48 x 96 48 x 120	0.719	22.59 28.24
.064	48 x 96 48 x 144	0.901	28.45 42.67
.081	48 x 96 48 x 144	1.129	36.128 54.19
.125	36 x 96 48 x 96 48 x 144	1.764	42.34 56.45 84.67

*\*Also available in anodizing quality. Coils are stocked in gauges under 1/8".*

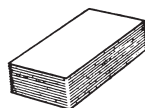
### 5454-H32 ALUMINUM SHEET – MILL FINISH



A non heat treatable alloy of medium strength and with high corrosion resistance in marine applications. As welded properties superior to 5052. Used for storage tanks, highway tankers and unfired pressure vessels.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.128	60 x 192	1.802	144.0
.187	60 x 144 72 x 144 72 x 168 72 x 192 84 x 168 84 x 240	2.641	158.4 177.3 221.9 253.5 258.8 369.7

## ALUMINUM SHEET



### 5454-0 ALUMINUM SHEET – MILL FINISH

See above for description

Fully annealed for forming

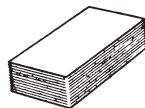
Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.187	72 x 108	2.641	142.6
	72 x 110		145.3
	84 x 108		166.3
	84 x 112		172.5
	90 x 112		184.9
	96 x 112		197.2

### 5454-H32 ALUMINUM PLATE – MILL FINISH

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
¼	60 x 120	3.521	176.0
	60 x 144		211.0
	72 x 120		211.0
	84 x 144		295.8
	84 x 168		345.1
	84 x 192		394.4
	84 x 240		492.9

Can shear aluminum sheets to any required size.

## ALUMINUM SHEET & PLATE



### ALUMINUM SHEET + COIL – MILL FINISH

#### 5083-H116

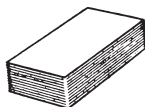
An alloy with superior tensile strength and welded properties. Used for heavy structural applications such as dump trucks and rock bodies, railway rolling stock and ship building.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.125	60 x Coil	1.803	43.3
	60 x 192		144.2
.187	48 x 144	2.641	126.8
	60 x Coil	2.641	
	60 x 192		211.3

*\*5083-H321 — Should not be used for marine applications.*

## ALUMINUM SHEET & PLATE

### ALUMINUM PLATE – MILL FINISH 5083-H116

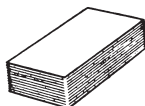


An alloy with superior tensile strength and welded properties. Used for heavy structural applications such as dump trucks and rock bodies, railway rolling stock and ship building.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
¼	48 x 192	3.521	237.0
	60 x Coil		141.0
	60 x 192		281.6
	96 x 240		563.4
⅝	60 x 192	4.409	352.7
	96 x 240		705.4
¾	60 x 192	5.291	423.3
	96 x 240		846.6
½	60 x 192	7.048	564.8
	96 x 192		902.0
⅝	60 x 192	8.820	706.0
¾	60 x 192	10.580	848.0
1	60 x 192	13.824	1106.0

\*5083-H321 — Should not be used for marine applications.

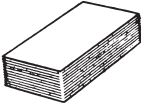
### ALUMINUM 5005-H14 – ANODIZING QUALITY SHEET MILL FINISH – RECTANGULAR



5005-H34 is an alloy developed to anodize with a uniform surface finish. Material is packed in 2000 lbs skids – all paper interleaved to avoid surface scratching.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.032	48 x 120	.451	18.04
.040	48 x 120	.565	22.60
.050	48 x 120	.706	28.24
.064	48 x 120	.904	36.16
.080	48 x 120	1.130	45.20
.125	48 x 120	1.750	70.00

# ALUMINUM SHEET



## 5052-H32 ALUMINUM SHEET\* – MILL FINISH

Alloyed with Magnesium and a small percentage of Chromium. Has about double the strength of commercially pure aluminum. An excellent general purpose alloy with good forming characteristics, weldability, and very good corrosion resistance. Used for aircraft fuel tanks, storm shutters, refrigerator liners, utensils, fan blades and other applications subject to abuse. Also used for marine applications such as pleasure boats.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.032	36 x 96	.454	10.80
.040	48 x 96	.563	18.00
	48 x 144		27.00
.051	36 x 96	.718	17.20
	48 x 96		23.00
.064	36 x 96	.901	21.60
	48 x 96		28.80
	48 x 120		36.00
	48 x 144		43.20
.081	48 x 96	1.141	36.5
	48 x 120		45.6
	48 x 144		54.8
.091	48 x 96	1.282	41.00
	48 x 120		51.30
	48 x 144		61.50
	60 x 120		64.10
	60 x 144		76.90
.125	36 x 96	1.762	42.30
	48 x 96		56.40
	48 x 120		70.50
	48 x 144		84.60
	48 x 192		112.80
.1875	48 x 96	2.641	84.51
	48 x 120		105.6
	48 x 144		126.8

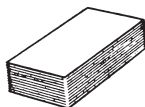
*\*Released to Aircraft Spec. QQ-A-250/8 Condition H32.*

## ALUMINUM 5052-H32 PLATE

.250	48 x Coil	3.521	
	48 x 96		112.6
	48 x 120		140.8
	48 x 144		169.0
	60 x Coil		
	60 x 120		176.0
.375	48 x 96	5.291	169.3
	48 x 144		253.9
.500	48 x 96	7.048	225.5
	48 x 144		338.3

# ALUMINUM SHEET

## 5052-H34 ALUMINUM SHEET – MILL FINISH



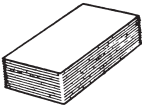
See previous page for description.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.032	48 x 96	.451	14.4
	48 x 120		18.0
.040	48 x 96	.563	18.0
	48 x 120		22.5
.051	48 x 96	.718	23.0
	48 x 120		28.7
.064	48 x 96	.901	28.9
	48 x 120		36.0
	48 x 144		43.0
.081	48 x 96	1.141	36.5
	48 x 120		45.6
	48 x 144		54.8
.091	48 x 96	1.282	41.0
	48 x 120		51.3
	48 x 144		61.5
.125	48 x 96	1.762	56.4
	48 x 120		70.5
	48 x 144		84.6
.187	48 x 96	2.641	84.5
	48 x 144		126.8

"O", "H36" & "H38" tempers also available in mill run quantities.

ALUMINUM SHEET

6061-T6 ALUMINUM SHEET – MILL FINISH  
TO QQA-250/11



Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
.040	48 x 144	0.563	27.0
.051	48 x 96	0.718	23.0
	48 x 144		34.5
.064	48 x 96	0.901	28.9
	48 x 120		36.0
	48 x 144		43.0
.081	48 x 96	1.141	36.5
.125	36 x 96	1.762	42.3
	48 x 96		56.4
	48 x 120		70.5
	48 x 144		84.6
	60 x 144		105.7
	60 x 192		141.0
.187	36 x 96	2.641	63.4
	48 x 96		84.5
	48 x 144		126.8
	60 x 192		211.3

# ALUMINUM PLATE

## 6061-T651 ALUMINUM PLATE – MILL FINISH TO QQA-250/11

A medium strength heat-treatable alloy – used for applications where the highest strength compatible with very good corrosion resistance and moderate price are required.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
1/4	48 x 96	3.521	112.6
	48 x 120		141.0
	48 x 144		169.0
	60 x 192		281.6
	72 x 144		253.5
5/16	48 x 144	4.409	212.0
	60 x 192		352.7
3/8	48 x 96	5.291	169.3
	48 x 144		254.0
	60 x 192		423.2
1/2	48 x 96	7.048	225.9
	48 x 120		282.4
	48 x 144		338.0
	60 x 192		564.8
5/8	48 x 96	8.82	282.2
	48 x 144		424.0
	60 x 192		705.6
3/4	48 x 96	10.60	338.6
	48 x 120		423.0
	48 x 144		508.8
1	48 x 144	14.10	677.0
1 1/4	48 x 144	17.62	847.0
1 1/2	48 x 144	21.15	1016.0
2	48 x 144	28.20	1355.0
2 1/2	48 x 144	35.30	1694.4
3	48 x 144	42.30	2030.0
3 1/2	48 x 144	49.40	2369.0
4	48 x 144	56.40	2707.0
5	48 x 144	70.56	3387.0
6	48 x 144	84.67	4064.0

*\*In some cases manufacturers supply above plates 1/2" extra on width and length for cutting. Because of this weights could vary slightly.*

*\*\*Now available in thickness up to 12" on mill run quantities.*



## ALUMINUM EXPANDED METAL

Expanded metal may be used for many industrial purposes such as open partitions, window guards, machine guards and other manufacturing and maintenance uses.

It is more rigid than an equal weight of solid aluminum plate or wire mesh. In fabricating it may be cut to any desired shape without loss of its original strength. Expanded metal has no sharp edges.

### STANDARD ALUMINUM EXPANDED METAL

Style No.	Sheet Size Inches	Weight per 100 Sq. Ft. Lbs.	Approximate Size of Openings		Approx. % Open Area
			Width, Ins.	Lengths, Ins.	
½-032	48 x 96	14	.40	.92	62-68
½-051	48 x 96	27	.39	.91	66-71
½-081	48 x 96	44	.36	.85	58-63
¾-081	48 x 96	30	.75	1.53	71-75

NOTE: Other special style numbers or sheet sizes available upon request.

### FLATTENED ALUMINUM EXPANDED METAL

Style No.	Sheet Size Inches	Weight per 100 Sq. Ft. Lbs.	Approximate Size of Openings		Approx. % Open Area
			Width, Ins.	Lengths, Ins.	
½-032F	48 x 96	13	.27	1.0	55-60
½-051F	48 x 96	26	.27	1.0	57-62
½-081F	48 x 96	59	.27	1.0	56-60
¾-051	48 x 96	16	.844	1.69	76-81

## PERFORATED ALUMINUM SHEETS

STOCK PATTERNS (Actual Size)\*

Sheet Sizes 36 x 96



**GRECIAN DESIGN**  
42% OPEN AREA  
Alum.: .040" (18 GA)



**ROUND CANE DESIGN**  
39% OPEN AREA  
Alum.: .040" (18 GA)

# ALUMINUM TREAD PLATE

6061-T6 – 5086H112\* – 3003 H22

Pattern No. C-102

Raised four-way Diamond Pattern – has an approximate 1" centre – opposite side is smooth.

Excellent for locations requiring metal, skid resistant floors. The non-sparking characteristic adds a measure of safety where combustibles are present.

Thickness* Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
1/8 *	48 x 192	1.90	122
	60 x 192		152
3/16 *	48 x 192	2.80	179
	60 x 192		224
1/4 *	48 x 192	3.70	237
	60 x 192		296
3/8 *	48 x 192	5.50	358
	60 x 192		440
1/2	48 x 192	7.30	448
	60 x 192		560

\*Thickness is measured exclusive of projections.

3003-H22 – Bright Finish Bendable

5086-H112 – Excellent Corrosion Characteristics

6061-T6 – Structural Applications – Not Bendable



## 5-BAR – TREAD PLATE

3003-H22 – 5086-H112

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
1/8	48 x 96	1.90	60.8
	48 x 192		121.6
3/16	48 x 96	2.80	89.6
	48 x 192		179.2
1/4	48 x 96	3.70	118.4
	48 x 192		236.8
	60 x 192		296

## CUSTOMER DIES/FABRICATION

As one of the industry's leaders, we can offer you a complete package which will result in the production of a custom built die.

The service we offer includes the design and manufacture of a die capable of producing an Aluminum Extrusion to meet your specific requirements.

Many of our customers are now taking advantage of our technical expertise to produce fabricated parts from Aluminum Extrusions. We have available excellent precision cut to length, painting and anodizing, punching, stamping, CNC machining and welding capabilities, etc. which are at the disposal of our customers.

## ALUMINUM ROD & BAR

### 2011-T3 ALUMINUM ROUND ROD

**Stock Lengths – 12 Feet**

An alloy specially developed for automatic screw machine products.

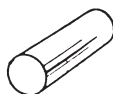


Size in Inches	Weight per Ft. Lbs.	Size in Inches	Weight per Ft. Lbs.
$\frac{1}{8}$ dia.	.015	$\frac{13}{16}$ dia.	.634
$\frac{5}{32}$	.023	$\frac{7}{8}$	.735
$\frac{3}{16}$	.034	$\frac{15}{16}$	.843
$\frac{7}{32}$	.046	1	.960
$\frac{1}{4}$	.060	$1\frac{1}{16}$	1.08
$\frac{9}{32}$	.076	$1\frac{1}{8}$	1.21
$\frac{5}{16}$	.094	$1\frac{3}{8}$	1.35
$\frac{11}{32}$	.113	$1\frac{1}{4}$	1.50
$\frac{3}{8}$	.135	$1\frac{5}{8}$	1.65
$\frac{13}{32}$	.159	$1\frac{3}{4}$	1.81
$\frac{7}{16}$	.184	$1\frac{7}{8}$	1.98
$\frac{1}{2}$	.240	$1\frac{1}{2}$	2.16
$\frac{9}{16}$	.304	$1\frac{3}{4}$	2.94
$\frac{5}{8}$	.375	$1\frac{7}{8}$	3.37
$\frac{11}{16}$	.454	2	3.84
$\frac{3}{4}$	.540		

## ALUMINUM ROD & BAR

### 6061-T6 ALUMINUM ROUND ROD

**Lengths – Up to 2¾ – 20 Feet  
over 2¾ 12 Feet**



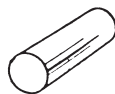
An excellent all purpose alloy, having good machining, welding and corrosion resistance properties.

Size in Inches	Weight per Ft. Lbs.	Size in Inches	Weight per Ft. Lbs.
¼ dia.	.058	3 dia.	8.30
⅝ <sub>16</sub>	.090	3¼	9.74
⅜	.130	3½	11.30
7 <sub>16</sub>	.176	3¾	12.99
½	.230		
⅝	.360	4	14.75
¾	.518	4¼	17.02
7 <sub>8</sub>	.706	4½	18.67
		4¾	21.27
1	.922		
1⅝	1.167	5	23.04
1¼	1.440	5½	27.88
1⅜	1.743		
1½	2.074	6	33.93
1⅝	2.434		
1¾	2.823	7	46.18
1⅞	3.241		
2	3.69	8	60.32
2¼	4.67		
2⅜	5.20	9	76.34
2½	5.76		
2⅝	6.35	10	94.25
2¾	6.97		

## ALUMINUM WIRE

**1100-0**

**Lengths – 30kg/Coil (66#)**



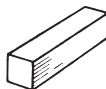
Size in Inches	Weight per Ft. Lbs.	Size in Inches	Weight per Ft. Lbs.
1 <sub>16</sub> dia.	.0036	1 <sub>8</sub> dia.	.0145
3 <sub>32</sub>	.0077		

## ALUMINUM ROD & BAR

### 6061-T6 ALUMINUM SQUARE BAR

**Stock Lengths – 20 Feet**

An excellent all purpose alloy, having good machining, welding and corrosion resistance properties.

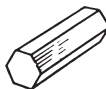


Size in Inches	Weight per Ft. Lbs.	Size in Inches	Weight per Ft. Lbs.
$\frac{3}{8}$ sq	.165	2 sq	4.70
$\frac{1}{2}$	.294	$2\frac{1}{2}$	7.35
$\frac{5}{8}$	.460		
$\frac{3}{4}$	.662		
1	1.176	3	10.57
$1\frac{1}{4}$	1.837		
$1\frac{1}{2}$	2.647	4	18.81

### 2011-T3 ALUMINUM HEXAGON BAR

**Stock Lengths – 12 Feet**

An alloy specially developed for automatic screw machine products.



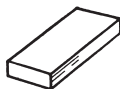
Size in Inches	Weight per Ft. Lbs.	Size in Inches	Weight per Ft. Lbs.
$\frac{1}{2}$ across flats	.064	$\frac{7}{8}$ across flats	.778
$\frac{5}{16}$	.099	$\frac{15}{16}$	.893
$\frac{3}{8}$	.143		
$\frac{7}{16}$	.195	1	1.016
$\frac{1}{2}$	.254	$1\frac{1}{16}$	1.147
$\frac{9}{16}$	.322	$1\frac{1}{8}$	1.286
$\frac{5}{8}$	.397	$1\frac{1}{4}$	1.588
$1\frac{1}{16}$	.480	$1\frac{3}{8}$	1.922
$\frac{3}{4}$ hex.	.572	$1\frac{1}{2}$	2.287
$\frac{13}{16}$ across flats	.671	$1\frac{5}{8}$	2.684

# ALUMINUM ROD & BAR

## 6061-T6 ALUMINUM FLAT BAR

### Stock Lengths – 20 Feet

An excellent all purpose alloy, having good machining, welding and corrosion resistance properties.



Size in Inches	Weight per Ft. Lbs.	Size in Inches	Weight per Ft. Lbs.
$\frac{1}{8}$ x $\frac{1}{2}$	.073	3	1.322
$\frac{1}{8}$ x $\frac{5}{8}$	.091	4	1.762
$\frac{3}{4}$	.110	5	2.200
1	.147*	6	2.646
$1\frac{1}{4}$	.184	8	3.528
$1\frac{1}{2}$	.220		
2	.294	$\frac{1}{2}$ x $\frac{3}{4}$	.441
3	.440	1	.587
4	.588	$1\frac{1}{4}$	.785
		$1\frac{1}{2}$	.881
$\frac{3}{16}$ x $\frac{3}{4}$	.165	2	1.175
1	.220	$2\frac{1}{2}$	1.469
$1\frac{1}{4}$	.275	3	1.762
$1\frac{1}{2}$	.331	4	2.352
2	.441	5	2.941
$2\frac{1}{2}$	.551	6	3.529
		8	4.704
$\frac{1}{4}$ x $\frac{1}{2}$	.147		
$\frac{3}{4}$	.221	$\frac{3}{4}$ x 1	.881
1	.294	$1\frac{1}{2}$	1.320
$1\frac{1}{4}$	.367	2	1.762
$1\frac{1}{2}$	.441	$2\frac{1}{2}$	2.205
2	.587	3	2.643
$2\frac{1}{2}$	.734	4	3.524
3	.881	5	4.391
4	1.175	6	5.287
5	1.470		
6	1.764	1 x $1\frac{1}{2}$	1.762
8	2.352	2	2.350
		3	3.524
$\frac{3}{4}$	.331	4	4.699
$\frac{3}{8}$ x 1	.441	6	7.049
$1\frac{1}{4}$	.551	8	9.398
$1\frac{1}{2}$	.661		
2	.881	$1\frac{1}{4}$ x 3	4.406
$\frac{3}{8}$ x $2\frac{1}{2}$	1.101		

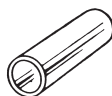
\* 20/21 ft

Lean on us for our technical “know-how” –  
we’ve been building it up for over 100 years.

**ALUMINUM 6061 – T6511****ACC-U-PLATE\*****AQ-A-200/8, ASTM B-221**

Description			Weight per Ft. Lbs.
$\frac{3}{8}$	x 8	x 12 ft	3.528
$\frac{3}{8}$	x 10	x 12 ft	4.410
$\frac{3}{8}$	x 12	x 12 ft	5.292
$\frac{1}{2}$	x 8	x 12 ft	4.704
$\frac{1}{2}$	x 10	x 12 ft	5.880
$\frac{1}{2}$	x 10	x 12 ft 6"	5.880
$\frac{3}{4}$	x 8	x 12 ft	7.056
$\frac{3}{4}$	x 10	x 12 ft	8.820
1	x 8	x 12 ft	9.408
1	x 10	x 12 ft	11.760
1	x 12	x 12 ft	14.112
$1\frac{1}{4}$	x 10	x 12 ft 6"	14.700
$1\frac{1}{4}$	x 12	x 12 ft	21.000
$1\frac{1}{2}$	x 12	x 12 ft 4"	21.168
$1\frac{3}{4}$	x 10	x 12 ft 6"	20.580
2	x 14	x 12 ft	33.600

\*Registered Trade Mark of CRESSONA ALUMINUM COMPANY.

**ALUMINUM TUBING****6061-T6 ALUMINUM ROUND TUBING****Stock Lengths – 20 Feet**

Strong, economical; good finishing and welding properties; used structurally.

Outside Diameter Inches	Wall Thickness Inches	Weight per Ft. Lbs.	Outside Diameter Inches	Wall Thickness Inches	Weight per Ft. Lbs.
$\frac{1}{4}$	.035	.028	$1\frac{1}{2}$	.065	.344
$\frac{3}{8}$	.035	.044		.120	.610
	.049	.059	2	.065	.464
	.065	.074		.120	.830
$\frac{1}{2}$	.049	.082	$2\frac{1}{2}$	.065	.580
	.065	.104		.120	1.060
$\frac{3}{4}$	.065	.164	3	.125	1.280
1	.065	.224			
	.125	.389	4	.125	1.85
$1\frac{1}{4}$	.065	.282			
	.120	.500			

Some above sizes also available in 6063-T52 in certain branches.

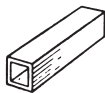
## ALUMINUM TUBING

### 6063-T5 ALUMINUM SQUARE TUBING

(Sharp Corners)

**Stock Lengths – 20 Feet**

Used for ornamental work – fair machining, excellent finishing. Easily welded.



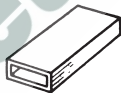
Size in Inches	Wall Thickness Inches	Weight per Ft. Lbs.
$\frac{3}{4}$ x $\frac{3}{4}$	.120	.362
1 x 1	.065	.292
1 x 1	.095	.413
1 x 1	.125	.512
$1\frac{1}{4}$ x $1\frac{1}{4}$	.120	.664
$1\frac{1}{4}$ x $1\frac{1}{4}$	.095	.527
$1\frac{1}{2}$ x $1\frac{1}{2}$	.075	.504
$1\frac{1}{2}$ x $1\frac{1}{2}$	.095	.640
$1\frac{1}{2}$ x $1\frac{1}{2}$	.120	.750
2 x 2	.120	1.07
$2\frac{1}{2}$ x $2\frac{1}{2}$	.120	1.325
3 x 3	.120	1.65
3 x 3	.250	3.22
4 x 4	.150	2.78

### 6063-T5 ALUMINUM RECTANGULAR TUBING

(Sharp Corners)

**Stock Lengths – 20 Feet**

Used for ornamental work – fair machining, excellent finishing. Easily welded.



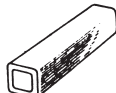
Depth Inches	Width Inches	Wall Thickness Inches	Weight per Ft. Lbs.
1	$1\frac{1}{2}$	.095	.529
1	2	.095	.634
1	2	.125	.810
1	3	.120	1.07
$1\frac{1}{2}$	2	.120	.909
$1\frac{1}{2}$	$2\frac{1}{2}$	.120	1.07
$1\frac{1}{2}$	3	.120	1.21
2	3	.120	1.37
2	4	.120	1.66
2	4	.187	2.50
2	6	.125	2.297
2	6	.187	3.357

### 6061-T6 ALUMINUM SQUARE TUBING

(Round Corners)

**Stock Lengths – 20 Feet**

Strong, economical; good finishing and welding; used structurally.



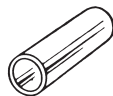
Size in Inches	Wall Thickness Inches	Weight per Ft. Lbs.
1 x 1	.120	.474
$1\frac{1}{4}$ x $1\frac{1}{4}$	.095	.579
$1\frac{1}{2}$ x $1\frac{1}{2}$	.120	.732
2 x 2	.120	.983
2 x 2	.188	1.502
$2\frac{1}{2}$ x $2\frac{1}{2}$	.120	1.320
3 x 3	.120	1.68
3 x 3	.188	2.487
4 x 4	.188	3.36



# ALUMINUM PIPE

## SCHEDULE 5 AND 10

### Stock Lengths – 20 and 40 Feet



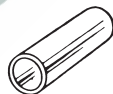
A thin walled alloy pipe suited for surface lines wherever light weight corrosion resistant installations are required for low pressure applications. Can be supplied plain or with Victaulic “Vic-Easy” grooved ends. A complete line of Victaulic Couplings and Fittings is available, with most items available in either Aluminum or Malleable Iron.

Nominal Size Inches	Outside Diameter Inches	Wall Thickness Inches	Sch.	Weight per Ft. Lbs.
1	1.315	.065	5	.300
2	2.375	.065	5	.555
3	3.500	.083	5	1.048
3½	4.000	.083	5	1.200
4	4.500	.083	5	1.354
6	6.625	.134	10	3.213
8	8.625	.148	10	4.635
10	10.750	.165	10	6.453

## 6061-T6 ALUMINUM I.P.S. (Schedule 40)

### Stock Lengths – 20 Feet

Strong Pipe for all purposes – good welding.



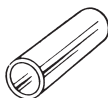
Nominal Size Inches	Outside Diameter Inches	Inside Diameter Inches	Wall Thickness Inches	Weight per Ft. Lbs.
¼	.540	.364	.088	.147
⅜	.675	.493	.091	.196
½	.840	.622	.109	.293
¾	1.050	.824	.113	.391
1	1.315	1.049	.133	.581
1¼	1.660	1.380	.140	.786
1½	1.900	1.610	.145	.940
2	2.375	2.067	.154	1.264
2½	2.875	2.469	.203	2.004
3	3.500	3.068	.216	2.621
3½	4.000	3.548	.226	3.151
4	4.500	4.026	.237	3.733
4½	5.000	4.506	.247	4.333
5	5.563	5.047	.258	5.057
6	6.625	6.065	.280	6.564
8	8.625	7.981	.322	9.839
10	10.750	10.020	.365	14.000
12	12.750	11.938	.426	18.520

## ALUMINUM PIPE

6061-T6 ALUMINUM I.P.S. (Schedule 80)

**Stock Lengths – 20 Feet**

Heavy wall Pipe for general use – easily welded.



Nominal Size Inches	Outside Diameter Inches	Inside Diameter Inches	Wall Thickness Inches	Weight per Ft. Lbs.
½	.840	.546	.147	.376
¾	1.050	.742	.154	.510
1	1.315	.957	.179	.751
1¼	1.660	1.278	.191	1.037
1½	1.900	1.500	.200	1.256
2	2.375	1.939	.218	1.737
2½	2.875	2.323	.276	2.650
3	3.500	2.900	.300	3.547
3½	4.000	3.364	.318	4.326
4	4.500	3.826	.337	5.183
4½	5.000	4.290	.355	6.092
6	6.625	5.761	.432	9.884

## THREADED ALUMINUM PIPE FITTINGS\*



Union



45° Elbow



Cap



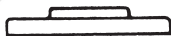
Coupling



Plug



Reducer



Flange



Bushing



Tee



90° Elbow

A complete line of Aluminum Threaded Pipe Fittings is available in sizes ranging from ½" to 4" inclusive.

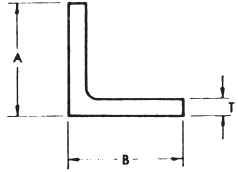
*\*Aluminum welding fittings also available on request.*

# ALUMINUM STRUCTURAL SHAPES

## 6061-T6 ALUMINUM ANGLES

### Equal Legs

Has a yield strength comparable to that of Mild Steel, and is suitable for most structural applications where high strength is required at moderate cost. Has excellent corrosion resistance and weldability.



Stock Lengths x 20 Feet

A	B	T	Weight per Ft. Lbs.
1/2	1/2	1/16	.070
3/4	3/4	1/8	.211
1	1	1/8	.282
		3/16	.411
		1/4	.528
1 1/4	1 1/4	1/8	.352
		3/16	.515
		1/4	.681
1 1/2	1 1/2	1/8	.422
		3/16	.634
		1/4	.822
2	2	1/8	.573
		3/16	.845
		1/4	1.115
		3/8	1.630
2 1/2	2 1/2	3/16	1.065
		1/4	1.410
		3/8	2.070
3	3	3/16	1.287
		1/4	1.704
		5/16	2.108
		3/8	2.510
		1/2	3.300
3 1/2	3 1/2	5/16	2.480
		3/8	2.950
4	4	1/4	2.283
		3/8	3.400
		1/2	4.460
6	6	3/8	5.160
		1/2	6.820

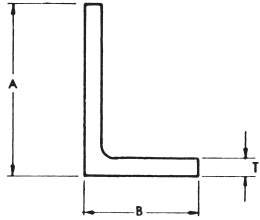
ALUMINUM STRUCTURAL SHAPES

6061-T6 ALUMINUM ANGLES

Unequal Legs

Has a yield strength comparable to that of Mild Steel, and is suitable for most structural applications where high strength is required at moderate cost. Has excellent corrosion resistance and weldability.

Stock Lengths x 20 Feet

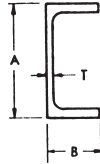


A	B	T	Weight per Ft. Lbs.
2	1¼	⅜ <sub>16</sub>	.681
2	1½	¼	.974
2½	1½	⅜ <sub>16</sub>	.846
		¼	1.115
2½	2	¼	1.267
3	2	⅜ <sub>16</sub>	1.064
		¼	1.408
		⅝ <sub>16</sub>	1.748
3	2½	¼	1.565
3½	2½	¼	1.704
		⅝ <sub>16</sub>	2.112
		⅜ <sub>8</sub>	2.512
4	3	¼	1.996
		⅜ <sub>8</sub>	2.947
5	3	⅝ <sub>16</sub>	2.810
5	3½	⅜ <sub>8</sub>	3.165
6	3½	⅝ <sub>16</sub>	3.382
6	4	⅜ <sub>8</sub>	4.270
		½	5.640
		⅝ <sub>8</sub>	6.970

# ALUMINUM STRUCTURAL SHAPES

## 6061-T6 ALUMINUM CHANNELS

Has a yield strength comparable to that of Mild Steel, and is suitable for most structural applications where high strength is required at moderate cost. Has excellent corrosion resistance and weldability.



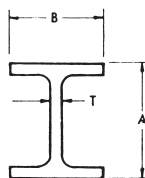
*Stock Lengths x 20 Feet*

A Depth of Channel Inches	B Width of Flange Inches	T Thickness of Web Inches	Weight per Ft. Lbs.
1½	¾	5/32	.51
2	1½	1/8	.703
2¼	1	3/16	.85
2½	1⅝	3/16	1.03
3	1½	3/16	1.48
		¼	1.84
3	2	¼	2.18
4	1½	¼	1.93
4	1¾	¼	2.24
4	2	3/16	2.02
		¼	2.52
4	2½	¼	2.90
5	2	3/16	2.50
		9/32	3.09
5	2½	¼	3.54
6	2	9/32	3.59
6	2½	¼	3.51
6	2¾	¼	4.07
6	3½	3/8	6.41
7	2½	7/32	3.91
7	3	¼	4.61
8	2¾	¼	4.65
8	3	9/32	5.57
10	3	9/32	6.23
10	3½	5/16	7.58
12	4	3/8	10.28

## ALUMINUM STRUCTURAL SHAPES

### 6061-T6 ALUMINUM I BEAMS

Has a yield strength comparable to that of Mild Steel, and is suitable for most structural applications where high strength is required at moderate cost. Has excellent corrosion resistance and weldability.

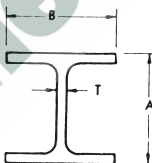


**Stock Lengths x 20 Feet**

A Depth of Section Inches	B Width of Flange Inches	T Thickness of Web Inches	Weight per Ft. Lbs.
3	2½	⅜	2.159
4	3	⅜	2.670
5	3½	¼	4.035
6	3	¼	3.915
6	3½	¼	4.813
8	5	⅝	8.73
9	4½	⅝	8.53
10	6	⅝	11.35

### 6061-T6 ALUMINUM H BEAMS

Has a yield strength comparable to that of Mild Steel, and is suitable for most structural applications where high strength is required at moderate cost. Has excellent corrosion resistance and weldability.

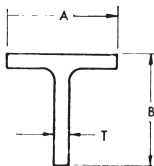


**Stock Lengths x 20'**

3	3	¼	2.641
4	4	¼	4.120
5	5	⅝	6.279
6	6	¼	5.339
6	6	⅝	7.605
6	6	⅜	9.64
8	8	⅜	13.04

### 6061-T6 ALUMINUM TEES

Has a yield strength comparable to that of Mild Steel, and is suitable for most structural applications where high strength is required at moderate cost. Has excellent corrosion resistance and weldability.



**Stock Lengths x 20'**

A Width of Flange Inches	B Length of Stem Inches	T Thickness of Stem Inches	Weight per Ft. Lbs.
1½	1½	⅜	.64
2	1½	⅜	.75
2	2	¼	1.13
3	3	⅜	2.55
4	2½	⅝	2.32
4	4	⅝	3.43

# ALUMINUM ARCHITECTURAL SHAPES

## 6063-T5 ALUMINUM ANGLES

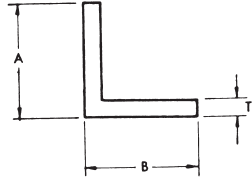
### Equal Legs

Most widely used of the extrusion alloys. Readily welded and brazed, has excellent corrosion resistance and finishing qualities.

Most economical Angle – used architecturally – excellent finishing.

### Stock Lengths x 20 Feet

A	B	T	Weight per Ft. Lbs.
1/2	1/2	1/8	.127
3/4	3/4	1/8	.200
1	1	1/8	.272
		3/16	.395
1 1/4	1 1/4	1/8	.346
		3/16	.502
1 1/2	1 1/2	1/8	.422
		3/16	.611
2	2	1/8	.561
		1/4	1.088
3	3	3/16	1.290

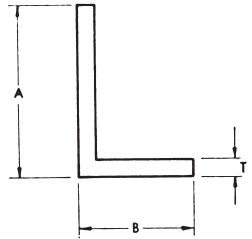


## 6063-T5 ALUMINUM ANGLES

### Unequal Legs

### Stock Lengths x 20 Feet

1	1/2	1/8	.200
1	3/4	1/8	.235
1 1/4	3/4	1/8	.272
1 1/2	3/4	1/8	.308
1 1/2	1	1/8	.345
2	1	1/8	.417
2	1 1/2	1/8	.489
2 1/2	1 1/2	1/8	.563
3	2	1/8	.708



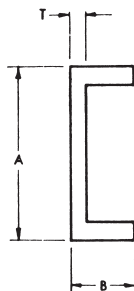
## ALUMINUM ARCHITECTURAL SHAPES

### 6063-T5 ALUMINUM CHANNELS

Most widely used of the extrusion alloys. Readily welded and brazed, has excellent corrosion resistance and finishing qualities.

Used architecturally – economical – excellent finishing.

**Stock Lengths x 20 Feet**



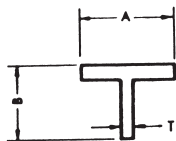
A Depth of Channel Inches	B Width of Flange Inches	T Thickness of Web Inches	Weight per Ft. Lbs.
1/2	1/2	1/8	.183
3/4	1/2	1/8	.218
1	3/4	1/8	.326
1	1	1/8	.413
1 1/4	5/8	1/8	.326
1 1/2	1	1/8	.471
1 1/2	1 1/2	1/8	.622
2	1	1/8	.543
3	1	1/8	.691
4	2	3/16	1.691

### 6063-T5 ALUMINUM TEES

Most widely used of the extrusion alloys. Readily welded and brazed, has excellent corrosion resistance and finishing qualities.

Most economical Tee – used architecturally – excellent finishing.

**Stock Lengths x 20 Feet**



A Width of Flange Inches	B Length of Stem Inches	T Thickness of Stem Inches	Weight per Ft. Lbs.
1	1	1/8	.272
1 1/4	1 1/4	3/16	.503

## ALUMINUM VAN TRAILER SHEET IN COIL

Aluminum van trailer sheets are of medium strength particularly suited for panels on all types of van bodies. Available in mill, or painted white.

Thickness & Width Inches	Mill Finish
.040 x 49	✓
.050 x 49	✓

The above coils may be cut to desired length.



## ALUMINUM VAN TRAILER SHEET IN COIL

### ALUMINUM TRUCK ROOFING COILS 3003-H16

Coils weighing approximately 4,000 pounds are stocked for use as one piece trailer roofs.

Thickness & Width Inches	Weight Linear Ft. Lbs.	Approximate Feet Per Coil
.032 x 96	3.608	550
.032 x 102	3.834	525
.040 x 96	4.504	445
.040 x 102	4.786	420

### ALCAN ALUMINUM REEFER FLOOR COMPONENTS

The following sections can be assembled to produce a complete aluminum floor for use in refrigerator vans.

Die Number	Weight per Ft. Lbs.	Description
71916	1.282	6 <sup>3</sup> / <sub>4</sub> " Board Section
71917	2.330	9" Board Section
71918	.840	1 <sup>7</sup> / <sub>8</sub> " Starter Strip
71919	.740	1" Starter Strip
71920	.690	½" Starter Strip
71921	1.370	4 <sup>1</sup> / <sub>8</sub> " Flashing
13228		Rub Rail Casting

ALUMINUM END PLUG CASTINGS ARE AVAILABLE FOR ABOVE FLOORS.

### AZ-31B MAGNESIUM TOOLING PLATE

Weighing ⅔ of aluminum, this extremely flat, weldable tooling plate has excellent machinability. Suitable for molds, layout tables, profiling templates, vacuum chucks, assembly jigs and fixtures, etc.

Thickness Inches	Size Inches	Weight per Sq. Ft. Lbs.	Est. Weight per Sheet Lbs.
¼	48 x 96	2.3	74
⅜	48 x 96	3.5	111
½	48 x 96	4.6	147
¾	48 x 96	7.0	221
1	48 x 96	9.2	295

We can saw or plasma cut to sizes required. Magnesium tread plates, sheets, bars, tubes and shapes are also available on short notice.

# Recommended Minimum Bend Radii for 90-Degree Cold Forming of Sheet and Plate<sup>①②③④</sup>

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.016"	.031"	.063"	.125"
1100	0	0	0	0	0
	H12	0	0	0	½t
	H14	0	0	0	1t
	H16	0	½t	1t	1½t
	H18	1t	1t	1½t	2½t
2014	0	0	0	0	½t
	T3	1½t	2½t	3t	4t
	T4	1½t	2½t	3t	4t
	T6	3t	4t	4t	5t
2024	0	0	0	0	½t
	T3	2½t	3t	4t	5t
	T361 <sup>①</sup>	3t	4t	5t	6t
	T4	2½t	3t	4t	5t
	T81	4½t	5½t	6t	7½t
	T861 <sup>⑤</sup>	5t	6t	7t	8½t
2036	T4	..	1t	1t	..

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.188"	.250"	.375"	.500"
1100	0	½t	1t	1t	1½t
	H12	1t	1t	1½t	2t
	H14	1t	1½t	2t	2½t
	H16	1½t	2½t	3t	4t
	H18	3t	3½t	4t	4½t
2014	0	1t	1t	2½t	4t
	T3	5t	5t	6t	7t
	T4	5t	5t	6t	7t
	T6	6t	8t	8½t	9½t
2024	0	1t	1t	2½t	4t
	T3	5t	6t	7t	7½t
	T361 <sup>①</sup>	6t	8t	8½t	9½t
	T4	5t	6t	7t	7½t
	T81	8t	9t	10t	10½t
	T861 <sup>⑤</sup>	9½t	10t	11½t	11½t
2036	T4	..	..	..	..

# Recommended Minimum Bend Radii for 90-Degree Cold Forming of Sheet and Plate<sup>①②③④</sup>

Alloy	Temper	RADI FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.016"	.031"	.063"	.125"
3003	0	0	0	0	0
	H12	0	0	0	½t
	H14	0	0	0	1t
	H16	½t	1t	1t	1½t
	H18	1t	1½t	2t	2½t
3004	0	0	0	0	½t
	H32	0	0	½t	1t
	H34	0	1t	1t	1½t
	H36	1t	1t	1½t	2½t
	H38	1t	1½t	2½t	3t
3105	H25	½t	½t	½t	..
5005	0	0	0	0	0
	H12	0	0	0	½t
	H14	0	0	0	1t
	H16	½t	1t	1t	1½t
	H18	1t	1½t	2t	2½t
	H32	0	0	0	½t
	H34	0	0	0	1t
	H36	½t	1t	1t	1½t
	H38	1t	1½t	2t	2½t

Alloy	Temper	RADI FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.188"	.250"	.375"	.500"
3003	0	½t	1t	1t	1½t
	H12	1t	1t	1½t	2t
	H14	1t	1½t	2t	2½t
	H16	2½t	3t	3½t	4t
	H18	3½t	4½t	5½t	6½t
3004	0	1t	1t	1t	1½t
	H32	1t	1½t	1½t	2t
	H34	1½t	2½t	2½t	3t
	H36	3t	3½t	4t	4½t
	H38	4t	5t	5½t	6½t
3105	H25	..	..	..	..
5005	0	½t	1t	1t	1½t
	H12	1t	1t	1½t	2t
	H14	1½t	1½t	2t	2½t
	H16	2½t	3t	3½t	4t
	H18	3½t	4½t	5½t	6½t
	H32	1t	1t	1½t	2t
	H34	1½t	1½t	2t	2½t
	H36	2½t	3t	3½t	4t
	H38	3½t	4½t	5½t	6½t

# Recommended Minimum Bend Radii for 90-Degree Cold Forming of Sheet and Plate<sup>①②③④</sup>

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.016"	.031"	.063"	.125"
5050	0	0	0	0	½t
	H32	0	0	0	1t
	H34	0	0	1t	1½t
	H36	1t	1t	1½t	2t
	H38	1t	1½t	2½t	3t
5052	0	0	0	0	½t
	H32	0	0	1t	1½t
	H34	0	1t	1½t	2t
	H36	1t	1t	1½t	2½t
	H38	1t	1½t	2½t	3t
5083	0	..	..	½t	1t
	H321	..	..	1t	1½t
	H323	..	..	1½t	2t
	H343	..	..	1½t	2½t
5086	0	0	0	½t	1t
	H32	0	½t	1t	1½t
	H34	½t	1t	1½t	2t
	H36	1½t	2t	2½t	3t

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.188"	.250"	.375"	.500"
5050	0	1t	1t	1½t	1½t
	H32	1t	1½t	..	..
	H34	1½t	2t	..	..
	H36	2½t	3t	..	..
	H38	4t	5t	..	..
5052	0	1t	1t	1½t	1½t
	H32	1½t	1½t	1½t	2t
	H34	2t	2½t	2½t	3t
	H36	3t	3½t	4t	4½t
	H38	4t	5t	5½t	6½t
5083	0	1t	1t	1½t	1½t
	H321	1½t	1½t	2t	2½t
	H323	2½t	3t	..	..
	H343	3t	3½t	..	..
5086	0	1t	1t	1½t	1½t
	H32	1½t	2t	2½t	3t
	H34	2½t	3t	3½t	4t
	H36	3½t	4t	4½t	5t

# Recommended Minimum Bend Radii for 90-Degree Cold Forming of Sheet and Plate<sup>①②③④</sup>

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.016"	.031"	.063"	.125"
5154	0	0	0	½t	1t
	H32	0	½t	1t	1½t
	H34	½t	1t	1½t	2t
	H36	1t	1½t	2t	3t
	H38	1½t	2½t	3t	4t
5252	H25	0	0	1t	2t
	H28	1t	1½t	2½t	3t
5254	0	0	0	½t	1t
	H32	0	½t	1t	1½t
	H34	½t	1t	1½t	2t
	H36	1t	1½t	2t	3t
	H38	1½t	2½t	3t	4t
5454	0	0	½t	1t	1t
	H32	½t	½t	1t	2t
	H34	½t	1t	1½t	2t

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.188"	.250"	.375"	.500"
5154	0	1t	1t	1½t	1½t
	H32	1½t	2t	2½t	3½t
	H34	2½t	3t	3½t	4t
	H36	3½t	4t	4½t	5t
	H38	5t	5t	6½t	6½t
5252	H25	..	..	..	..
	H28	..	..	..	..
5254	0	1t	1t	1½t	1½t
	H32	1½t	2t	2½t	3½t
	H34	2½t	3t	3½t	4t
	H36	3½t	4t	4½t	5t
	H38	5t	5t	6½t	6½t
5454	0	1t	1½t	1½t	2t
	H32	2t	2½t	3t	4t
	H34	2½t	3t	3½t	4t

## Recommended Minimum Bend Radii for 90-Degree Cold Forming of Sheet and Plate<sup>①②③④</sup>

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.016"	.031"	.063"	.125"
5456	0	..	..	..	1t
	H321	..	..	..	2t
	H323	..	..	2½t	3t
	H343	..	..	3t	3½t
5457	0	0	0	0	½t
5652	0	0	0	0	½t
	H32	0	0	1t	1½t
	H34	0	1t	1½t	2t
	H36	1t	1t	1½t	2½t
	H38	1t	1½t	2½t	3t
5657	H25	0	0	0	1t
	H28	1t	1½t	2½t	3t
6061	0	0	0	0	1t
	T4	0	0	1t	1½t
	T6	1t	1t	1½t	2½t

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.188"	.250"	.375"	.500"
5456	0	1½t	1½t	2t	2t
	H321	2t	2½t	3t	3½t
	H323	3½t	4t	..	..
	H343	4t	4½t	..	..
5457	0	4t	1t	1t	1½t
5652	0	1t	1t	1½t	1½t
	H32	1½t	1½t	1½t	2t
	H34	2t	2½t	2½t	3t
	H36	3t	3½t	4t	4½t
	H38	4t	5t	5½t	6½t
5657	H25	..	..	..	..
	H28	..	..	..	..
6061	0	1t	1t	1½t	2t
	T4	2½t	3t	3½t	4t
	T6	3t	3½t	4½t	5t

# Recommended Minimum Bend Radii for 90-Degree Cold Forming of Sheet and Plate<sup>①②③④⑤</sup>

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		.016"	.031"	.063"	.125"
7072	0	0	0	..	..
	H12	0	0	..	..
	H14	0	0	..	..
	H16	0	½t	..	..
	H18	1t	1t	..	..
7075	0	0	0	1t	1t
	T6	3t	4t	5t	6t
7178	0	0	0	1t	1½t
	T6	3t	4t	5t	6t

Alloy	Temper	RADII FOR VARIOUS THICKNESSES EXPRESSED IN TERMS OF THICKNESS "t"			
		188"	.250"	.375"	.500"
7072	0	..	..	..	..
	H12	..	..	..	..
	H14	..	..	..	..
	H16	..	..	..	..
	H18	..	..	..	..
7075	0	1½t	2½t	3½t	4t
	T6	6t	8t	9t	9½t
7178	0	1½t	2½t	3½t	4t
	T6	6t	8t	9t	9½t

- ① The radii listed are the minimum recommended for bending sheets and plates without fracturing in a standard press brake with air bend dies. Other types of bending operations may require larger radii or permit smaller radii. The minimum permissible radii will also vary with the design and condition of the tooling.
- ② Alclad sheet in the heat-treatable alloys can be bent over slightly smaller radii than the corresponding tempers of the bare alloy.
- ③ Heat-treatable alloys can be formed over appreciably smaller radii immediately after solution heat treatment.
- ④ The H112 temper (applicable to non-heat treatable alloys) is supplied in the as-fabricated condition without special property control but usually can be formed over radii applicable to the H14 (or H34) temper or smaller.
- ⑤ The reference test method is ASTM E290.
- ⑥ Tempers T361 and T861 formerly designed T36 and T86, respectively.

## SPECIFICATIONS OF CANADIAN STANDARDS ASSOCIATION

The Canadian Standards Association, non-ferrous metal specification, are prefixed by the letter H and another letter to denote the base metal: A for aluminum. A number follows to define the subjects:

- HA.1 – general definitions, testing, packing, tolerances, etc.
- HA.2 – unalloyed ingot for remelting
- HA.3 – alloy ingot for remelting
- HA.4 – sheet, plate and coil
- HA.5 – wire, rod, rolled or drawn bar, extruded bar
- HA.6 – rivet rod and wire, welding and brazing rod and wire
- HA.7 – drawn or extruded, seamless tubes
- HA.8 – forgings
- HA.9 – sand castings
- HA.10 – permanent and semi-permanent mould castings

The alloys are identified by one or two letters indicating the main alloy constituents and one or two numbers. (C = copper, G = magnesium, S = silicon, Z = zinc, N = nickel, M = manganese, etc.). Where the aluminum is unalloyed the minimum aluminum content is expressed as the grade.

Wrought Alloys		Casting Alloys	
CSA Alloy Number	Relevant Alcan Alloy Number	CSA Alloy Number	Relevant Alcan Alloy Number
995	1050	C4	225
990C	1100	CS42	B224
MC10	3003	CS72	236
CB60	2011	G8	340
CG42	2024	G10	350
CG42 Alclad	2024 Alclad	GS40	A320
CM41	2017	S5	123
GM31N	5454	S12N	6290
CS41N Alclad	2014 Alclad	S12P	B160
GM41	5083	SC51N	125
GM50R	5056	SC53	117
GR20	5052	SC84N	143
GR40	5154	SG70N	135
GS10	6063	SN122	162
GS11N	6061		
SG11P	6053		
SG11	6151		
SG11R	6351		
ZG62	7075		
ZG62 Alclad	7075 Alclad		



## **SPECIFICATIONS OF AMERICAN SOCIETY FOR TESTING MATERIALS**

The ASTM specifications are issued in the ASTM Standards Handbook, which is published from time to time and for which an annual supplement is provided. The specifications dealing with aluminum and other non-ferrous metals are prefixed by the letter "B". The specification number follows and, after this, the year of issue. Where the specification is still tentative the year is suffixed with the letter "T".

The following specification numbers refer to aluminum:

### **ASTM**

B26 – Sand Castings  
B85 – Die Castings  
B108 – Permanent mould  
castings  
B179 – Ingots (alloy)  
B184 – Arc welding  
electrodes  
B209 – Sheet and plate  
B210 – Tubes, drawn,  
seamless  
B211 – Bars, rods and wire  
B221 – Extruded bars, rods,  
shapes and tubes  
B234 – Tubes for condensers  
and heat  
exchangers  
B236 – Bus bars

### **ASTM**

B241 – Pipe  
B247 – Die forgings  
B260 – Brazing filler  
B285 – Welding rods and  
bare electrodes  
B308 – Standard structural  
shapes  
B313 – Tubes, round, welded  
B316 – Wire and rods, rivet  
and cold heading  
B317 – Bus conductors  
B323 – Wire for electrical  
purposes, round  
B324 – Wire for electrical  
conductors, square  
and rectangular

## U.S. FEDERAL SPECIFICATIONS

The U.S. Federal specifications now being issued supersede many of those departmental specifications previously issued by the U.S. Army, Navy, and Air Force. Certain of these Federal Specifications cover products in a range of alloys, while other specifications will deal with one product and alloy only. In the first group come aluminum ingots, forgings, sands, permanent mould and die castings. In the latter group are all the wrought products other than forgings and welding and brazing materials.

Old Spec.	New Spec.	Relevant Alcan Alloy No.
<b>Sheet Specifications:</b>		
QQ-A-255	QQ-A-250/3	2014 Alclad
QQ-A-283	/12	7075
QQ-A-287	/13	7075 Alclad
QQ-A-318	/8	5052
QQ-A-327	/11	6061
QQ-A-355	/4	2024
QQ-A-359	/2	3003
QQ-A-362	/5	2024 Alclad
QQ-A-561	/1	1100
<b>Extruded Shapes, Rod and Bar:</b>		
QQ-A-261	200/2	2014
QQ-A-267	/3	2024
QQ-A-270	/8	6061
QQ-A-274	/9	6063
QQ-A-277	/11	7075
QQ-A-357	/1	3003
<b>Rolled or Drawn Wire, Rod, Bar and Shapes:</b>		
QQ-A-266	225/4	2014
QQ-A-268	/6	2024
QQ-A-282	/9	7075
QQ-A-315	/7	5052
QQ-A-325	/8	6061
QQ-A-351	/5	2017
QQ-A-356	/2	3003
QQ-A-365	/3	2011
QQ-A-411	/1	1100
<b>Tubing Specifications:</b>		
WW-T-783	WW-T-700/1	1100
WW-T-785	/3	2024
WW-T-787	/4	5052
WW-T-788	/2	3003
WW-T-789	/6	6061

## WROUGHT ALLOYS – CHEMICAL COMPOSITION

In percentage of weight. Except where a range is shown, the percentages are maximum values.

Alloy Number	Composition Designation	Aluminum by Difference	Silicon	Iron	Copper	Manganese	Magnesium
1050	15010	min. 99.50	.025	0.40	0.05	0.05	0.05
1060	16020	min. 99.60	.025	0.35	0.03	0.03	0.03
1100	10050	min. 99.00	1.0 Si	+ Fe	0.05-0.20	0.05	....
1145	14520	min. 99.45	0.55 Si	+ Fe	0.05	0.05	....
1200	10020	min. 99.00	1.0 Si	+Fe	0.05	0.05	....
2011	26820	remainder	0.40	0.7	5.0-6.0	....	....
2017	24320	remainder	0.8	0.7	3.5-4.5	0.40-1.0	0.20-0.8
2024	24520	remainder	0.50	0.50	3.8-4.9	0.30-0.9	1.2-1.8
3003	31220	remainder	0.6	0.7	0.50-0.20	1.0-1.5	....
3004	31530	remainder	0.30	0.7	0.25	1.0-1.5	0.8-1.3
3105	31550	remainder	0.6	0.7	0.30	0.30-0.8	0.20-0.8
4043	43010	remainder	4.5-6.0	0.8	0.30	0.05	0.05
5005	51020	remainder	0.30	0.7	0.20	0.20	0.50-1.1
5050	51030	remainder	0.40	0.7	0.20	0.10	1.1-1.8
5052	52820	remainder	0.25	0.40	0.10	0.10	2.2-2.8
5056	55310	remainder	0.30	0.40	0.10	0.05-0.20	4.5-5.6
5083	54330	remainder	0.40	0.40	0.10	0.4-1.0	4.0-4.9
5086	54380	remainder	0.40	0.50	0.10	0.20-0.7	3.5-4.5
5154	54840	remainder	0.25	0.40	0.10	0.10	3.1-3.9

Alloy Number	Composition Designation	Aluminum by Difference	Chromium	Zinc	Titanium	Other Elements	
						Each	Total
1050	15010	min. 99.50	....	0.05	0.03	0.03	....
1060	16020	min. 99.60	....	0.05	0.03	0.03 <sup>①</sup>	....
1100	10050	min. 99.00	....	0.10	....	0.05 <sup>①</sup>	0.15
1145	14520	min. 99.45	....	....	....	0.03	....
1200	10020	min. 99.00	....	0.10	....	0.05	0.15
2011	26820	remainder	....	0.30	....	0.05 <sup>②</sup>	0.15
2017	24320	remainder	0.10	0.25	....	0.05	0.15
2024	24520	remainder	0.10	0.25	....	0.05	0.15
3003	31220	remainder	....	0.10	....	0.05 <sup>①</sup>	0.15
3004	31530	remainder	....	0.25	....	0.05 <sup>①</sup>	0.15
3105	31550	remainder	0.20	0.40	0.10	0.05	0.15
4043	43010	remainder	....	0.10	0.20	0.05 <sup>①</sup>	0.15
5005	51020	remainder	0.10	0.25	....	0.05	0.15
5050	51030	remainder	0.10	0.25	....	0.05 <sup>①</sup>	0.15
5052	52820	remainder	0.15-0.35	0.10	....	0.05 <sup>①</sup>	0.15
5056	55310	remainder	0.05-0.20	0.10	....	0.05 <sup>①</sup>	0.15
5083	54330	remainder	0.05-0.25	0.25	0.15	0.05	0.15
5086	54380	remainder	0.05-0.25	0.25	0.15	0.05	0.15
5154	54840	remainder	0.15-0.35	0.20	0.20	0.05	0.15

Cont'd

## WROUGHT ALLOYS – CHEMICAL COMPOSITION

In percentage of weight. Except where a range is shown, the percentages are maximum values.

Alloy Number	Composition Designation	Aluminum by Difference	Silicon	Iron	Copper	Manganese	Magnesium
5454	53320	remainder	0.40 Si	+ Fe	0.10	0.50-1.0	2.4-3.0
5456	55330	remainder	P.40 Si	+ Fe	0.10	0.50-1.0	4.7-5.5
6005	65470	remainder	0.6-0.9	0.35	0.10	0.10	0.40-0.6
6061	69260	remainder	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2
6063	66050	remainder	0.20-0.6	0.35	0.10	0.10	0.45-0.9
6101	66020	remainder	0.30-0.7	0.50	0.10	0.03	0.35-0.8
6262	69830	remainder	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2
6351	66440	remainder	0.7-1.3	0.50	0.10	0.40-0.8	0.40-0.8
X7004	74510	remainder	0.25	0.35	0.05	0.20-0.7	0.1-2.0
7072	71020	remainder	0.7 Si	+ Fe	0.10	0.10	0.10
7075	76520	remainder	0.40	0.50	1.2-2.0	0.30	2.1-2.9

Alloy Number	Composition Designation	Aluminum by Difference	Chromium	Zinc	Titanium	Other Elements	
						Each	Total
5054	53320	remainder	0.05-0.20	0.25	0.20	0.05	0.15
5456	55330	remainder	0.05-0.20	0.25	0.20	0.05	0.15
6005	65470	remainder	0.10	0.10	0.10	0.05	0.15
6061	69260	remainder	0.04-0.35	0.25	0.15	0.05	0.15
6063	66050	remainder	0.10	0.10	0.10	0.05	0.15
6101	66020	remainder	0.03	0.10	....	0.03 <sup>⑧</sup>	0.15
6262	69830	remainder	0.04-0.14	0.25	0.15	0.05 <sup>⑨</sup>	0.15
6351	66440	remainder	....	0.20	0.20	0.05	0.15
X7004	74510	remainder	0.05	3.8-4.6	0.05	0.05 <sup>⑩</sup>	0.15
7072	71020	remainder	....	0.8-1.3	....	0.05	0.15
7075	76520	remainder	0.18-0.35	5.1-6.1	0.20	0.05	0.15

① Beryllium 0.0008 max for welding rod or wire.

② Lead, Bismuth, 0.20-0.6 each.

⑧ Barium, 0.06 max.

⑨ Lead, bismuth 0.40-0.7 each.

⑩ Zirconium, 0.10-0.20.

## WROUGHT ALLOYS TYPICAL MECHANICAL PROPERTIES<sup>①</sup>

This table does not represent all alloys manufactured by Alcan.

Alcan Alloy and Temper	Ultimate Tensile Strength 1,000 psi	Yield Strength 1,000 psi	Elongation % in 2 in. ⅛" thick Specimen	Brinell Hardness 500 Kg Load 10 mm ball	Ultimate Shear Strength 1,000 psi
1050-0	11	4	39	20	9
1050-H14	16	15	10	32	10
1050-H16	19	18	8	36	11
1050-H18	23	21	7	40	12
1100-0	13	5	35	23	9
1100-H12	16	15	12	28	10
1100-H14	18	17	9	32	11
1100-H16	21	20	6	38	12
1100-H18	24	22	5	44	13
2024-0	27	11	20	47	18
2024-T3	70	50	18	120	41
2024-T351,-T4	68	47 <sup>②</sup>	20	120	41
2024-T36	72	57	13	130	42
2024-0 Alclad	26	11	20	—	18
2024-T3 Alclad	65 <sup>③</sup>	45 <sup>③</sup>	18	—	40
3003-0	16	6	30	28	11
3003-H12	19	18	10	35	12
3003-H14	22	21	8	40	14
3003-H16	26	25	5	47	15
3003-H18	29	27	4	—	16
3004-0	26	10	20	45	16
3004-H32	31	25	10	52	17
3004-H34	35	29	9	63	18
3004-H36	38	33	5	70	20
3004-H38	41	36	5	77	21
3105-H25	26	23	8	—	15
5005-0	18	6	25	28	11
5005-H12	20	19	10	—	14
5005-H14	23	22	6	—	14
5005-H16	26	25	5	—	15
5005-H18	29	28	4	—	16
5052-0	28	13	25	47	18
5052-H32	33	28	12	60	20
5052-H34	38	31	10	68	21
5052-H36	40	35	8	73	23
5052-H38	42	37	7	77	24

Cont'd

## WROUGHT ALLOYS TYPICAL MECHANICAL PROPERTIES

Alcan Alloy and Temper	Ultimate Tensile Strength 1,000 psi	Yield Strength 1,000 psi	Elongation % in 2 in. 1/16" thick Specimen	Brinell Hardness 500 Kg Load 10 mm ball	Ultimate Shear Strength 1,000 psi
5083-0	42	21	—	—	25
5083-H116	46	33	—	—	—
5083-H321	46	33	—	—	—
5086-0	38	17	22	—	23
5086-H32	42	30	12	—	—
5086-H34	47	27	10	—	27
5086-H112	39	19	14	—	—
5454-0	36	17	22	62	23
5454-H32	40	30	10	73	24
5454-H34	44	35	10	81	26
5454-H111	38	26	14	70	23
5454-H112	36	18	18	62	23
6061-0	18	8	25	30	12
6061-T4,-T451	35	21	22	65	24
6061-T6,-T651	45	40	12	95	30
6063-0	13	7	—	25	10
6063-T4	25	13	22	—	—
6063-T5	27	21	12	60	17
6063-T6	35	31	12	73	22
6063-T83	37	35	9	82	22
6063-T832	42	39	12	95	27
6101-H111	14	11	—	—	—
6101-T6	32	28	15④	71	20
6351-T4	36	22	20	—	—
6351-T5	46	42	12	—	—
6351-T6	45	41	14	95	29
*7004-T1	51	39	14	—	—
*7004-T5	60	55	14	—	—
7075-0	33	15	17	60	22
7075-T6,-T651	83⑤	73⑤	11	150	48
7075-0 Alclad	32	14	17	—	22
7075-T6,-T651 Alclad	83	73	11	—	48

NOTES: ① These properties are average for various forms, sizes and methods of manufacture, and may not exactly describe one particular product.

② Extruded products more than 3/4 inch thick will have strengths 15 to 25% higher than these values.

③ Sheet more than .062 inch thick will have strengths slightly higher.

④ Specimen 1/4 inch thick.

⑤ Extruded products will have strengths approximately 10% higher.

# WROUGHT ALLOYS

## Physical Properties (Partial List)

### Typical Values for Wrought Alloys

Alloy and Temper	Density lb./cu. in	Approximate Melting Range °C	Electrical Volume Conductivity % of IACS	Thermal Conductivity at 25°C cgs units <sup>①</sup>	Thermal Expansion between 20-100°C in./in./°C	Young's Modules ksi x 10 <sup>3</sup>
1060-O	.0975	645-655	62	0.56	0.0000236	10.0
1060-H18	.0975	645-655	61	0.55	0.0000236	10.0
1100-O	0.098	640-660	59	0.53	0.0000236	10.0
1100-H18	0.098	640-660	57	0.52	0.0000236	10.0
2011-T3	0.102	535-645	40	0.37	0.0000228	10.3
2014-T6	0.101	510-640	40	0.37	0.0000230	10.6
2017-T4	0.101	510-640	30	0.29	0.0000236	10.4
2024-T4	0.100	500-640	30	0.29	0.0000232	10.6
3003-O	0.099	640-655	50	0.46	0.0000232	10.0
3003-H14	0.099	640-655	41	0.38	0.0000232	10.0
3003-H18	0.099	640-655	40	0.37	0.0000232	10.0
5005-H14	0.098	630-650	52	0.48	0.0000238	10.0
5050-O	0.097	625-650	50	0.46	0.0000238	10.0
5050-H38	0.097	625-650	50	0.46	0.0000238	10.0
5052-O	0.097	595-650	35	0.33	0.0000234	10.2
5052-H38	0.097	595-650	35	0.33	0.0000234	10.2
5056-O	0.095	570-640	29	0.28	0.0000241	10.3
5056-H38	0.095	570-640	27	0.26	0.0000241	10.3
5083-O	0.096	580-640	29	0.28	0.0000234	10.3
5086-O	0.096	585-640	31	0.30	0.0000234	10.3
5154-O	0.096	590-645	32	0.30	0.0000239	10.2
5454-O	0.097	600-645	34	0.32	0.0000236	10.2
5456-O	0.096	570-640	29	0.28	0.0000239	10.3
6005-T6	0.097	550-650	—	—	—	10.0
6061-O	0.098	580-650	45	0.41	0.0000236	10.0
6061-T4, T451	0.098	580-650	40	0.37	0.0000236	10.0
6061-T6, T651	0.098	580-650	40	0.37	0.0000236	10.0
6063-O	0.097	600-650	57	0.53	0.0000234	10.0
6063-T6	0.097	600-650	53	0.48	0.0000234	10.0
6101-T6	0.097	615-650	57	0.52	0.0000238	10.0
6101-T61	0.097	615-650	59	0.53	0.0000238	10.0
6101-T63	0.097	615-650	58	0.52	0.0000238	10.0
6101-T64	0.097	615-650	60	0.54	0.0000238	10.0
6351-T6	0.098	555-650	46	0.51	0.0000240	10.0
7075-T6	0.101	475-640	30	0.29	0.0000236	10.4

Cont'd

# WROUGHT ALLOYS

## Physical Properties (Partial List)

### Typical Values for Wrought Alloys

Alloy and Temper	Density lb./cu. in	Approximate Melting Range °C	Electrical Volume Conductivity % of IACS	Thermal Conductivity at 25°C cgs units <sup>①</sup>	Thermal Expansion between 20-100°C in./in./°C	Young's Modules ksi x 10 <sup>3</sup>
<b>Other Metals</b>						
Cast Iron	0.261	1130-1230	—	0.11	0.0000112	10-13
Copper	0.322	1080	100	0.90	0.0000167	18.0
Lead	0.410	330	8	0.08	0.0000294	2.5
Magnesium	0.063	650	38	0.37	0.0000258	6.3
Monel	0.318	1350	4	0.06	0.0000140	26.0
Nickel	0.319	1450	16	0.14	0.0000128	30.0
Silver	0.379	950-960	94	0.97	0.0000189	10.3
Steel	0.276-0.282	1450-1500	3-15	0.11	0.0000126	29.0
Tin	0.264	230	15	0.15	0.0000269	5.9
Zinc	0.258	420	30	0.27	0.0000263	13.4

NOTES: ① 1 cgs unit – 1 gram calorie per second per square centimeter per centimeter of thickness per degree Centigrade. To convert to “k factor” for thermal conductivity (BTU per hour per square foot per inch of thickness per degree of Fahrenheit) multiply these figures by 2903.



# TYPICAL AS-WELDED AND AS-BRAZED MECHANICAL PROPERTIES OF WROUGHT ALUMINUM ALLOYS

Alcan Alloy and Temper of Parent Metal	Inert-Gas-Shielded Arc Welded Butt Joints			Torch Brazed <sup>①</sup>	
	Alcan Filler Alloy	Ultimate Tensile Strength 1,000 psi	Yield Strength 1,000 psi	Elongation % in 2 inches	Tensile Strength 1,000 psi
1050-O	1050	11.5	4.5	25	11.0
1050-H18	1050	11.5	6.0	15	11.0
1100-O	1100	13.5	5.5	25	13.0
1100-H18	1100	13.5	6.5	15	13.0
3003-O	1100 or 4043	16.0	7.0	25	16.0
3003-H18	1100 or 4043	16.0	8.5	15	16.0
6063-T6	4043 or 5056	21.0	14.0	17	20.0 <sup>②</sup>
6063-T6C	4043 or 5056	21.0	14.0	17	20.0 <sup>②</sup>
6101-T6	4043	21.0	14.0	17	20.0 <sup>②</sup>
6101-T6A	4043	21.0	14.0	17	20.0 <sup>②</sup>
6101-T6B	4043	21.0	14.0	17	20.0 <sup>②</sup>
6351-T4	4043 or 5356	29.0	20.0	8	—
6351-T6	4043-5356	30.0	20.0	7	—
5454-H32	5554	35.0	18.0	14	—
5083-H116	5356	44.5	25.0	11	—
5083-H321	5356	44.5	25.0	11	—
5052-O	5356	29.0	14.0	22	—
5052-H34	5356	32.0	18.0	18	—
6061-T4	4043 or 5356	29.0	20.0	8	25.0 <sup>②</sup>
6061-T6	4043 or 5356	30.0	20.0	7	25.0 <sup>②</sup>

NOTES: ① Lap joints and using 4047 brazing filler.

② These values may be increased by quenching from brazing temperature.

# ALUMINUM WROUGHT ALLOYS

## Relative Ratings of Characteristics of Some Alloys

Alloy & Temper	Corrosion Resistance (1)	Workability (Cold) (1)	Machinability (2)	Brazability (1)	Weldability (1)			
					MIG	TIG	Resistance	Oxy-Gas
1050-O	A	A	D	A	A	A	C	A
-H14	A	A	C	A	A	A	B	A
-H18	A	C	C	A	A	A	B	A
1100-O	A	A	D	A	A	A	B	A
-H14	A	A	D	A	A	A	A	A
-H18	A	C	D	A	A	A	A	A
2011-T3	D	C	A	*	*	*	D	*
-T8	D	D	A	*	*	*	D	*
2014-T4	D	C	B	*	C	*	B	*
-T6	D	D	B	*	C	*	B	*
2024-T3, T351	D	C	B	*	*	*	B	*
-T4	D	C	B	*	*	*	B	*
3003-O	A	A	D	A	A	A	B	A
-H14	A	B	C	A	A	A	A	A
-H18	A	C	C	A	A	A	A	A
3001-H32	A	B	D	B	A	A	C	B
-H38	A	C	C	B	A	A	B	B
3105-H14	A	B	D	A	A	A	A	A
-H25	A	B	D	A	A	A	A	A
5005-H14, H34	A	B	C	B	A	A	B	A
-H18, H38	A	C	C	B	A	A	B	A
5052-O	A	A	D	C	A	A	B	A
-H34	A	B	C	C	A	A	A	A
-H38	A	C	C	C	A	A	A	A
5056-O	A	A	D	*	A	A	B	C
-H38	A	C	C	*	A	A	A	C

Cont'd

# ALUMINUM WROUGHT ALLOYS

## Relative Ratings of Characteristics of Some Alloys

Alloy & Temper	Corro- sion Resis- tance (1)	Work- ability (Cold) (1)	Ma- chin- ability (2)	Braze- ability (1)	Weldability (1)			
					MIG	TIG	Resis- tance	Oxy- Gas
5083-0	A	A	D	*	A	A	B	*
-H323	A	C	C	*	A	A	A	*
-H343	C	D	C	*	A	A	A	*
5086-0	A	A	D	*	A	A	B	*
-H34	B	B	C	*	A	A	A	*
5357-0	A	A	D	B	A	A	B	A
-H25	A	B	C	B	A	A	A	A
5454-0	A	A	D	*	A	A	B	*
-H34	A	B	C	*	A	A	A	*
6061-0	A	A	D	B	A	A	C	B
-T4	A	C	C	B	A	A	B	B
-T6,T651	A	C	C	B	A	A	A	B
6063-0	A	A	D	A	A	A	C	A
-T5	A	B	C	A	A	A	B	A
-T6	A	C	C	A	A	A	A	A
6351-0	A	A	D	C	A	A	C	B
-T4	A	C	C	C	A	A	B	B
-T6	A	C	C	C	A	A	A	B
7004-T1	B	B	C	C	A	A	B	*
-T5	B	C	C	C	A	A	A	*
7075-T6	C	C	B	*	*	*	B	*

(1) Ratings A through D are relative ratings in decreasing order of merit.  
The \* = not recommended.

(2) Ratings A through E in decreasing order of merit.

(3) Holding this alloy at elevated temperatures for long periods may change this rating.