Engineering Division Handbook

Aluminium City (Pty) Limited

Index

Technical Data

TEMPER DESIGNATION SYSTEM

Aluminium City utilise a temper designation system similar to the ISO 2107 "alternative temper designation system" which is widely recognised internationally and closely approximates that of the Aluminium Association. The system defines the sequence of basic treatments used to achieve the various tempers. The temper designation follows the four digit Aluminium alloy designation, the two being separated by a hyphen. Basic temper designations consist of letters whereas subdivisions of these basic tempers are indicated by one or more digits following the letter.

Basic Temper Designations

F **As Fabricated.** Applies to the products of shaping processes in which no special control over thermal conditions or strain-hardening is employed. For wrought products, there are no specified requirements for mechanical properties.

O **Annealed.** Applies to wrought products which are annealed to obtain the lowest strength condition.

H **Strain-hardened.** (wrought products only). Applies to products subjected to the application of cold work after annealing (or hot forming), or to a combination of cold work and partial annealing or stabilizing in order to secure the specified mechanical properties. The H is always followed by two (or more) digits.

T **Thermally treated** to produce stable tempers other than F, O or H. Applies to products which are thermally treated, with or without supplementary strain-hardening, to produce stable tempers. The T is always followed by one (or more) digits indicating the specific sequence of treatments.

Subdivisions of H Temper: Strain-hardened

The first digit following the H indicates the specific combination of basic operations viz.

H1x **Strain-hardened only.** Applies to products which are strain-hardened to obtain the desired strength without supplementary thermal treatment. The number following the designation indicates the degree of strain-hardening.

H2x **Strain-hardened and partially annealed.** Applies to products which are strain-hardened more than the desired final amount and then reduced in strength to the desired level by partial annealing. The number following this designation indicates the degree of strain-hardening remaining after the partial anneal.

H3x **Strain-hardened and stabilised.** Applies to products which are strain-hardened and whose mechanical properties are stabilised by a low temperature thermal treatment which results in slightly lower tensile strength and improved ductility.(Only applicable to those alloys which, unless stabilised gradually age-soften at room temperature.) The number following this designation indicates the degree of strain-hardening remaining after the stoving process.

H4x **Strain-hardened and stoved.** Applies to products which are strain-hardened and whose mechanical properties are modified by subsequent thermal treatment during paint stoving operations. The number following this designation indicates the degree of strain-hardening remaining after the stoving process.

Subdivisions of T Temper: Thermally Treated.

The digit following the T indicates the specific sequences of basic treatments viz.

T3 **Solution heat-treated, cold worked, and naturally aged to a substantially stable condition.** Applies to products which are cold worked by a controlled amount to improve their strength after solution heat-treatment, or in which the effect of cold work in flattening or straightening is recognised in mechanical property limits.

T4 **Solution heat-treated and naturally aged to a substantially stable condition.** Applies to products which are cold worked after solution heat-treatment, or in which the effect of cold work in flattening or straightening may not be recognised in mechanical property limits.

T5 **Cooled from an elevated temperature shaping process and then artificially aged.** Applies to products which are not cold worked after cooling from an elevated temperature shaping process, or in which the effect of cold work in flattening or straightening may not be recognised in mechanical property limits.

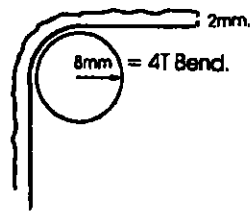
T6 **Solution heat-treated and then artificially aged.** Applies to products which are not worked after solution heat-treatment, or in which the effect of cold work in flattening or straightening may not be recognised in mechanical property limits.

T8 **Solution heat-treated, cold worked and then artificially aged.** Applies to products which are cold worked to improve strength, or in which the effect of cold work in flattening or straightening is recognised in mechanical property limits.

BEND RADII FOR TREADPLATE

Recommended minimum bend radii for 90 degree cold bends are listed below and assume the usage of correct workshop practice. The bend radii are given in mm.

Base Thickness	Temper	Minimum Bend Radius 1200	3003	5251
1.5	Hx4	4	4	9
2.0	Hx4	8	8	12
3.0	Hx4	12	12	18
4.5	Hx4	18	18	24
6.0	Hx2	12	12	36



Note:
1. 2.0mm 1200H14 can take a 4T bend (see example)
2. Alloy 1200 is recommended for severe forming operations

ALLOY 1200 NON HEAT-TREATABLE

Chemical Composition Limits (in%) Aluminium 99.00% minimum

							Other elements	
Si + Fe	Cu	Mn	Mg	Cr	Zn	Ti	Each	Total
1.00	0.05	0.05	-	-	0.10	0.05	0.05	0.15

Characteristics:

Corrosion resistance:	Very good
Anodising:	Very good
Formability:	Excellent
Machinability:	Poor
Weldability:	Excellent
Brazeability:	Excellent

Typical uses:
General sheet metal work where moderate strength is adequate, lightly stressed panels; Architectural flashings; holloware: equipment and containers for food and chemical industries.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
O	70	85	105	-	-	40	70
H2	90	110	125	-	-	12	80
H4	105	123	140	-	110	6	85
H6	125	139	160	-	120	5	90
H8	140	159	-	-	-	5	100

Bend Radii:
Min recommended radii for 90° cold bends.

	Thickness in mm				
Temper	0.5	0.8	1.2	2.5	3.0
H6	0.5t	0.5t	0.5t	1t	1.5t
H8	1t	1.5t	2t	2t	3t

t = Thickness

Welding:
1200 is readily welded by the TIG and MIG processes.
Commonly used filler alloys are 4043 and 1050.
4043 filler gives the greater weld strength, but 1050 should be used if the assembly is to be anodised.

1200 may also be gas welded or resistance welded, but the resultant joints are not so strong or corrosion-resistant as inert gas arc welded joints. Where fluxes are used in welding or brazing, it is essential that all traces of the flux be removed by scrubbing with hot water on completion.

Annealing:
350° ± 3° C until all parts have reached the annealing temperature.

ALLOY 3003 NON HEAT-TREATABLE

Chemical Composition Limits (in%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other elements Each	Other elements Total
0.60	0.70	0.05-0.2	1.0-1.5	-	-	0.10	-	0.05	0.15

Characteristics:

Corrosion resistance:	Very Good
Anodising:	Very Good (for surface protection only)
Formability:	Very Good
Machinability:	Poor
Weldability:	Very Good
Brazeability:	Excellent

Typical uses:
General sheet metal work requiring greater strength than is provided by 1000 series alloys.
Profiled building sheet (roofing and cladding), insulation panels, vehicle panelling, some holloware.
Food and chemical handling and storage equipment.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
O	95	110	130	35	50	30	75
H2	120	130	160	85	125	10	85
H4	140	167	180	115	154	7	95
H6	165	175	205	145	170	5	105
H8	185	200	-	165	185	4	110

Bend Radii:
Min recommended radii for 90° cold bends.

Temper	Thickness in mm				
	0.5	0.8	1.2	2.5	3.0
H2	0	0	0	0	0.5t
H4	0	0	0	0.5t	0.5t
H6	1t	1t	1.5t	2t	2t
H8	2t	2t	3t	3t	3t

t = Thickness

Welding:
3003 is readily welded by the TIG and MIG processes using 1100 or 4043 filler alloy.

3003 may also be gas welded or resistance welded, but the resulting joints are not so strong or corrosion-resistant as inert gas arc welded joints.

3003 may be flame brazed: a 10 - 12% silicon rod should be used.
In gas welding and flame brazing a flux is used. It is essential that all traces of the flux be removed by scrubbing with hot water on completion.

Annealing:
415° ± 3° C until all parts have reached the annealing temperature.

ALLOY 3004 NON HEAT-TREATABLE

Chemical Composition Limits (in%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other elements Each	Other elements Total
0.30	0.70	0.25	1.0-1.5	0.8-1.3	-	0.25	-	0.05	0.15

Characteristics:

Corrosion resistance	Good
Anodising	Good (for surface protection only)
Formability	Good
Weldability	Very Good
Brazeability	Very Good

Typical uses:
Containers for chemical and brewing industries. Roofing, architecture, transport and lampbase stock.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
O	150	160	200	60/85	71	22	110
H2	190	210	240	145	177	7	115
H4	220	245	265	170	226	4	125
H6	240	263	285	190	-	4	140
H8	260	-	-	215	-	-	145

Bend Radii:
Min recommended radii for 90° cold bends.

Temper	Thickness in mm 0.5	0.8	1.6	3.0
O	-	0	0	0.5t
H2	-	0	0.5t	1t
H4	-	1t	1t	1.5t
H6	-	1t	1.5t	2.5t
H8	-	1.5t	2.5t	3t

t = Thickness

Welding:
Can be readily welded by TIG and MIG processes using 5356 filler alloy.
3004 may also be gas welded or resistance welded, but the resulting joints are not so strong or corrosion-resistant as inert gas arc welded joints.

3004 may be flame brazed: a 10 - 12% silicon rod should be used.

In gas welding and flame brazing a flux is used. It is essential that all traces of the flux be removed by scrubbing with hot water on completion.

Annealing:
360° ± 3° C until all parts have reached the annealing temperature.

ALLOY 3103 NON HEAT-TREATABLE

Chemical Composition Limits (in%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other elements Each	Other elements Total
0.50	0.70	0.10	0.9-1.5	0.3	0.1	0.20	0.1	0.05	0.15

Characteristics:

Corrosion resistance	Very Good
Anodising	Good
Formability	Very Good
Weldability	Very Good
Brazeability	Excellent

Typical uses:
Building sheet (roofing), vehicle panelling, general sheet metal work, packaging, rivets.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
O	90	110	130		55	-	80
H2	120	135	155		-	7	-
H6	160	175	195		155	4	100
H8	178	210	240		190	4	110

Bend Radii:
Min recommended radii for 90° cold bends.

Temper	Thickness in mm 0.5	0.8	1.2	2.5	3.0
H8	1.5t	1.5t	2t	2t	2t

t = Thickness

Welding:
3103 is readily welded by the TIG and MIG processes using 1100 or 4043 filler alloy.

3103 may also be gas welded or resistance welded, but the resulting joints are not so strong or corrosion-resistant as inert gas arc welded joints.

3103 may be flame brazed: a 10 - 12% silicon rod should be used.
In gas welding and flame brazing a flux is used. It is essential that all traces of the flux be removed by scrubbing with hot water on completion.

Annealing:
400° ± 3° C until all parts have reached the annealing temperature.

ALLOY 5083 NON HEAT-TREATABLE

Chemical Composition Limits (In%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other elements Each	Other elements Total
0.40	0.40	0.10	0.4-1.0	4.0-4.9	.05-.25	0.25	0.15	0.05	0.15

Characteristics:

Corrosion resistance	Excellent - very resistant to sea water and industrial atmosphere
Anodising	Good (natural only)
Formability	Good (in O temper)
Machinability	Fair
Weldability	Good
Brazeability	Not recommended

Typical uses:

Shipbuilding, railway waggons, car bodies.
Pressure vessels and low temperature applications, structural plate for mine skips and cages.
Tipper and dumper bodies.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
F	275	355	450	125	250	15	155
O	275	305	350	125	160	16	175
H2	310	345	375	235	285	9	200

Bend Radii:

Min recommended radii for 90° cold bends.

Temper	Thickness in mm 0.5	0.8	1.2	2.5	3.0
O	-	-	1t	1t	1t
H2	-	1.5t	1.5t	2t	2t

t = Thickness

Welding:

5083 is readily welded by the TIG and MIG processes, using 5183, 5356 or 5556 filler alloys.

5083 has very high strength after welding.

Annealing:

350° ± 5° C for 2 - 3 hours (to soften permanently)

ALLOY 5251 NON HEAT-TREATABLE

Chemical Composition Limits (in%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other elements Each	Other elements Total
0.40	0.50	0.15	0.1-0.5	1.7-2.4	0.15	0.15	0.15	0.05	0.15

Characteristics:

Corrosion resistance:	Excellent
Anodising:	Excellent
Formability:	Very Good
Machinability:	Fair
Weldability:	Very Good
Brazeability:	Poor

Typical uses:
Panelling and structures exposed to marine atmospheres.
Pressings, certain aircraft parts, containers.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
O	160	-	200	60	-	-	120
H2	200	-	240	130	-	-	130
H4	225	250	275	175	210	8	140
H8	255	-	285	215	-	3	-

Bend Radii:
Min recommended radii for 90° cold bends.

Temper	Thickness in mm 0.5	0.8	1.2	2.5	3.0
O	0	0	0	0.5t	0.5t
H2	0	0.5t	0.5t	1t	1.5t
H4	0	0.5t	1t	1.5t	2t
H8	2t	3t	4t	4t	4t

t = Thickness

Welding:
5251 is readily welded by the TIG and MIG processes, using 5356 filler alloy.
Welding of 5251 in the H2, H4 or H8 tempers will reduce the tensile and yield strengths in the heat-affected zone to those of the annealed condition.

5251 may also be gas welded or resistance welded, but the resulting joints are not so strong or corrosion-resistant as inert gas arc welded joints. It is essential that all traces of welding flux are removed by scrubbing with hot water on completion.

Annealing:
350° ± 3° C until all parts have reached the annealing temperature.

ALLOY 6061 HEAT-TREATABLE

Chemical Composition Limits (in%)

								Other elements	
Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Each	Total
0.4-0.8	0.7	0.15-0.4	0.15	0.8-1.2	.04-.35	0.25	0.15	0.05	0.15

Characteristics:

Corrosion resistance	Good
Anodising	Good
Formability	Severe forming possible in O or T4 temper
Weldability	Good
Brazeability	Good

Typical uses:
Structural engineering, road and rail transport.
Structural sections for cages and skips.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
O		125	150		40	30	
T4	180	240		110	145	21	
T6	260	310		240	275	15	

Welding:
6061 can readily be welded by the TIG and MIG processes using 4043 filler alloy.

Annealing:
415° ± 3° C for 2 - 3 hours.

ALLOY 6063 HEAT-TREATABLE

Chemical Composition Limits (in%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other elements Each	Other elements Total
0.2-0.6	0.35	0.10	0.1	0.45-0.9	0.1	0.10	0.1	0.05	0.1

Characteristics:

Corrosion resistance	Very Good
Anodising	Very Good
Formability	Good (in T4 temper)
Weldability	Good
Brazeability	Good

Typical uses:

Architectural members such as window frames, glazing bars, balustrades and shopfronts. Used extensively for irrigation tubing and electrical fittings.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress MPa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
T4	130	95	175	70	115	17	
T6	185	215	245	160	205	10	

Welding:

6063 can readily be welded by the TIG and MIG processes.
Common filler alloy is 4043.

Annealing:

To soften fully - 340° - 360° C for 2 hours. Cool not faster than 15°C/hour to 250° C and withdraw from furnace.

To soften partially - 340° - 360° C for 2 hours. Cool in still air and form as soon as possible after annealing. Some degree of solution heat treatment/natural ageing will occur.

ALLOY 6082 HEAT-TREATABLE

Chemical Composition Limits (in%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other elements Each	Other elements Total
0.7-1.3	0.50	0.10	0.4-1.0	0.6-1.2	0.25	0.20	0.1	0.05	0.15

Characteristics:

Corrosion resistance	Good
Anodising	Good
Formability	Good
Machinability	Good
Weldability	Good
Brazeability	Good

Typical uses:

For stressed structural applications, such as bridges, cranes, roof trusses, trsnsport applications. Beer barrels, milk churns, bridle plates for man cages and ore skips.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
T4	200	215	230	115	150	18	140
T6	295	310	325	240	265	9	205

Welding:

6082 can readily be welded by the TIG and MIG processes using 4043 or 5356 filler alloy.

Annealing:

To soften partially, 340° - 360° C for 2 hours.
To soften fully, 340° - 360° C for 2 hours. Cool not faster than 15° C/hour to 250° C and withdraw from furnace.

ALLOY 6261 HEAT-TREATABLE

Chemical Composition Limits (in%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other elements Each	Other elements Total
0.4-0.7	0.40	0.15-0.4	0.2-0.35	0.7-1.0	0.1	0.20	0.1	0.05	0.15

Characteristics:

Corrosion resistance	Good
Anodising	Good
Formability	Good (in O and T4 temper)
Weldability	Good
Brazeability	Good

Typical uses:
Structural engineering, road and rail transport.
Structural sections for cages and skips.

Mechanical Properties:

Temper	Ultimate Tensile Strength MPa			0.2% Proof Stress Mpa		Elongation %	Ultimate Shear Strength
	Min	Typ	Max	Min	Typ	Typ at 1.6 thick	Mpa Typ
T4	190	260	-	115	180	18	165
T6	295	330	-	255	285	10	205

Welding:
6261 can be readily welded by TIG and MIG processes using 4043 filler alloy.

Annealing:
415° ± 3° C for 2 - 3 hours.

WELDING ALUMINIUM

The welding of aluminium is not difficult, but is different.
Aluminium can be welded easily by the two inert gas processes - TIG and MIG.
Under normal atmospheric conditions all aluminium is highly corrosion resistant. This is due to the thin layer of aluminium oxide which forms on the surface when the bare metal is exposed to air.
Should the surface be broken by scratching, it will instantly start to reform and therefore has a 'self-healing' property. Whilst this is an admirable property in the metal itself, the oxide layer must be removed from the weld surface before welding can commence.
Thoroughly scratch brush the weld area using a stainless steel brush to ensure oxide removal. Support the material with jigs, or by tacking in place, to maintain proper alignment, and weld using the TIG or MIG methods.

Tungsten Inert Gas (TIG) and Metal Inert Gas (MIG) Processes.

TIG

In this process, an Alternating Current (AC) arc is struck between a tungsten electrode and the aluminium workpiece. A shroud of inert gas covers the electrode and the weld area. A filler rod, if required is fed in independently.
The method allows close control by the operator of both the heat input and the amount of filler material fed into the weld, and it is particularly applicable for the intricate torch manipulation required for pipework and complex structures.
TIG welding is slower than MIG but results in a neater looking weld.
Normally we would limit TIG welding to 12mm and less.

MIG

In the MIG process a Direct Current (DC) arc of reverse polarity (with the electrode positive), shielded by an inert gas shroud, is struck between the aluminium and a continuously fed aluminium wire electrode, which undergoes controlled melting at the tip and so acts as the filler material.
The process lends itself to high-speed automatic welding, but lacks the penetration control possible with TIG welding.

Filler Wires

The range of available filler wires for TIG and MIG welding is relatively restricted and consists essentially of pure aluminium, Al-Mg and Al-Si alloys. It is important to select the appropriate filler for the alloy being welded in order to achieve compatibility and particularly to avoid the possibility of weld cracking.

Welding Problem Identification

1. Edge cracking is usually due to the incorrect choice of filler alloy or parent metal. It can also occur when the weld is made under restraint, because of aluminium's coefficient of linear expansion being about twice that of steel.
2. Lack of penetration can be caused by the presence of oxide film due to insufficient cleaning before welding. It can also be caused by using too low a welding current or too high a welding speed for the current used. Faulty welding technique such as incorrect torch or gun angle can also contribute to this defect.
3. Crater cracks result from insufficient filler metal being present to fill up the crater at the end of the welding run and is a defect which is more common with MIG welding than with Tig welding.

For more information on welding, or for problem identification, you can contact the South African Welding Institute, based in Johannesburg.

Standard Products

Commercial Grade Sheet

Size (mm)	Thickness (mm)	Alloy
2000 X 1000	0.5	1200-H4
2500 X 1250	0.5	1200-H4
2000 X 1000	0.7	1200-H4
2500 X 1250	0.7	1200-H4
2000 X 1000	0.9	1200-H4
2500 X 1250	0.9	1200-H4
2000 X 1000	1.2	1200-H4
2500 X 1250	1.2	1200-H4
3000 X 1500	1.2	1200-H4
2000 X 1000	1.6	1200-H4
2500 X 1250	1.6	1200-H4
3000 X 1500	1.6	1200-H4
2000 X 1000	2.0	1200-H4
2500 X 1250	2.0	1200-H4
3000 X 1500	2.0	1200-H4
2500 X 1250	2.5	1200-H4
2000 X 1000	3.0	1200-H4
2500 X 1250	3.0	1200-H4
3000 X 1500	3.0	1200-H4
2500 X 1250	0.9	5251-H6
2500 X 1250	1.2	5251-H6
2500 X 1250	1.6	5251-H6
2500 X 1250	2.0	5251-H6
2500 X 1250	2.5	5251-H6
2500 X 1250	3.0	5251-H6

Architectural Grade Sheet

Size (mm)	Thickness (mm)	Alloy
2500 X 1250	1.2	ARCH 1200-H4
2500 X 1250	1.6	ARCH 1200-H4
2500 X 1250	2.0	ARCH 1200-H4
2500 X 1250	3.0	ARCH 1200-H4

Rainwater Coil - Painted

Size mm	Thickness mm	Alloy	Finish
266	0.6	3003-H14	Poly
285	0.6	3003-H14	Poly
305	0.6	3003-H14	Poly
355	0.6	3003-H14	Poly
381	0.6	3003-H14	Poly
381	0.8	3003-H14	Poly
400	0.8	3003-H14	Poly
448	0.8	3003-H14	Poly
448	0.9	3003-H14	Poly

Plate

Size (mm)	Thickness (mm)	Alloy
2000 X 1000	4.5	1200-H4
2500 X 1250	4.5	1200-H4
2000 X 1000	6.0	1200-H4
2500 X 1250	6.0	1200-H4
2500 X 1250	4.5	5251-H6
2500 X 1250	6.0	5251-H6
2500 X 1250	4.5	5083-H2
2500 X 1250	6.0	5083-H2
2500 X 1250	8.0	5083-H2
2500 X 1250	9.5	5083-H2
2500 X 1250	10.0	5083-H2
2500 X 1250	12.0	5083-H2
2500 X 1250	16.0	5083-F
2500 X 1250	20.0	5083-F
2500 X 1250	25.0	5083-F
2500 X 1250	30.0	5083-F
2500 X 1250	40.0	5083-F
2500 X 1250	50.0	5083-F
2500 X 1250	60.0	5083-F
2500 X 1250	80.0	5083-F
2000 X 1000	100.0	5083-F
2500 X 1250	6.0	6082-T6
2500 X 1250	8.0	6082-T6
2500 X 1250	10.0	6082-T6
2500 X 1250	12.0	6082-T6
2500 X 1250	16.0	6082-T6
2500 X 1250	20.0	6082-T6
2500 X 1250	25.0	6082-T6
2500 X 1250	30.0	6082-T6
2500 X 1250	40.0	6082-T6
2500 X 1250	50.0	6082-T6
1000 X 1000	60.0	6082-T6

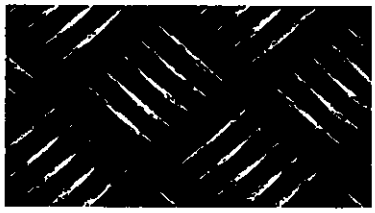
Coil - Mill Finish

Size mm	Thickness mm	Alloy
1000	0.5	1200-H4
1000	0.6	1200-H4
1000	0.7	1200-H4
1000	0.9	1200-H4
1000	0.9	3004-H4
1245	0.9	3004-H4

Certain listed items may not be available at all Branches

Treadplate - 5 Bar Pattern

Size (mm)	Thickness (mm)	Alloy
2500 x 1250	1.5	1200-H4
3000 x 1500	1.5	1200-H4
2500 x 1250	2.0	1200-H4
2500 x 1250	3.0	1200-H4
2500 x 1250	1.5	5251-H6
2500 x 1250	2.0	5251-H6
2500 x 1250	3.0	5251-H6
2500 x 1250	4.5	5251-H6
2500 x 1250	6.0	5251-H6

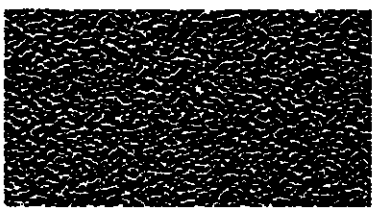


Bright Treadplate - PropellerPattern

Size (mm)	Thickness (mm)	Alloy
2438 x 1219	1.473	3003-H22
2438 x 1219	1.829	3003-H22
2438 x 1219	2.032	3003-H22
2438 x 1219	3.175	3003-H22

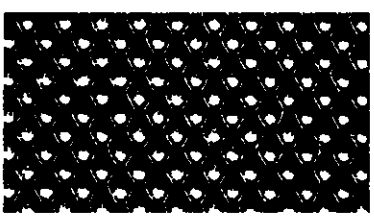
Stucco Embossed Sheet

Size (mm)	Thickness (mm)	Alloy
2500 X 1250	0.7	1200-H4
2500 X 1250	0.9	1200-H4
2500 X 1250	1.2	1200-H4
2500 X 1250	1.6	1200-H4



Rigidised Sheet

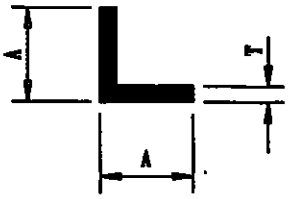
Size (mm)	Thickness (mm)	Alloy
2500 x 1250	0.9	1200-H4
2500 x 1250	1.2	1200-H4
2500 x 1250	1.6	1200-H4
2500 x 1250	2.0	1200-H4



Certain listed items may not be available at all Branches

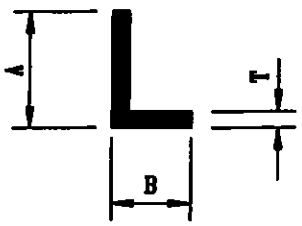
Equal Angles

A mm	T mm	Length Metres	Alloy	Die Number
12.70	1.60	5.0	6063-T6	15137
19.06	1.60	5.0	6063-T6	15094
19.06	3.18	5.0	6063-T6	15145
22.20	1.60	5.0	6063-T6	15147
25.40	1.14	5.0	6063-T6	15150
25.40	1.58	5.0	6063-T6	15192
25.40	3.18	5.0 & 6.0	6063-T6	15156 or 15824
25.40	6.36	5.0	6063-T6	15158
31.70	3.18	5.0	6063-T6	15162
31.70	4.74	5.0	6063-T6	15198
38.10	2.00	5.0 & 6.0	6063-T6	15291
38.10	3.18	5.0	6063-T6	15165
38.10	6.36	5.0	6063-T6	15170
50.80	2.00	5.0	6063-T6	15736 or 15563
50.80	3.18	5.0	6063-T6	15202
50.80	6.36	5.0	6261-T6 or 6061-T6	15112 or 15204
50.80	6.36	5.0	6261-T6 or 6061-T6	15205
63.50	3.18	5.0	6063-T6	15207
76.20	3.18	5.0	6063-T6	15211
76.20	6.36	5.0	6261-T6 or 6061-T6	15121



Unequal Angles

A mm	B mm	T mm	Length Metres	Alloy	Die Number
15.80	9.50	1.60	5.0	6063-T6	15408
19.06	12.70	1.60	5.0	6063-T6	15038
22.20	9.50	1.60	5.0	6063-T6	15042
25.40	12.70	1.60	5.0	6063-T6	15241
25.40	12.70	3.18	5.0	6063-T6	15050
25.40	15.88	1.60	5.0	6063-T6	15051
44.40	22.20	2.04	5.0	6063-T6	15064
44.40	22.20	3.18	5.0	6063-T6	15065
50.80	25.40	3.18	5.0	6063-T6	15074
75.00	25.00	2.00	5.0	6063-T6	15520
100.00	50.00	3.00	5.0	6061-T6	15878
101.60	50.80	3.18	5.0	6261-T6 or 6061-T6	15844



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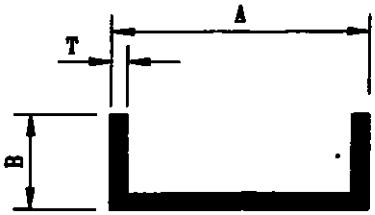
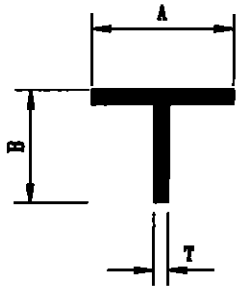
Channels

A mm	B mm	T mm	Length Metres	Alloy	Die Number
9.52	9.52	1.60	5.0	6063-T6	16007
12.70	12.70	1.52	5.0	6063-T6	16873
9.52	15.00	1.60	5.0	6063-T6	16027
9.52	19.06	1.58	5.0	6063-T6	16502
19.06	12.70	1.60	5.0	6063-T6	16031
19.06	12.70	3.18	5.0	6063-T6	16032
25.40	12.70	3.18	5.0	6063-T6	16046
25.40	25.40	3.18	5.0	6063-T6	16238
38.10	19.06	3.18	5.0	6063-T6	16075
47.31	19.06	1.43	5.0	6063-T6	16413
50.80	25.40	3.18	5.0	6063-T6	16113
50.80	50.80	6.36	5.0	6261-T6 or 6061-T6	16245
76.20	38.10	6.36	5.0	6261-T6 or 6061-T6	16155 or 16246
101.60	50.80	6.36	5.0	6261-T6 or 6061-T6	16252
158.00	50.00	3.18	5.0	6261-T6 or 6061-T6	16556



T - Sections

A mm	B mm	T mm	Length Metres	Alloy	Die Number
19.06	19.06	3.18	5.0	6063-T6	14005
25.4	25.4	3.18	5.0	6063-T6	14017
38.1	38.1	4.78	5.0	6063-T6 or 6061-T6	14047
50.8	50.8	6.36	5.0	6063-T6 or 6061-T6	14050



Square Bar

A mm	Length Metres	Alloy
12.70	5.0	6261-T6 or 6061-T6
19.06	5.0	6261-T6 or 6061-T6
25.40	5.0	6261-T6 or 6061-T6
31.76	5.0	6261-T6 or 6061-T6
38.10	5.0	6261-T6 or 6061-T6
50.80	5.0	6261-T6 or 6061-T6

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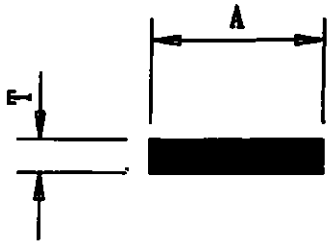
Flat Bar

A mm	T mm	Length Metres	Alloy	Die Number
11.92	2.10	5.0	6063-T6	10159
12.70	3.18	5.0	6063-T6	10011
12.70	6.36	5.0	6063-T6	10465
15.80	3.18	5.0	6063-T6	10018
19.06	3.18	5.0	6063-T6	10021
19.06	4.78	5.0	6063-T6	10022
19.06	6.36	5.0	6063-T6	10023
20.00	2.00	5.0	6063-T6	10510
25.40	3.18	5.0	6063-T6	10230
25.40	4.78	5.0	6063-T6	10231
25.40	6.36	5.0	6063-T6	10232
25.40	9.52	5.0	6063-T6	10234
25.40	12.70	5.0	6261-T6 or 6061-T6	10235
31.70	3.18	5.0	6063-T6	10248
31.70	6.36	5.0	6261-T6 or 6061-T6	10250
38.10	3.18	5.0	6063-T6	10257
38.10	4.78	5.0	6063-T6	10031
38.10	6.36	5.0	6063-T6	10032
38.10	9.52	5.0	6261-T6 or 6061-T6	10034
38.10	12.70	5.0	6063-T6	10035
44.40	3.18	5.0	6063-T6	10042
50.80	2.04	5.0	6063-T6	10387
50.80	3.18	5.0	6063-T6	10050
50.80	4.78	5.0	6261-T6 or 6061-T6	10052
50.80	6.36	5.0	6261-T6 or 6061-T6	10055
50.80	9.52	5.0	6261-T6 or 6061-T6	10059
50.80	12.70	5.0	6261-T6 or 6061-T6	10061
54.00	2.00	5.0	6063-T6	101306
63.40	3.18	5.0	6261-T6 or 6061-T6	10265
63.40	6.36	5.0	6261-T6 or 6061-T6	10266
76.20	1.90	5.0	6063-T6	10512
76.20	3.18	5.0	6063-T6	10320
76.20	6.36	5.0	6261-T6 or 6061-T6	10283
76.20	9.52	5.0	6261-T6 or 6061-T6	10286
76.20	12.70	5.0	6261-T6 or 6061-T6	10288
101.60	3.18	5.0	6261-T6 or 6061-T6	10321
101.60	6.36	5.0	6261-T6 or 6061-T6	10082
101.60	9.52	5.0	6261-T6 or 6061-T6	10083



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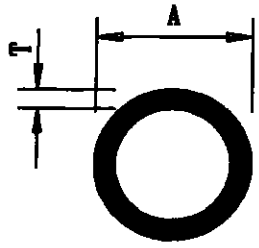
Round Tube

A mm	T mm	Length Metres	Alloy
9.52	1.22	5.0	6063-T6
10.00	1.22	5.0	6063-T6
12.70	1.22	5.0	6063-T6
12.70	1.62	5.0	6063-T6
12.70	3.18	5.0	6063-T6
15.80	1.62	5.0	6063-T6
19.06	1.22	5.0	6063-T6
19.06	1.62	5.0	6063-T6
19.06	3.18	5.0	6063-T6
22.20	1.22	5.0	6063-T6
22.20	1.62	5.0	6063-T6
25.40	1.22	5.0	6063-T6
25.40	1.62	5.0	6063-T6
25.40	3.18	5.0	6063-T6
31.76	1.62	5.0	6063-T6
31.76	3.18	5.0	6063-T6
38.10	1.50	5.0	6063-T6
38.10	3.18	5.0	6063-T6 or 6063-T4
49.00	4.50	5.0	6261-T6 or 6061-T6
50.80	1.27	5.0	6063-T6
50.80	1.62	5.0 or 6.0	6063-T6
50.80	3.18	5.0	6261-T6 or 6061-T6 or 6063-T6
50.80	6.36	5.0	6261-T6
60.32	4.78	6.0	6063-T6
76.20	1.27	6.0	6063-T6
76.20	3.18	6.0	6261-T6 or 6061-T6
88.90	4.78	6.0	6261-T6 or 6061-T6
101.60	1.27	6.0	6063-T6
101.60	3.20	5.0	6261-T6 or 6061-T6
101.60	6.36	5.0	6261-T6 or 6061-T6
107.96	3.20	5.0	6063-T6
127.00	3.50	5.0	6063-T6



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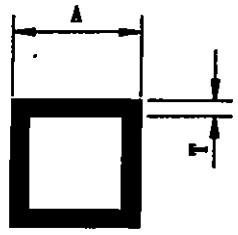
Round Bar

Diameter	Length	Alloy
6.36 MM	5.0	6101-T6
7.94 MM	5.0	6101-T6
9.52 MM	5.0	6261-T6 or 6061-T6
12.7 MM	5.0	6261-T6 or 6061-T6
15.88 MM	5.0	6261-T6 or 6061-T6
19.06 MM	5.0	6261-T6 or 6061-T6
25.4 MM	5.0	6261-T6 or 6061-T6
31.76 MM	5.0	6261-T6 or 6061-T6
40.00 MM	5.0	6261-T6 or 6061-T6
50.8 MM	5.0	6261-T6 or 6061-T6
65.0 MM	VARIOUS	6082-T6
76.2 MM	VARIOUS	6082-T6
90.0 MM	VARIOUS	6082-T6
101.6 MM	VARIOUS	6082-T6 or 6261-T6
115.0 MM	VARIOUS	6082-T6
130 MM	VARIOUS	6082-T6
140.0 MM	VARIOUS	6082-T6
152.6 MM	VARIOUS	6082-T6
165.0 MM	VARIOUS	6082-T6
176.0 MM	VARIOUS	6082-T6
190.00 MM	VARIOUS	6082-T6
200.00 MM	VARIOUS	6082-T6
250.00 MM	VARIOUS	6082-T6
300.00 MM	VARIOUS	6082-T6

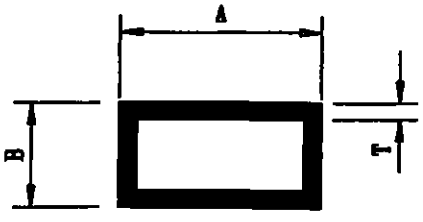


Square Tube

A mm	T mm	Length Metres	Alloy	Die Number
19.06	1.62	5.0	6063-T6	H823
25.40	2.04	5.0	6063-T6	H175
25.40	2.04	5.0	6063-T6	H5674
25.40	3.26	5.0	6063-T6	H22
31.76	3.18	5.0	6063-T6	H101
38.10	2.04	5.0	6063-T6	H41
38.10	3.18	5.0	6063-T6	H2305
50.00	2.50	5.0	6063-T6	H4720
50.80	3.26	5.0	6063-T6	H256
78.00	2.00	6.0	6063-T6	H2268

Rectangular Tube

A mm	B mm	T mm	Length Metres	Alloy	Die Number
50.80	25.40	2.00	6.0	6063-T6	H3115
76.20	38.10	2.00	5.0 or 6.0	6063-T6 or 6261-T6 or 6061-T6	H3523
100.30	50.80	3.18	5.0	6063-T6 or 6261-T6 or 6061-T6	H454



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