

## ALLOY SPECIFICATIONS



**CAPRAL**  
ALUMINIUM



### Extruded Products Alloys

Alloy	Description	Applications
1350	1350 is a high purity non-heat treatable alloy with a minimum aluminium content of 99.5%. It has very good extrudability, excellent corrosion resistance but low mechanical properties.	<ul style="list-style-type: none"><li>• Principally used in electrical applications demanding the highest available electrical conductivity</li></ul>
2011	2011 is a heat treatable free machining alloy designed to be used by the repetition machining industry. It is generally restricted to round rod and bar and its corrosion resistance is poor because of its high copper content.	<ul style="list-style-type: none"><li>• Various machining components</li><li>• Screws, bolts, fittings and nuts</li><li>• Where good machinability and high strength are required</li></ul>
6005A	<p>6005A is the weakest of the three structural alloys (6005A, 6061 and 6082).</p> <p>As with all structural alloys it is difficult to produce thin walled or complicated extrusions in 6005A however, of the structural alloys, it has the best extrusion characteristics and mill surface finish.</p> <p>6005A is a heat treatable alloy with excellent corrosion resistance. It also has good weldability.</p>	<ul style="list-style-type: none"><li>• Ladders</li><li>• Transport applications</li><li>• Pylons</li><li>• Platforms</li><li>• Tubes and hollow sections</li><li>• Pipelines</li><li>• Applications that require greater strength than 6060 or 6063 alloy</li></ul>
6060	<p>6060 alloy is one of the most common alloys of the 6000 series. It is a heat treatable alloy with very good corrosion resistance and weldability.</p> <p>It is commonly used in window and door frames in residential and commercial applications.</p> <p>It is an ideal alloy for very complex cross sections and has a very good anodising response.</p>	<ul style="list-style-type: none"><li>• Architectural applications including door and window frames</li><li>• Electrical components and conduits</li><li>• Tube for irrigation systems</li><li>• Curtain Walls</li><li>• Lighting, furniture and picture frames</li><li>• Carpet edging</li><li>• Railings and fences</li><li>• Applications where surface finish is important</li></ul>
6061	6061 is a heat treatable alloy with mechanical properties slightly lower than 6082. It has good corrosion resistance but like 6082 its extruded surface finish is not as good as 6060.	<ul style="list-style-type: none"><li>• Road and rail transport</li><li>• Marine</li><li>• Scaffold tube</li><li>• Structural members</li></ul>



Alloy	Description	Applications
6082	<p>6082 has excellent corrosion resistance and the highest strength of the 6000 series structural alloys. As with all structural alloys the extruded surface finish is not as good as alloys such as 6060 or 6063.</p> <p>The higher strength of 6082 has seen it replace 6061 in many applications.</p> <p>6082 has good weldability and when DNV (Det Norske Veritas) certified it is commonly used in marine applications.</p>	<ul style="list-style-type: none"><li>• Highly stressed applications</li><li>• Bridges</li><li>• Cranes</li><li>• Marine applications</li><li>• Other transport application</li></ul>
6101	<p>6101 is a heat treatable alloy specifically designed for electrical conductors with an electrical conductivity slightly higher than 6060 or 6063.</p>	<ul style="list-style-type: none"><li>• Used for electrical bus bars where mechanical strength is also a requirement</li></ul>
6106	<p>6106 is a heat treatable alloy with mechanical properties between 6060 and 6061/6082. It has excellent corrosion resistance and its good extrudability enables more complex shapes to be extruded than can be produced with 6061 or 6082.</p>	<ul style="list-style-type: none"><li>• Ladders</li><li>• Tray bodies</li><li>• Architectural shapes where increased strength is required</li></ul>
6351	<p>6351 is a heat treatable alloy very similar to 6082 with similar characteristics including corrosion resistance and strength. Many European specifications now call up 6082 in lieu of 6351.</p>	<ul style="list-style-type: none"><li>• Road and rail transport</li><li>• Marine</li><li>• Structural members</li></ul>





### Rolled Products Alloys

Alloy	Description	Applications
3003	<p>3003 is a medium strength alloy with very good resistance to atmospheric corrosion.</p> <p>It also has very good weldability and good cold formability. It is widely used for chemical equipment including silos and also caravan sidings.</p>	<ul style="list-style-type: none"><li>• Propellor plate</li><li>• Cooking utensils</li><li>• Chemical equipment</li><li>• Sheet metal work</li><li>• Storage tanks</li><li>• Caravan sidings</li><li>• Office equipment</li><li>• Equipment for heating and cooling</li></ul>
5005	<p>5005 is a medium strength general purpose alloy with good weldability, good formability and good corrosion resistance.</p> <p>It is an extremely popular alloy and is the most commonly used grade of aluminium in sheet and plate form.</p> <p>It is suitable for decorative anodising and as a result is often used in architectural applications.</p>	<ul style="list-style-type: none"><li>• General sheet metal work</li><li>• Architectural applications – cladding</li><li>• Furniture</li><li>• Packaging</li><li>• Ducting in electrical cabinets</li></ul>
5052	<p>5052 is a medium strength alloy which has excellent corrosion resistance, particularly in marine atmospheres.</p> <p>One of the more popular alloys, 5052 has good weldability. It is significantly stronger than 5005 alloy and is widely used in the small boat market.</p>	<ul style="list-style-type: none"><li>• High strength sheet metal work</li><li>• Tread plate</li><li>• Small boats</li><li>• Architectural paneling</li><li>• Road signs</li><li>• Truck fuel tanks</li></ul>



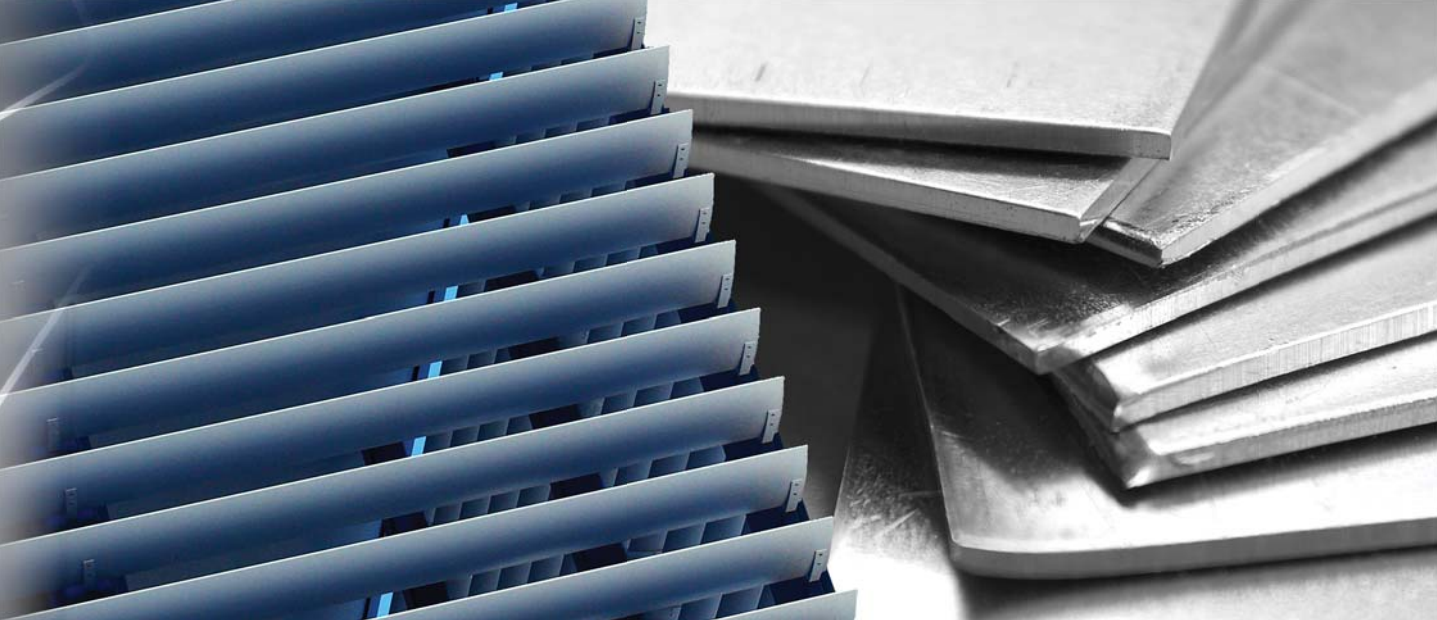
Alloy	Description	Applications
5083	<p>5083 is known for exceptional performance in extreme environments. 5083 is resistant to attack by seawater and general industrial environments. It has the highest strength of the non-heat treatable alloys but is not recommended for use in temperatures in excess of 65 degree.</p>	<ul style="list-style-type: none"><li>• Ship building</li><li>• Drilling rigs</li><li>• Rail cars</li><li>• Vehicle and tip truck bodies</li><li>• TV towers</li><li>• Mine skips and cages</li></ul>
5251	<p>5251 is a medium strength non-heat treatable alloy which is often used as an alternative to 5052 although because of its lower magnesium content its mechanical properties are slightly lower. It has excellent corrosion resistance and weldability.</p>	<ul style="list-style-type: none"><li>• Sheet metal work requiring higher strength than available with 5005</li><li>• Tread plate</li><li>• Small boats</li></ul>
5454	<p>5454 is a non-heat treatable alloy with a lower magnesium content than alloy 5083 and as such is suitable for elevated temperature applications.</p>	<ul style="list-style-type: none"><li>• Petroleum including bitumen road tankers</li><li>• Chemical and process industries</li></ul>



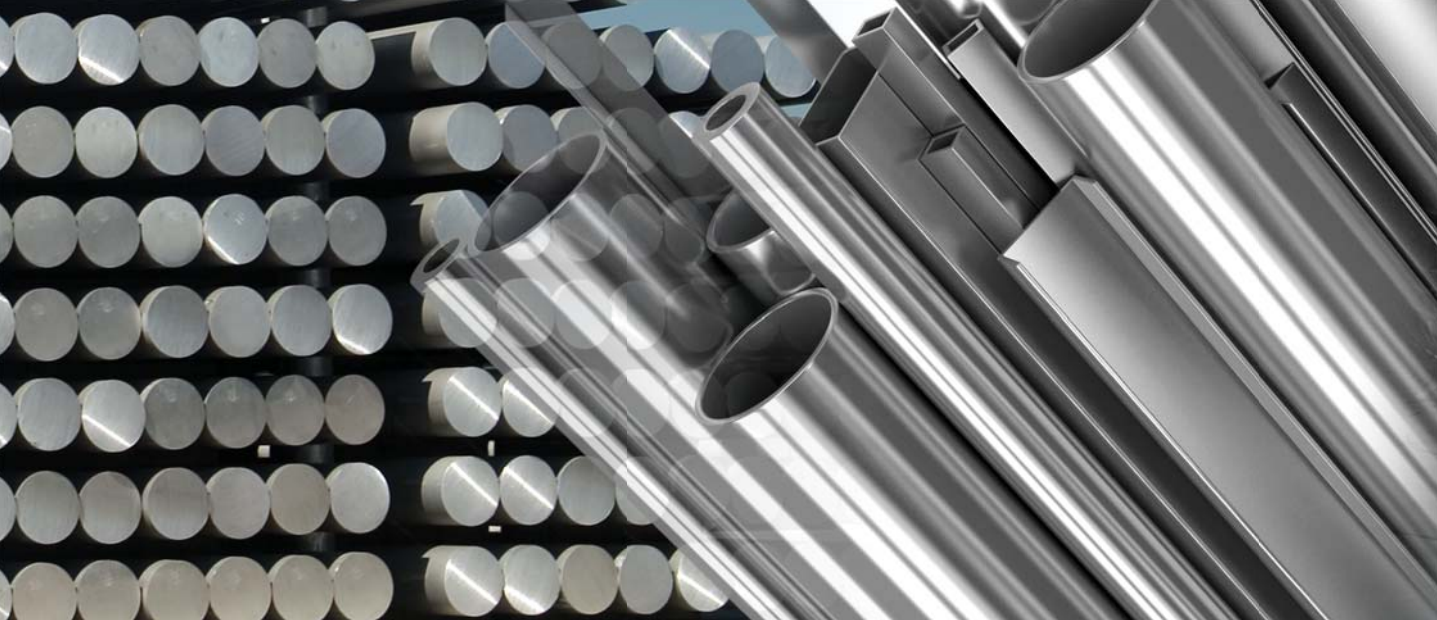
Chemical Composition Limits

Alloy	Mg	Mn	Fe	Si	Cu	Zn	Cr
1350	–	≤0.01	≤0.40	≤0.10	≤0.05	≤0.05	≤0.01
2011	–	–	≤0.70	≤0.40	5.00-6.00	≤0.30	–
3003	–	1.00-1.50	≤0.70	≤0.60	0.05-0.20	≤0.10	–
5005	0.50-1.10	≤0.20	≤0.70	≤0.30	≤0.20	≤0.25	≤0.10
5052	2.20-2.80	≤0.10	≤0.40	≤0.25	≤0.10	≤0.10	0.15-0.35
5083	4.00-4.90	0.40-1.00	≤0.40	≤0.40	≤0.10	≤0.25	0.05-0.25
5251	1.70-2.40	0.10-0.50	≤0.50	≤0.40	≤0.15	≤0.15	≤0.15
5454	2.40-3.00	0.50-1.00	≤0.40	≤0.25	≤0.10	≤0.25	0.05-0.20
6005A	0.40-0.70	≤0.50	≤0.35	0.50-0.90	≤0.30	≤0.20	≤0.30
6060	0.30-0.60	≤0.10	0.10-0.30	0.30-0.60	≤0.10	≤0.15	≤0.05
6061	0.80-1.20	≤0.15	≤0.70	0.40-0.80	0.15-0.40	≤0.25	0.04-0.35
6063	0.45-0.90	≤0.10	≤0.35	0.20-0.60	≤0.10	≤0.10	≤0.10
6082	0.60-1.20	0.40-1.00	≤0.50	0.70-1.30	≤0.10	≤0.20	≤0.25
6101	0.35-0.80	≤0.03	≤0.50	0.30-0.70	≤0.10	≤0.10	≤0.03
6106	0.40-0.80	0.05-0.20	≤0.35	0.30-0.60	≤0.25	≤0.15	≤0.20
6351	0.40-0.80	0.40-0.80	≤0.50	0.70-1.30	≤0.10	≤0.20	–





Mn+Cr	Ti	Bi	Pb	V	Other Elem	Total Other	Al
—	—	—	—	≤0.02V+Ti	≤0.03	≤0.10	≥99.50
—	—	0.20-0.60	0.20-0.60	—	≤0.05	≤0.15	Rem.
—	—	—	—	—	≤0.05	≤0.15	Rem.
—	—	—	—	—	≤0.05	≤0.15	Rem.
—	—	—	—	≤0.05	≤0.05	≤0.15	Rem.
—	≤0.15	—	—	—	≤0.05	≤0.15	Rem.
—	≤0.15	—	—	—	≤0.05	≤0.15	Rem.
—	≤0.20	—	—	—	≤0.05	≤0.15	Rem.
0.12-0.50	≤0.10	—	—	—	≤0.05	≤0.15	Rem.
—	≤0.10	—	—	—	≤0.05	≤0.15	Rem.
—	≤0.15	—	—	—	≤0.05	≤0.15	Rem.
—	≤0.10	—	—	—	≤0.05	≤0.15	Rem.
—	≤0.10	—	—	—	≤0.05	≤0.15	Rem.
—	-	≤0.06	—	—	≤0.03	≤0.10	Rem.
—	≤0.10	—	—	—	≤0.05	≤0.15	Rem.
—	≤0.20	—	—	—	≤0.05	≤0.15	Rem.



Mechanical Properties Limits: Extruded

Alloy	Temper	Thickness	Tensile	Yield	Elongation
1350	F	Not specified			
	H111	All	60	25	
2011	T6	≤25	350	220	8
6005A	T4	≤12	180	110	14
	T5	≤12	260	240	8
	T6	≤12	285	260	8
	T1	≤12	115	60	12
6060	T4	≤12	125	70	12
	T5	≤12	150	110	8
	T591	≤12	150-205	95-140	8
	T595	≤12	170-220	130-160	5
6061	T4	All	180	110	14
	T5	All	235	210	8
	T6	All	260	240	8
6063	T4	≤12	130	70	12
	T5	≤12	150	110	8
	T6	≤12	205	170	8
6082	T5	≤6	270	230	8
	T6	≤20	295	255	7
6101	T5	≤12	150	110	
	T6	≤12	200	170	10
6106	T4	≤12	130	70	12
	T5	≤ 12	150	110	8
	T6	≤12	235	210	8
6351	T4	≤150	185	115	16
	T5	≤150	260	240	8
	T6	≤150	295	255	8





Mechanical Properties Limits: Sheet and Plate

Alloy	Temper	Thickness	Tensile	Yield	Elongation
3003	H16	1.6 - 4.0	165 - 205	145	4
5005	H34	1.2 - 6.3	135 - 180	105	5
5052	O	1.3 - 3.0	170 - 215	65	19
	H114	1.3 - 3.0	170 - 240	65	10
	H32	1.3 - 3.0	215 - 265	160	7
5083	H116	3.0 - 30.0	305	215	10
5251	H34	1.3 - 3.0	230 - 275	180	6
5454	H34	6.0 - 12.0	270 - 325	200	8



Characteristics Comparison For Extrusion Alloy/Temper

Extruded		Machining				Forming				Gas &
Alloy	Temper	D	C	B	A	D	C	B	A	D
1350	H111									
2011	T6									
6005A	T4									
	T5									
6060	T5									
	T591									
	T595									
6061	T4									
	T5									
	T6									
6063	T5									
6082	T5									
	T6									
6101	T5									
	T6									
6106	T4									
	T5									
	T6									
6351	T4									
	T5									
	T6									

Characteristics Comparison For Rolled Alloy/Temper

Sheet & Plate		Machining				Forming				
Alloy	Temper	D	C	B	A	D	C	B	A	D
3003	H16									
5005	H34									
5052	O									
	H114									
	H32									
5083	H116									
5251	H34									
5454	H112									

A = Excellent; B = Good; C = Fair; D = Poor; NR = Not Recommended







## Manufacturing and Value Add Facilities

### NSW/ACT

2115 Castlereagh Road,  
Penrith NSW 2750  
Ph: 02 4761 2500

### VIC/TAS

151 Barry Road,  
Campbellfield VIC 3061  
Ph 1300 133 975

### QLD

71 Ashburn Road,  
Bundamba QLD 4304  
Ph: 07 3816 7000

### SA/NT

Stockwell & Crennis Mines  
Roads, Angaston SA 5353  
Ph: 08 8564 2230

### WA

45-55 Baile Road,  
Canning Vale WA 6155  
Ph: 08 9456 6666

## Manufacturing Plant Capabilities

Capral is Australia's largest manufacturer of aluminium extrusions and has an extensive network of added value facilities designed to meet the needs of our customers. These facilities not only provide aluminium extrusions but provide our customers with a more streamlined means to a final product and are supported by experienced trained staff. Basic value add facilities are also available through our network of regional and metropolitan Aluminium Centres.

### New South Wales

- Cut back saw
- Slotting
- Routing
- Small cut pieces
- Drilling
- 3 Axis CNC Plate router
- Customer specific packaging

### Queensland

- Precision cutting
- Compound cutting
- Mitre cutting
- Sheet/Plate cutting
- Punching
- Slotting
- Routing
- Drilling
- 4 Axis CNC
- 3 Axis CNC Plate router
- Customer specific packaging

### South Australia

- Precision cutting
- Mitre cutting
- Punching
- Slotting
- Weather pile installation
- Adhesive tape applied to critical extrusions to protect surface from scratching
- Customer specific packaging

### Victoria

- 7 Axis Robotic Machining Centre for product fabrication up to 17m
- Precision cutting
- Mitre cutting
- Sheet/Plate cutting
- Sheet/Plate bending
- Punching
- Slotting
- Drilling
- Knurling
- De-burring
- Cold drawing
- 3 Axis CNC Plate router
- 3 and 4 Axis CNC
- Customer specific packaging

### Western Australia

- Precision cutting
- Mitre cutting
- Punching
- Slotting
- Drilling
- Sheet/Plate cutting
- Sheet/Plate bending
- 3 Axis CNC Plate router
- Customer specific packaging