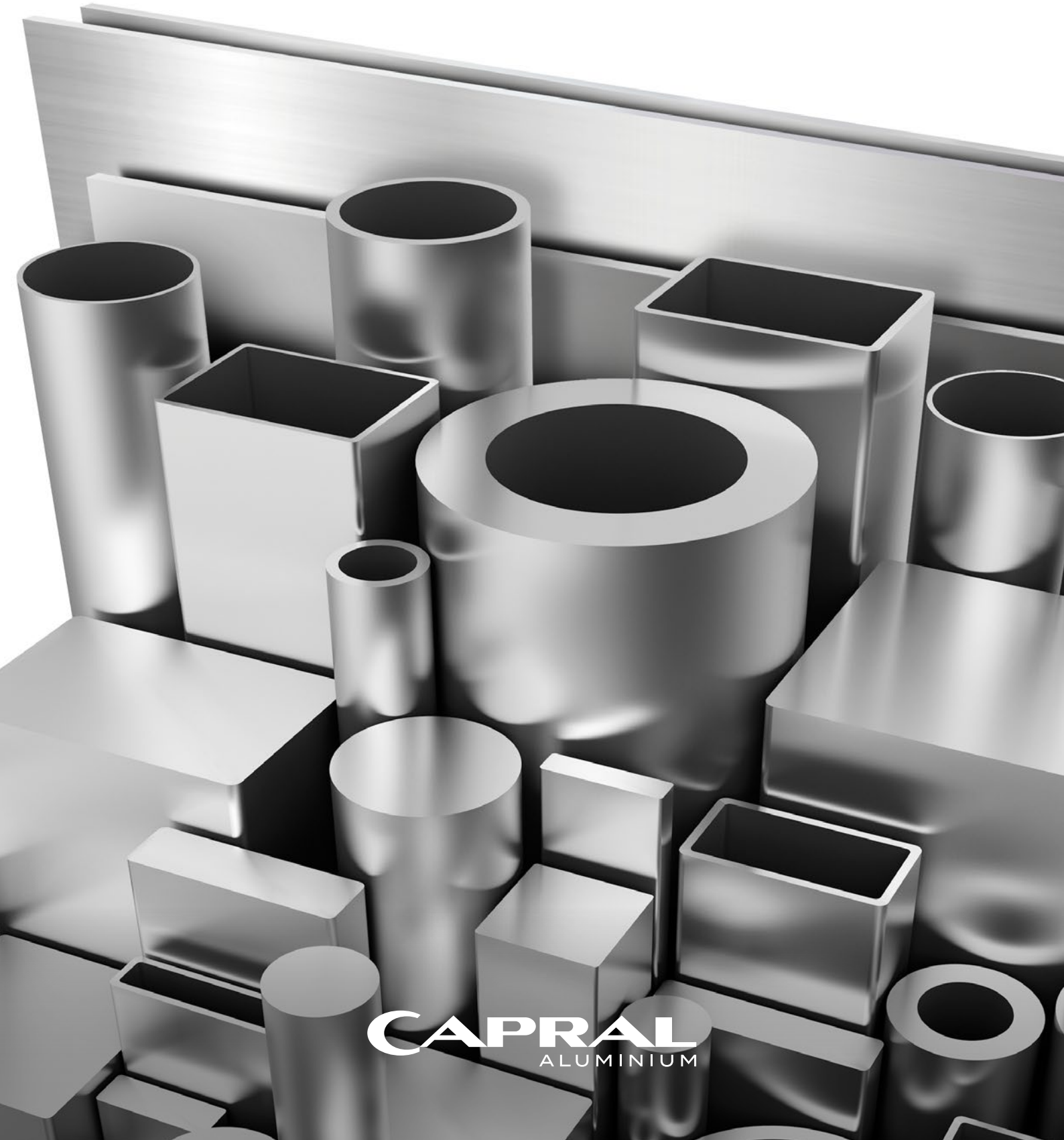
ALLOYS

SPECIFICATIONS AND APPLICATIONS

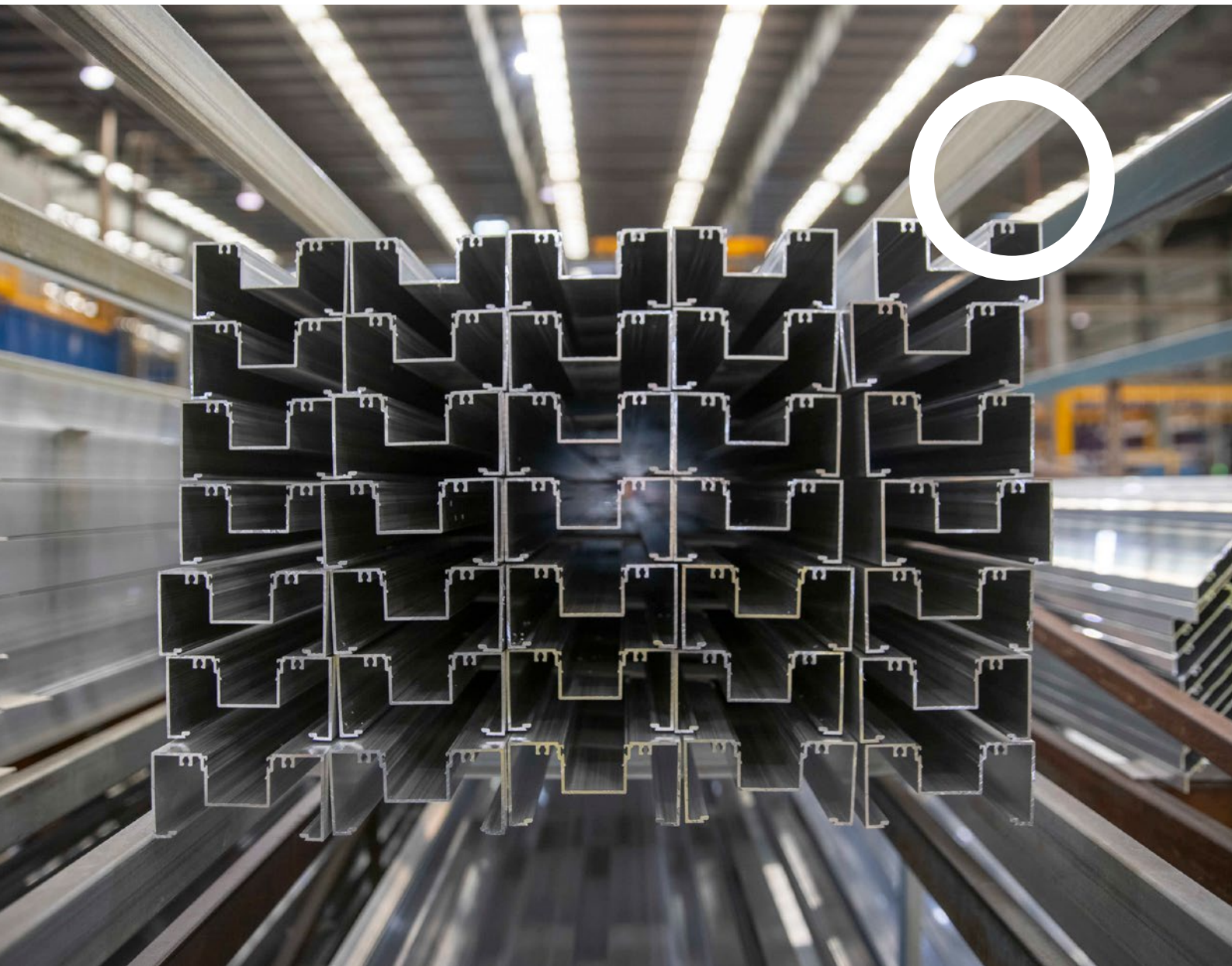


CAPRAL
ALUMINIUM

ALLOY SPECIFICATIONS – EXTRUDED PRODUCTS

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 and excellent corrosion resistance but low mechanical properties.	• Principally used in electrical applications demanding the highest available electrical conductivity
2011	2011 is a heat-treatable free machining alloy designed to be used by the repetition machining industry. It is generally restricted to round rods and bars, and its corrosion resistance is poor because of its high copper content.	• Various machining components • Screws, bolts, fittings and nuts • Where good machinability and high strength are required
6060/ 6063	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. It is commonly used in window and door frames in residential and commercial applications. It is an ideal alloy for very complex cross-sections and has a very good anodising response.	• Architectural applications including door and window frames • Electrical components and conduits • Curtain Walls • Lighting, furniture and picture frames • Carpet edging • Railings and fences • Applications where surface finish is important
6101	6101 is a heat-treatable alloy specifically designed for electrical conductors with an electrical conductivity slightly higher than 6060 or 6063.	• Used for electrical bus bars where mechanical strength is also a requirement
6106	6106 is a heat-treatable alloy with mechanical properties between 6060 and 6005. It has excellent corrosion resistance, and its good extrudability enables more complex shapes to be extruded than can be produced with 6061 or 6082.	• Ladders • Tray bodies • Architectural shapes where increased strength is required
6005A	As with all structural alloys, it is difficult to produce thin-walled or complicated extrusions in 6005A. However, it has the best extrusion characteristics and mill surface finish of the structural alloys. 6005A is a heat-treatable alloy with excellent corrosion resistance. It also has good weldability.	• Ladders • Transport applications • Pylons • Platforms • Tubes and hollow sections • Pipelines • Applications that require greater strength than 6060 or 6063 alloy
6061	6061 is a heat-treatable alloy with mechanical properties equivalent to 6005A. It has good corrosion resistance, but like 6082, its extruded surface finish is not as good as 6060. It is a quench sensitive alloy and therefore generally used for symetrical shapes.	• Road, rail and marine transport • Scaffold tube • Structural members

ALLOY	DESCRIPTION	APPLICATIONS
6351	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.	• Road, rail and marine transport • Structural members
6082	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. The higher strength of 6082 has seen it replace 6061 in many applications. 6082 has good weldability, and when DNV (Det Norske Veritas) certified, it is commonly used in marine applications.	• Highly stressed applications • Bridges • Cranes • Marine applications • Other transport application



ALLOY SPECIFICATIONS – ROLLED PRODUCTS

ALLOY	DESCRIPTION	APPLICATIONS
3003	3003 is a medium strength alloy with very good resistance to atmospheric corrosion. It also has very good weldability and good cold formability. It is widely used for chemical equipment including silos and also caravan sidings.	• Propellor plate • Cooking utensils • Chemical equipment • Sheet metal work • Storage tanks • Caravan sidings • Office equipment • Equipment for heating and cooling
5005	5005 is a medium strength general purpose alloy with good weldability, good formability and good corrosion resistance. It is an extremely popular alloy and is the most commonly used grade of aluminium in sheet and plate form. It is suitable for decorative anodising and as a result is often used in architectural applications.	• General sheet metal work • Architectural applications – cladding • Furniture • Packaging • Ducting in electrical cabinets
5052	5052 is a medium strength alloy which has excellent corrosion resistance, particularly in marine atmospheres. 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.	• High strength sheet metal work • Tread plate • Small boats • Architectural paneling • Road signs • Truck fuel tanks
5083	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.	• Ship building • Drilling rigs • Rail cars • Vehicle and tip truck bodies • TV towers • Mine skips and cages
5251	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.	• Sheet metal work requiring higher strength than available with 5005 • Tread plate • Small boats
5454	5454 is a non-heat treatable alloy with a lower magnesium content than alloy 5083 and as such is suitable for elevated temperature applications.	• Petroleum including bitumen road tankers • Chemical and process industries

CHEMICAL COMPOSITION LIMITS – EXTRUDED AND ROLLED PRODUCTS

ALLOY	MG	MN	FE	SI	CU	ZN	CR	MN+CR	TI	BI	PB	V	OTHER ELEM	TOTAL OTHER	AL
							(WEIGHT %)								
1350*	–	≤0.01	≤0.40	≤0.10	≤0.05	≤0.05	≤0.01	–	–	–	–	≤0.02 V+Ti	≤0.03	≤0.10	≥99.50
2011	–	–	≤0.70	≤0.40	5.00-6.00	≤0.30	–	–	–	0.20-0.60	0.20-0.60	–	≤0.05	≤0.15	Rem.
3003	–	1.00 -1.50	≤0.70	≤0.60	0.05-0.20	≤0.10	–	–	–	–	–	–	≤0.05	≤0.15	Rem.
5005	0.50-1.10	≤0.20	≤0.70	≤0.30	≤0.20	≤0.25	≤0.10	–	–	–	–	–	≤0.05	≤0.15	Rem.
5052	2.20-2.80	≤0.10	≤0.40	≤0.25	≤0.10	≤0.10	0.15-0.35	–	–	–	–	≤0.05	≤0.05	≤0.15	Rem.
5083	4.00-4.90	0.40 -1.00	≤0.40	≤0.40	≤0.10	≤0.25	0.05-0.25	–	≤0.15	–	–	–	≤0.05	≤0.15	Rem.
5251	1.70-2.40	0.10-0.50	≤0.50	≤0.40	≤0.15	≤0.15	≤0.15	–	≤0.15	–	–	–	≤0.05	≤0.15	Rem.
5454	2.40-3.00	0.50-1.00	≤0.40	≤0.25	≤0.10	≤0.25	0.05-0.20	–	≤0.20	–	–	–	≤0.05	≤0.15	Rem.
6005A	0.40-0.70	≤0.50	≤0.35	0.50-0.90	≤0.30	≤0.20	≤0.30	0.12-0.50	≤0.10	–	–	–	≤0.05	≤0.15	Rem.
6060	0.30-0.60	≤0.10	0.10-0.30	0.30-0.60	≤0.10	≤0.15	≤0.05	–	≤0.10	–	–	–	≤0.05	≤0.15	Rem.
6061	0.80-1.20	≤0.15	≤0.70	0.40-0.80	0.15-0.40	≤0.25	0.04-0.35	–	≤0.15	–	–	–	≤0.05	≤0.15	Rem.
6063	0.45-0.90	≤0.10	≤0.35	0.20-0.60	≤0.10	≤0.10	≤0.10	–	≤0.10	–	–	–	≤0.05	≤0.15	Rem.
6082	0.60-1.20	0.40-1.00	≤0.50	0.70-1.30	≤0.10	≤0.20	≤0.25	–	≤0.10	–	–	–	≤0.05	≤0.15	Rem.
6101	0.35-0.80	≤0.03	≤0.50	0.30-0.70	≤0.10	≤0.10	≤0.03	–	-	≤0.06	–	–	≤0.03	≤0.10	Rem.
6106	0.40-0.80	0.05-0.20	≤0.35	0.30-0.60	≤0.25	≤0.15	≤0.20	–	≤0.10	–	–	–	≤0.05	≤0.15	Rem.
6351	0.40-0.80	0.40-0.80	≤0.50	0.70-1.30	≤0.10	≤0.20	–	–	≤0.20	–	–	–	≤0.05	≤0.15	Rem.

Chemical Composition properties are derived from Australian Standard 1866.

* 1350 only available from Smithfield, NSW

MECHANICAL PROPERTY LIMITS

ALLOY	TEMPER#	WALL THICKNESS (mm)	TENSILE STRENGTH MPa	YIELD STRESS MPa	ELONGATION %
EXTRUDED					
1350*	F	Not specified	60	25	
2011†	T6	≤25	350	220	8
6060/6063	T1 T4 T5 T6 T581 T582 T591 T595	≤12 ≤12 ≤12 ≤12 All ≤12 ≤12 ≤12	115 125 150 205 140-190 150-205 150-205 170-220	60 70 110 170 80-140 min 110 95-140 130-160	12 12 8 8 12 8 8 5
6106	T4 T5 T6	≤12 ≤ 12 ≤12	130 150 235	70 110 210	12 8 8
6101	T5 T6	≤12 ≤12	150 200	110 170	10
6005A	T4 T5 T6	≤12 ≤12 ≤12	180 260 270	110 240 225	14 8 8
6061	T4 T5 T6	All All All	180 235 260	110 210 240	14 8 8
6351	T4 T5 T6	≤150 ≤150 ≤150	185 260 295	115 240 255	16 8 8
6082	T5 T6	≤6 ≤20	270 295	230 255	8 7
SHEET AND PLATE					
3003	H16	1.6-4.0	165-205	145	4
5005	H34	1.2-6.3	135-180	105	5
5052	O H114 H32	1.3-3.0 1.3-3.0 1.3-3.0	170-215 170-240 215-265	65 65 160	19 10 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

Mechanical properties are derived from Australian Standard 1866.

* 1350 available from Smithfield, NSW only. † Bought in alloy.

CHARACTERISTICS COMPARISON

EXTRUSION ALLOY/TEMPER

EXTRUDED		MACHINING				FORMING				GAS & INERT GAS				WELDING				CORROSION RESISTANCE				ANODISING			
ALLOY	TEMPER	D	C	B	A	D	C	B	A	D	C	B	A					D	C	B	A	D	C	B	A
1350	H111																								
2011	T6																						NR		
6005A	T4																								
	T5																								
6060	T5																								
	T591																								
	T595																								
6061	T4																								
	T5																								
	T6																								
6063	T5																								
6082	T5																								
	T6																								
6101	T5																						NR		
	T6																						NR		
6106	T4																								
	T5																								
	T6																								
6351	T4																								
	T5																								
	T6																								

ROLLED ALLOY/TEMPER

SHEET & PLATE		MACHINING				FORMING				GAS WELDING*				CORROSION RESISTANCE				ANODISING			
ALLOY	TEMPER	D	C	B	A	D	C	B	A	D	C	B	A	D	C	B	A	D	C	B	A
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

*Under inert gas welding conditions Alloy/Tempers exhibit A = Excellent rating

CAPRAL EXTRUSION CAPABILITY GUIDE

FACILITIES	LOG DIAMETER	ALLOYS USED			MEASUREMENTS			CIRCUMSCRIBING CIRCLE DIAMETER (MM)		TEMPER
		SOFT / SEMI STRUCTURAL	HARD / STRUCTURAL	EXTRUDED FINISHES	CUSTOMER LENGTH RANGE SAW (M)	PAINTLINE LTM	SECTION WEIGHT (KG/M)	SOLID	HOLLOW	
Canning Vale 7" Press	178mm	6060 6063 6106		Architectural, Structural	3.0 – 6.8	3.0 – 6.8	0.1 – 2.5	160	120	T1 T4 T5 T6 T52
Angaston 8" Press	203mm	6060 6063 6106	6005A	Architectural, Structural	3.0 – 7.2 Shorter lengths – refer to mill	3.7 - 6.5	0.1 – 5.0	230	210	T1 T4 T5 T595 T6
Campbellfield 9/12" Press	228/ 304mm	6060 6063 6101 6106	6005A 6061 6082 6351	Architectural, Structural	3.0 –17 Longer and shorter lengths – refer to mill	–	2.0 – 20.0	420w x 60h	380w x 90h	T1 T4 T5 T6 T591 T595
Penrith 8" Press	203mm	6060 6063 6106		Architectural, Structural	3.0 – 9.0 Shorter lengths – refer to mill	–	0.2 – 3.0	190w x 40h	160w x 40h	T1 T4 T5 T6 T591
Bremer - B1 8" Press	203mm	6060 6106		Architectural, Structural	3.0 – 7.2 Shorter lengths – refer to mill	3.5 – 7.0	0.1 – 5.5	200	180	T1 T4 T5 T6 T591 T595
Bremer - B3 7" Press	178mm	6060 6063 6106		Architectural, Structural	3.0 – 7.2 Shorter lengths – refer to mill	3.5 – 7.0	0.1 – 5.5	165	130	T1 T4 T5 T6 T591 T595
Bremer - B4 8" Press	203mm	6060 6063 6106	6005A	Architectural, Structural	3.0 – 7.2 Shorter lengths – refer to mill	3.5 – 7.0	0.1 – 5.5	250	180	T1 T4 T5 T6 T591 T595
Smithfield 9" Press	228mm	6060 6063 6106 1350	6005A 6351 6082	Architectural, Structural	3.0 – 12.0 Longer and shorter lengths – refer to mill	–	0.5 – 8.0	330	300	F T1 T4 T5 T6 T581 T582 T591 T595

NOTES:

1. Cut lengths < 3m P.O.A. contact plant. **2.** Shape dimensions outside those shown contact plant. **3.** Section weight outside those shown contact plant.

MANUFACTURING PLANT & VALUE ADD CAPABILITIES

CAPABILITIES

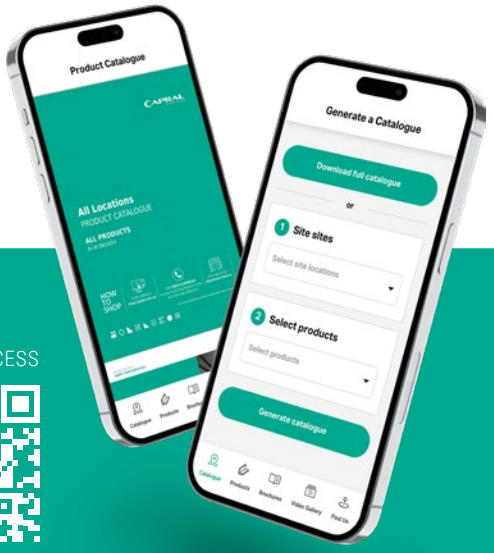
Capral is Australia's largest manufacturer of aluminium extrusions and has an extensive network of added value facilities designed to meet the needs of our customers. These facilities not only provide aluminium extrusions but provide our customers with a more streamlined means to a final product and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

AUSTRALIAN MADE extrusion

CAPABILITIES	NSW	VIC	QLD	SA	WA
7 Axis Robotic Machining Centre for product fabrication up to 17m		■			
4 Axis CNC Machining Centre for products up to 170mm (H), 400mm (W), 14000mm(L)		■	■		
3 Axis CNC Machining Centre for products up to 180mm (H), 200mm (W), 7000mm (L)		■			
3 Axis CNC Plate Router for products up to 200mm (H), 2500mm (W), 12,500mm (L), max. cut depth of 25mm		■	■		■
Cut Back Saw	■	■	■	■	■
Small Cut Pieces	■	■			
Precision Cutting: Cut back to less than standard extrusion tolerances	■	■	■	■	■
Mitre Cutting		■	■	■	■
Compound Cutting			■		
Sheet/Plate Cutting		■	■		■
Sheet/Plate Bending		■			■
Punching		■	■	■	■
Slotting	■	■	■	■	■
Routing	■		■		
Drilling	■	■	■		■
Knurling		■			
Product Edge De-Burring		■			
Weather Pile Installation to mechanically install weather pile to extrusions				■	
Adhesive tape applied to critical extrusions to protect surface from scratching				■	
Customer-specific Packaging	■	■	■	■	■
Thermal Break (Polyamide)		■	■	■	
Thermal Break (Polyurethane)		■			

CONTACT DETAILS

SALES OFFICE	LOCATION	CONTACT NUMBER
NSW/ACT Sales	2115 Castlereagh Road, Penrith NSW 2750	1300 361 877
NSW/ACT Sales	26a Long Street, Smithfield NSW 2164	1300 361 877
VIC/TAS Sales	151 Barry Road, Campbellfield VIC 3061	1300 133 975
QLD Sales	71 Ashburn Road, Bundamba QLD 4304	07 3816 7000
SA/NT Sales	Stockwell & Crennis Mines Roads, Angaston SA 5353	08 8564 2230
WA Sales	45-55 Baile Road, Canning Vale WA 6155	08 9456 6666



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