7xxx Plate

7xxx

7XXX series alloys contain zinc as the main alloying element, usually in combination with magnesium and copper. Alcoa's range of high strength 7XXX alloys are widely used in aerospace structures and are approved by the world's leading airframe builders. For engineering applications these alloys are generally used in the T651 or T652 temper in order to provide maximum strength.

Strength:

These materials offer the highest levels of room temperature strength attainable in rolled aluminium alloys.

Stress relieved:

7XXX plate alloys are stress relieved by controlled stretching, designated T651 or cold compression designated T652. See table overleaf for details.

Machinability:

7XXX are easy to machine, especially in the T651 temper.

Polishability:

7XXX alloys can be polished to a high finish.

Corrosion resistance:

7XXX alloys are susceptible to exfoliation corrosion and stress corrosion cracking in the T651 temper. This can be improved by over ageing. 7XXX alloys often require protection against general corrosion and a wide range of commercial protective coating systems are available.

Welding:

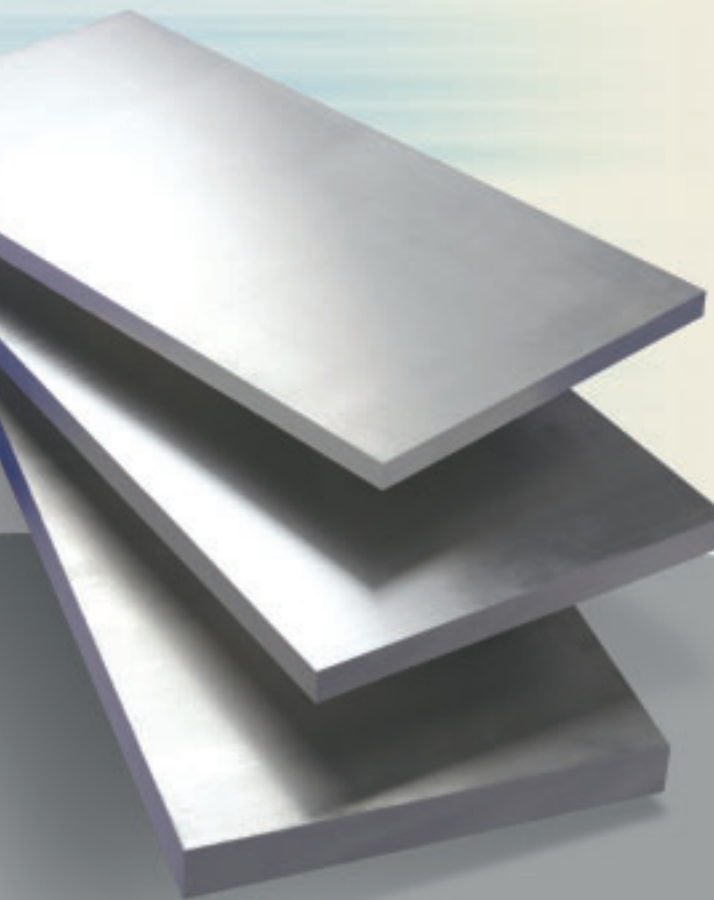
7XXX alloys with more than 0.2% copper are not considered weldable by fusion welding. 7XXX alloys with less than 0.2% can be welded.

7XXX Applications:

7XXX is superseding steels in structural load bearing applications where the benefits of lightness, specific stiffness and high strength-to-weight ratio can be exploited.

- Machined components
- Load bearing structures, e.g. cargo containers

7XXX alloys, with excellent machinability and wear resistance are widely used for mould applications.



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7xxx series alloys technical data

STANDARD DIMENSIONAL AVAILABILITY

Alloy	Temper	Thickness (mm)		Width (mm)	Length (mm)
		Min	Max	Max	Max
7020	T651	6.35 >20 >111	20 111 203	3150 2978 2964*	20000
7022	T651	6.35 >13 >71 >186	13 71 186 201	3150 2978 2942* 1101*	20000
	T652	>201	305	1220**	3000
7075	T651	6.35 >12 >69 >180	12 69 180 194	3150 2978 2958* 1101*	20000
	T652	>194	305	1220**	3000

Alcoa Europe only supplies plate that exceeds the requirements issued by the major specifying authorities e.g. European Standards.

1. These dimensions show only the range of capabilities and cannot necessarily be provided in every combination of these sizes. Other sizes may be available, subject to enquiry.
2. The above alloys are only available in Mill Finish
3. * denotes maximum width decreases with increasing thickness
4. ** denotes wider widths may be available on request

TYPICAL PHYSICAL PROPERTIES

Alloy	Temper	Relative Density	Co-efficient or Linear Expansion (20°C-100°C) 10^{-6}/°C	Thermal Conductivity (0-100°C) W/m°C	Electrical Resistivity (20°C) micro-Ohm cm	Melting Range °C	Young's Modulus (GPa)
7020	T651	2.78	23.5	134	4.6	485-630	72
7075	T651	2.80	23.5	130	5.2	485-630	72

7020 T651

7020 offers a combination of good ductility and levels of strength which are higher than 6XXX series alloys.

7020, with less than 0.2% copper is weldable. Heat affected zones will recover part of the fully heat treated strength through naturally ageing.

Good quality welded joints can only be achieved by strict attention to welding technique and good joint design. Post-weld corrosion protection maybe required. We advise our customers to consult Alcoa before designing welded structures in 7XXX.

7075 T651

7075 in the T651 temper is one of the strongest of the general engineering alloys. The T7351 temper has greater resistance to surface corrosion and stress corrosion cracking than the T651 condition, but at the expense of strength, which is approximately 12% lower.

7075-T651 is commonly used for the production of highly stressed machined components.