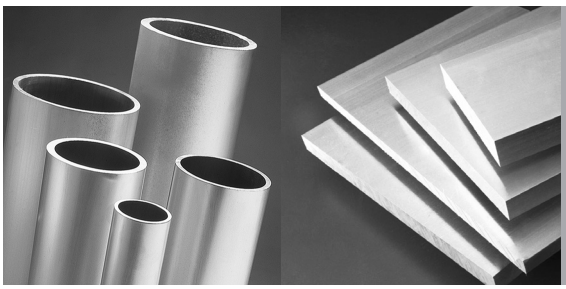
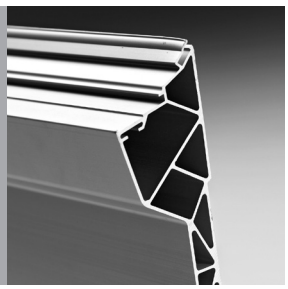
Hydro



We are aluminum



Alloy 6005A

Alloy 6005A is a versatile alloy that can be used for various structural and architectural applications in the commercial transportation, automotive, industrial, electrical, machinery and equipment industries. Alloy 6005A can be used to produce standard and custom shape extrusions that are solid (open) or hollow in design.

As a medium strength aluminum alloy, 6005A-T61 temper has mechanical property levels similar to 6061-T6, 6005-T5, and 6105-T5. Alloy 6005A has improved toughness characteristics compared to 6005 and 6105 and the chemical composition of 6005A provides improved extrudability compared to 6061 alloy. 6005A should not be confused with 6005 due to a difference in manganese and chromium content. 6005A-T1, -T5, -T61 tempers are included in ASTM B 221, ASTM B 241, and ASTM B 429 specifications.

6005A provides good corrosion resistance and finishing characteristics for anodizing or paint (caution: direct contact with dissimilar metals can cause galvanic corrosion). Alloy 6005A can be welded or brazed using various commercial methods. Consult the Safety Data Sheet (SDS) for proper safety and handling precautions when using 6005A alloy.

Typical applications for 6005A alloy:

- Truck, trailer, automotive, bus, and rail components
- Building and construction applications
- Platforms, ladders, structures
- Marine applications

6005A Temper Designations and Definitions

Standard Tempers	Standard Temper Definitions*
T1	Cooled from an elevated temperature shaping process and naturally aged. (See Note A.)
T5	Cooled from an elevated temperature shaping process & artificially aged. (See Note A.)
T61	Solution heat-treated and artificially aged. (See Note B.)

* For further details of definitions, see Aluminum Association's Aluminum Standards and Data manual and Tempers for Aluminum and Aluminum Alloy Products.

Note A: Applies to products that 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 recognized in mechanical properties.

Note B: Applies to products that are not cold worked after solution heat treatment, or in which the effect of cold work in flattening or straightening may not be recognized in mechanical properties.

Chemical Composition

Melting Temperature Range: 1110-1200 ºF Density: 0.098 lb./in.^{3}

Alloy	Si	Fe	Cu	Mn*	Mg	Cr*	Zn	Ti	Others	
									Each	Total
6005A	0.50-0.9	0.35	0.30	0.50	0.40-0.7	0.30	0.20	0.10	0.05	0.15

Chemical composition in weight percent maximum unless shown as a range or minimum.

Aluminum = Remainder

* 0.12 to 0.50 total Mn + Cr

Average Coefficient of Thermal Expansion (68º to 212ºF) = 13.1 x 10^{-6} (in./in.ºF)

Alloy 6005A

6005A Extruded Mechanical and Physical Property Limits[1]

Alloy	Standard Tempers	Wall Thickness[2] (min.)		Tensile Strength ksi (MPa)		Elongation[3] % (min.)	Typical Thermal Conductivity, @77°F, BTU-in./ft.²hr.°F (W/m-K@25ºC)	Typical Electrical Conductivity, @68ºF, % IACS
				Ultimate (min.)	Yield - 0.2% offset (min.)			
		inches	mm					
6005A	-T1	up thru 0.249	up thru 6.30	25.0 (170)	14.5 (100)	15	1220 (176)	47
	-T5	up thru 0.249	up thru 6.30	38.0 (260)	31.0 (215)	7	1340 (193)	50
		.250 - 0.999	>6.30 - 25.00	38.0 (260)	31.0 (215)	9	1340 (193)	50
	-T61	up thru 0.249	up thru 6.30	38.0 (260)	35.0 (240)	8	1310 (188)	49
		0.250 - 1.000	>6.30 - 25.00	38.0 (260)	35.0 (240)	10	1310 (188)	49
6061	-T6	up thru .249	up thru 6.30	38.0 (260)	35.0 (240)	8	1160 (167)	43
		.250 & above	>6.30	38.0 (260)	35.0 (240)	10		
6005	-T5	up thru .124	up thru 3.20	38.0 (260)	35.0 (240)	8	1310 (188)	50
		.125 - 1.000	>3.20 - 25.00	38.0 (260)	35.0 (240)	10		

1. Minimum property levels unless shown as a range or indicated as a maximum (max.)
2. The thickness of the cross section from which the tension test specimen is taken determines the applicable mechanical properties.
3. For materials of such dimensions that a standard test specimen cannot be taken, or for shapes thinner than .062", the test for elongation is not required. Elongation percent is minimum in 2" or 4 times specimen diameter.

* Mechanical property values for 6005A -T1, -T5, -T61 tempers per Aluminum Association. Values for 6005A-T6 temper per EN755-2 specification, elongation represents 'A' value.

Comparative Characteristics of Related Alloys/Tempers[1]

Alloy	Temper	Formability	Machinability	General Corrosion Resistance	Weldability	Brazeability	Anodizing Response
		D C B A	D C B A	D C B A	D C B A	D C B A	D C B A
6005A	-T1	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
	-T5	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
	-T61	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
6061	-T6	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
6005	-T5			■■■■	■■■■	■■■■	■■■■
6063	-T6	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■

1. Rating: A = Excellent B = Good C = Fair D = Poor

Extrusion North America
6250 North River Rd, Suite 5000
Rosemont, IL 60018
Phone: 877-710-7272
E-mail: NorthAmerica.Sales@hydro.com
www.hydroextrusions.com

Hydro

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