

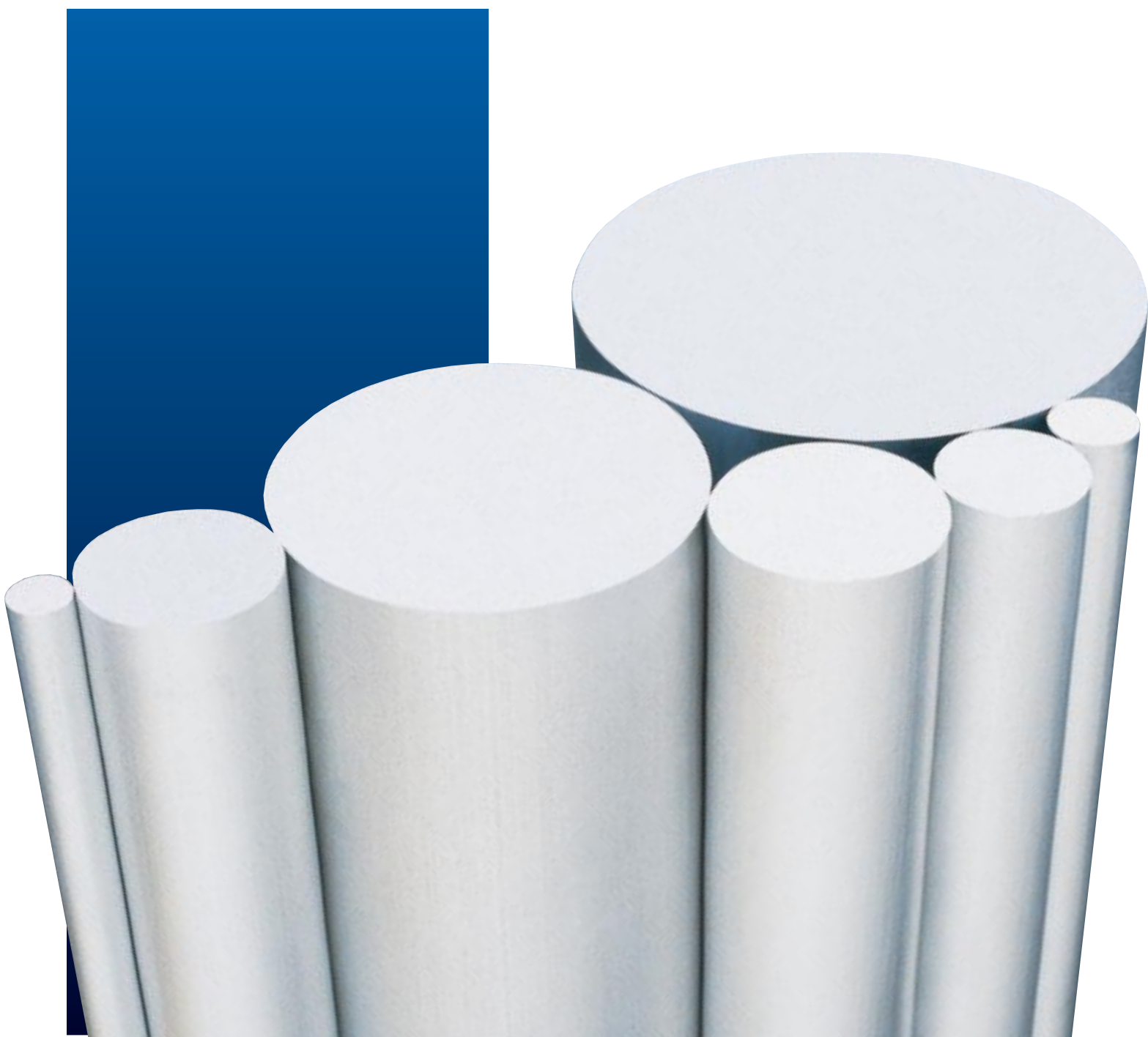


ALCOA

Alcoa Engineered Products

ACC-U-ROD[®]

Tightest Tolerance Extruded Aluminum Rod



MACHINE MATCHED ACC-U-ROD[®]

Tightest Tolerance Extruded Aluminum Rod

- MINIMUM MECHANICAL PROPERTIES AND STRAIGHTNESS EQUAL TO COLD FINISH
- NEAR NET STARTING TOLERANCES
- OUTSTANDING DIMENSIONAL CONSISTENCY; STRESS-RELIEVED FOR MACHINING

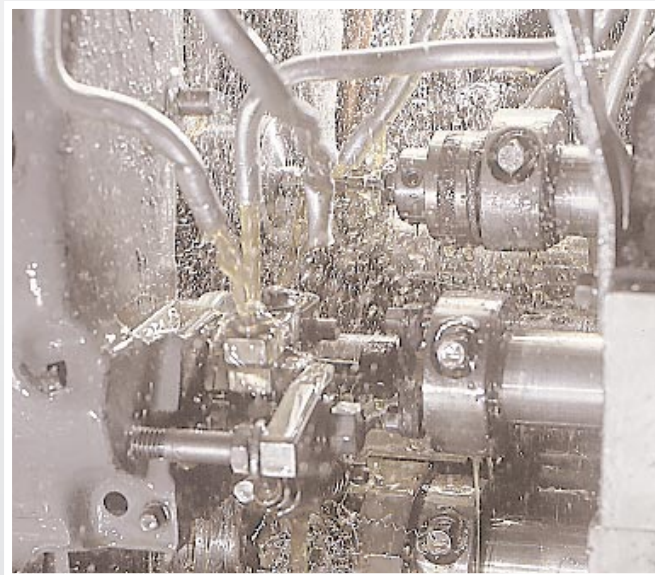
ACC-U-ROD[®], the tightest tolerance extruded aluminum rod, is recommended for uses that require outstanding dimensional consistency and high-performance properties. The ACC-U-ROD product's dimensional tolerances are 1/3 to 1/4 that of commercial extrusions and very close to cold finish. For automatic screw machining applications, it offers the closest extruded tolerances in diameter and straightness.

Alcoa Engineered Products offers ACC-U-ROD product in 6061 and 6262 alloys*, both with the minimum mechanical properties of cold finish:

- 42,000 psi (ultimate)
- 35,000 psi (yield)
- 10% elongation.

Its straightness (.100" maximum tolerance in 12 feet) is comparable to cold finish. Since our ACC-U-ROD product costs less, customers get tight tolerances and optimum performance at attractive cost savings over cold finish rod!

*To further enhance the machinability of 6061 and 6262 alloys, Alcoa has developed a unique chemical analysis that conforms to industry standards.



DEVELOPED FOR AUTOMATIC MACHINING CENTERS

ACC-U-ROD, the tightest tolerance extruded aluminum rod, has near net starting tolerances to facilitate accurate collet loading and precisely finished parts with less scrap. Fast machining, free-cutting ACC-U-ROD permits higher machine speeds with less vibration and noise.

**CERTIFIED TO ASTM B 221
(Alloys/Tempers 6061-T6,
-T6511 and 6262-T6, -T6511)**

PRODUCT CHARACTERISTICS—ALLOYS/TEMPERS^{1,2,4}

	Alloy/Temp	Formability		Machinability				General Corrosion Resistance				Weldability (Arc with Inert Gas)				Brazeability				Anodizing Response			
		Low	High	D	C	B	A	D	C	B	A	D	C	B	A	D	C	B	A	D	C	B	A
ACC-U-ROD ^{®3} Product	6061-T6, -T6511 6262-T6, -T6511	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
COLD FINISH	6061-T6, -T651 6262-T6, -T651	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
COMMERCIAL EXTRUSION	6061-T6, -T6511 6262-T6, -T6511	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

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

² For further details of explanation of ratings, see Aluminum Association's *Aluminum Standards & Data Book*.

³ For improved machinability and higher minimum properties than standard -T6 or -T6511. Minimum properties of 42 ksi (tensile), 35 ksi yield and 10.0% elongation apply to ACC-U-ROD product, .500" diameter and above. Diameters less than .500" have a 38.0 ksi tensile minimum.

⁴ Consult the Material Safety Data Sheet (MSDS) for proper safety and handling cautions of alloys.

COMPARISON OF PROPERTIES

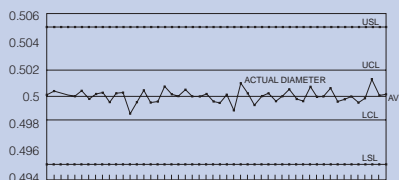
	Alloy and Temper	Diameter	Minimum Tension		Elongation	Typical Hardness	Typical Shear
			Strength, psi		Percent Min. in 4 D [†]	Brinell Number 500 kg load 10mm ball	Ultimate Shearing Strength psi
			Ultimate	Yield			
ACC-U-ROD [®] Product	6061-T6,-T6511	.500" & greater	42,000	35,000	10	95	30,000
	6262-T6,-T6511		42,000	35,000	10	95	30,000
COMMERCIAL EXTRUSION	6061-T6,-T6511	.250" & greater	38,000	35,000	10	95	30,000
	6262-T6,-T6511		38,000	35,000	10	95	30,000
COLD FINISH	6061-T6, -T651	up thru 8.000"	42,000	35,000	10	95	30,000
	6262-T6, -T651		42,000	35,000	10	95	30,000

† D = specimen diameter.

	Alloy and Temper	Electrical Conductivity % IACS at 68° F	Electrical Resistivity (ohm - cir mil/ft.) at 68° F	Typical Thermal Conductivity At 75°F
ACC-U-ROD [®] Product	6061-T6,-T6511	43	24	1160
	6262-T6,-T6511	44	24	1180
COMMERCIAL EXTRUSION	6061-T6,-T6511	43	24	1160
	6262-T6,-T6511	44	24	1180
COLD FINISH	6061-T6, -T651	43	24	1160
	6262-T6, -T651	44	24	1180

A precision-extruded product

Indirect extrusion technology allows Alcoa Engineered Products to carefully control dimensional tolerances in our ACC-U-ROD[®] products. As this graph indicates, we utilize Statistical Process Control to verify that ACC-U-ROD's tolerances fall within an extremely narrow size range.



COMPARISON OF TOLERANCES¹

Size	Extruded ACC-U-ROD [®] Product	"Close" Tolerance Extruded Rod	Standard Extrusion	Size	Extruded ACC-U-ROD [®] Product	"Close" Tolerance Extruded Rod	Standard Extrusion	Size	Extruded ACC-U-ROD [®] Product	"Close" Tolerance Extruded Rod	Standard Extrusion
.375	.0025	.005	.008	1.125	.004	.006	.012	2.000	.005	.008	.024
.438	.003	.005	.008	1.188	.004	.006	.012	2.062	.008	.008	.024
.500	.003	.005	.009	1.250	.004	.006	.012	2.125	.008	.008	.024
.562	.003	.005	.009	1.312	.004	.006	.012	2.188	.008	.008	.024
.625	.003	.005	.009	1.375	.004	.006	.012	2.250	.008	.008	.024
.688	.003	.005	.009	1.438	.004	.006	.012	2.312	.008	.008	.024
.750	.003	.005	.010	1.500	.004	.006	.014	2.375	.008	.008	.024
.812	.003	.005	.010	1.563	.005	.006	.014	2.500	.008	.008	.024
.875	.003	.005	.010	1.625	.005	.006	.014	2.563	.008	.008	.024
.938	.003	.005	.010	1.688	.005	.006	.014	2.625	.008	.008	.024
1.000	.003	.005	.012	1.750	.005	.006	.014	2.750	.008	.008	.024
1.062	.004	.006	.012	1.812	.005	.006	.014	3.000	.008	.008	.024
1.094	.004	.006	.012	1.875	.005	.006	.014				

(1) All tolerances shown are bi-lateral (±) in inches.

CHEMICAL ANALYSIS—6061 & 6262 ALLOYS

Alloy	Elements										Others Each	Others Total	Aluminum
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi			
6061	.40-.8	.7	.15-.40	.15	.8-1.2	.04-.35	.25	.15	—	—	.05	.15	Remainder
6262	.40-.8	.7	.15-.40	.15	.8-1.2	.04-.14	.25	.15	.40-.7	.40-.7	.05	.15	Remainder
	Density		Liquidus Temperature					Solidus Temperature					
6061	0.098 lb./in. ³		1206°F					1080°F					
6262	0.098 lb./in. ³		1204°F					1078°F					

Reference: ASM Metals Handbook®, Tenth Edition, Volume 2



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FAX: 800-252-4646





Alcoa Engineered Products

ACC-U-ROD®

Tightest Tolerance Extruded Aluminum Rod

Standard Sizes

DIAMETER (")	WT./FT.	SECTION
.375 (±.0025)	.129	507950*
.438 (±.003)	.178	507951*
.500 (±.003)	.231	507324
.562 (±.003)	.293	507771
.625 (±.003)	.361	507325
.688 (±.003)	.436	507953
.750 (±.003)	.520	507249
.812 (±.003)	.610	507954
.875 (±.003)	.707	507326
.938 (±.003)	.813	507955
1.000 (±.003)	.923	507248
1.062 (±.004)	1.042	507956
1.094 (±.004)	1.105	516730
1.125 (±.004)	1.169	507327
1.188 (±.004)	1.303	507957
1.250 (±.004)	1.443	507328
1.312 (±.004)	1.590	507958
1.375 (±.004)	1.746	507329
1.438 (±.004)	1.910	507959
1.500 (±.004)	2.078	507247

DIAMETER (")	WT./FT.	SECTION
1.563 (±.005)	2.257	507960
1.625 (±.005)	2.439	507330
1.688 (±.005)	2.632	512599
1.750 (±.005)	2.828	507331
1.756 (±.005)	2.848	517062
1.812 (±.005)	3.036	507961
1.875 (±.005)	3.247	507250
2.000 (±.005)	3.695	507332
2.062 (±.008)	3.927	507962
2.125 (±.008)	4.171	509225
2.188 (±.008)	4.419	515101
2.250 (±.008)	4.676	507333
2.312 (±.008)	4.937	510163
2.375 (±.008)	5.210	507334
2.500 (±.008)	5.773	507335
2.563 (±.008)	6.191	507963
2.625 (±.008)	6.365	512508
2.750 (±.008)	6.985	507336
2.875 (±.008)	7.635	533600
3.000 (±.008)	8.313	507337
3.375 (±.008)	10.521	519083

*Does not meet ACC-U-ROD® mechanical properties.

Available in 6061-T6, -T6511 and 6262-T6, -T6511 alloys; standard 12' lengths.