

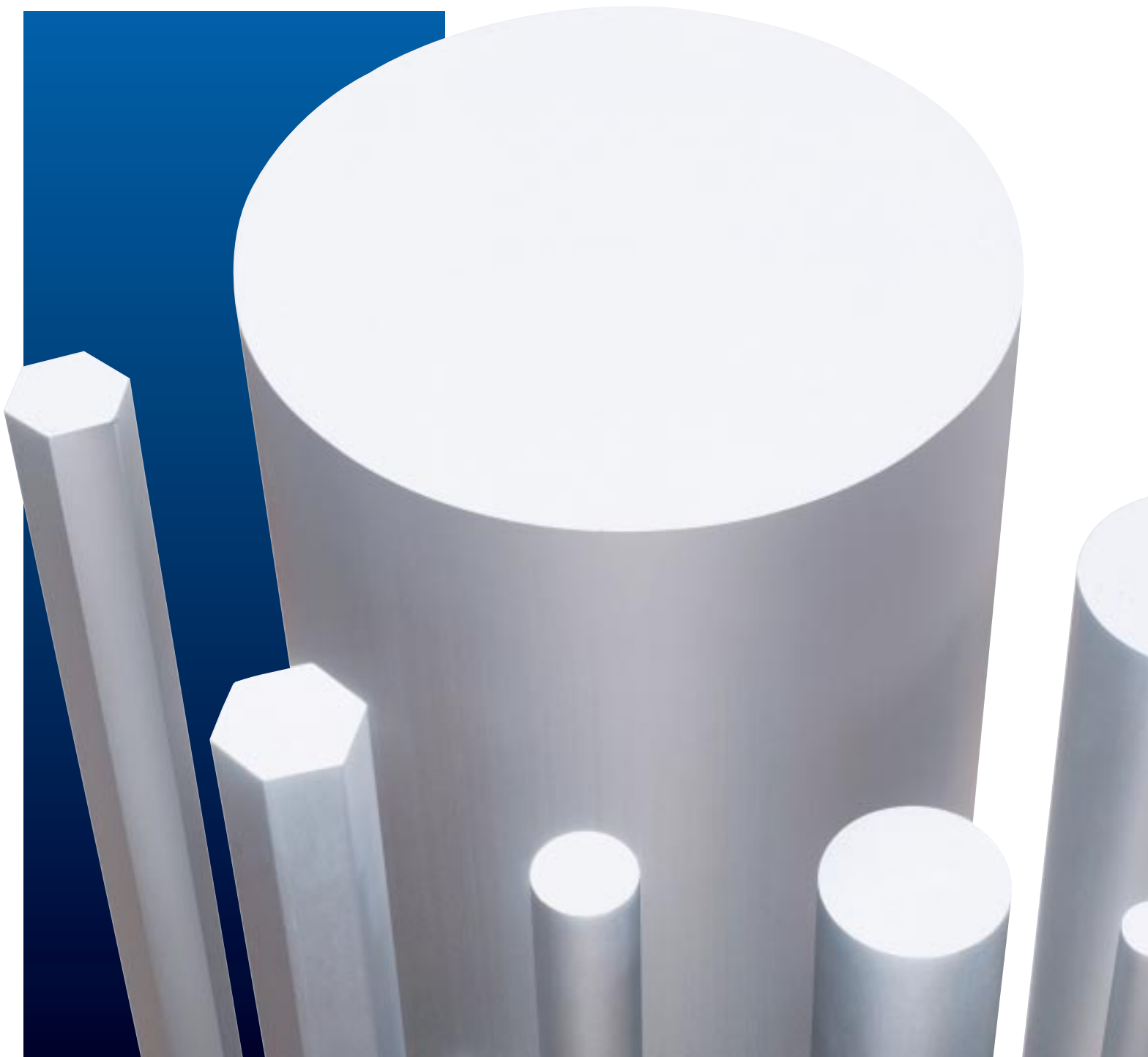


ALCOA

Alcoa Engineered Products

**ECON-O-ROD™ /
ECON-O-HEX™**

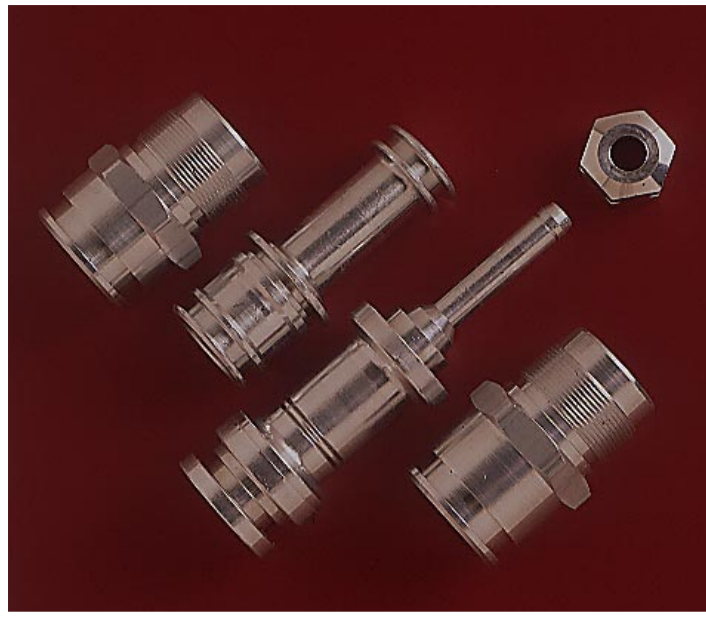
Close Tolerance Extruded Aluminum Rod and Bar



ECON-O-ROD™/ECON-O-HEX™

Close Tolerance Extruded Aluminum Rod and Bar

- COST-SAVING ALTERNATIVES TO COLD FINISH ROD
- DIMENSIONAL TOLERANCES TO 1/2 OR CLOSER OF STANDARD EXTRUDED TOLERANCES
- GOOD MACHINABILITY WITH CONSISTENT MACHINING PERFORMANCE



Screw machine parts made from ECON-O-ROD™/ECON-O-HEX™ extruded aluminum rod and bar

Alcoa Engineered Products' ECON-O-ROD™ and ECON-O-HEX™ are close tolerance extruded aluminum rod and bar that are marketed for machining and other close tolerance applications. The consistent dimensions of these products satisfy the tolerances required by flexible collets on automatic screw machines. Economically priced ECON-O-ROD and ECON-O-HEX products provide an attractive cost advantage over higher priced cold finish rod.

ECON-O-ROD and ECON-O-HEX extruded aluminum rod and bar are produced in 6061 and 6262 alloys, stress-relieved in temper T6511. Both alloys offer good mechanical, chemical and electrochemical finishing characteristics, excellent corrosion resistance and all-around stability. For improved machinability, 6262 has a higher machining rating than 6061.

These versatile products are available in a wide range of standard round sizes from .312" to 6.500" diameters and hex sizes from .438" to 3.250" thicknesses, all in standard 12' or special lengths. Custom and metric sizes are also available.

Applications include:

- automotive parts
- hardware
- couplings and connectors
- fasteners
- fittings
- valve parts
- hinge pins

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

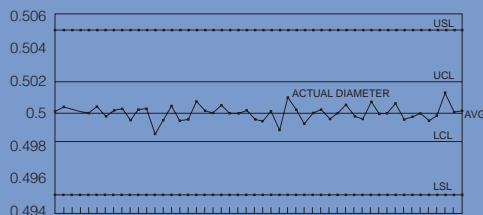
CONSISTENT HIGH QUALITY

Alcoa utilizes Statistical Process Control (SPC) to continuously monitor and control key process and product characteristics.

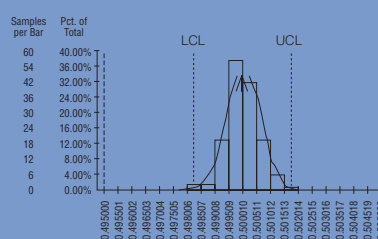
A Capability Index (CpK) is calculated for thickness, measuring adherence to target dimensions and specifications. The result is uniform high quality, from lot to lot and order to order.

EXAMPLE: ECON-O-ROD™, .500" ± .005"

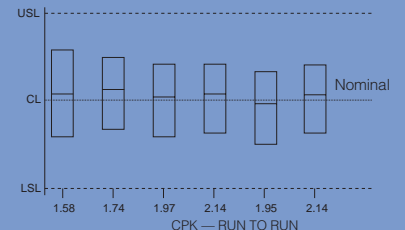
DIAMETER CONTROL CHART



HISTOGRAM



CAPABILITY



UCL, LCL = Statistical Control Limits, Upper and Lower
USL, LSL = Product Specification Limits, Upper and Lower

PRODUCT CHARACTERISTICS—ECON-O-ROD™/ECON-O-HEX™ ALLOYS/TEMPERS¹

Alloy	Temper	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
6061	-T6, -T6511	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████
	*-T6H, *-T6511H	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████
6262	-T6, -T6511	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████
	*-T6H, *-T6511H	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████	████

¹ Rating: A=Excellent B=Good C=Fair D=Poor For further details of explanation of ratings, see Aluminum Association's [Aluminum Standards & Data Book](#).
*Available by special inquiry

MECHANICAL PROPERTY LIMITS—6061 & 6262 ALLOYS

Temper	Thickness ² (inches)	Tensile Strength (ksi)		Elongation ³ Percent Min. in 2 inch or 4D ⁴	Typical Brinell Hardness (500 kg load/ 10 mm ball)	Typical Ultimate Shearing Strength ksi
		Ultimate Min.	Yield Min.			
		Standard Tempers¹				
T6, T6511	Up thru 0.249 0.250 and over	38.0	35.0	8	95	30
		38.0	35.0	10	95	30
Special Tempers						
T6H, T6511H	0.500 and over	42.0	38.0	10	95	30

¹ The mechanical property limits for standard tempers are listed in the "standards section" of the Aluminum Association's [Aluminum Standards & Data Book](#).

² The thickness of the cross section from which the tension test specimen is taken determine the applicable mechanical properties.

³ For material of such dimensions that a standard test specimen cannot be taken, or for shapes thinner than 0.062", the test for elongation is not required.

⁴ D = Specimen diameter.

⁵ For stress-relieved tempers, the characteristics and properties other than those specified may differ somewhat from the corresponding characteristics and properties of material in the basic temper.

6061 & 6262 TEMPER DESIGNATIONS AND DEFINITIONS

Standard Tempers*	
T6, T6511	Solution heat treated and artificially aged. 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.
Special Tempers	
T6H, T6511H	Alcoa's "H" temper is offered for special applications requiring improved machinability and higher minimum mechanical properties than standard -T6 or -T6511. Minimum properties of 42 ksi tensile, 38 ksi yield and 10.0% elongation are guaranteed. "H" temper is available for rod, bar, and certain solid shapes with a principle thickness of .500" or greater.

*For further details of definitions of standard tempers, see Aluminum Association's [Aluminum Standards & Data Book](#).



Alcoa Engineered Products

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Cressona, PA 17929-0129

Phone: 800-233-3165
FAX: 800-252-4646





Alcoa Engineered Products

ECON-O-ROD™ Close Tolerance Extruded Aluminum Rod

Standard Sizes

DIAMETER (")	WT./FT.	SECTION NO.
.312 (±.005)	.089	501163
.344 (±.005)	.109	501165
.375 (±.005)	.132	500333
.406 (±.005)	.155	503295
.412 (±.005)	.156	503291
.433 (±.005)	.173	518740
.438 (±.005)	.178	500348
.468 (±.005)	.202	501173
.500 (±.005)	.230	500303
.515 (±.005)	.245	501142
.531 (±.005)	.260	501164
.551 (±.005)	.280	508821
.562 (±.005)	.292	463211
.563 (±.005)	.292	500224
.594 (±.005)	.326	503292
.615 (±.005)	.353	520927
.625 (±.005)	.368	500316
.630 (±.005)	.366	518743
.640 (±.005)	.379	526891
.656 (±.005)	.397	500339
.687 (±.005)	.436	526270
.688 (±.005)	.436	500331
.718 (±.005)	.476	503285
.750 (±.005)	.520	500306
.766 (±.005)	.542	501177
.775 (±.005)	.555	509436
.781 (±.006)	.563	500437
.812 (±.005)	.609	500315
.817 (±.005)	.616	508588
.837 (±.005)	.647	509437
.844 (±.005)	.657	501149
.859 (±.005)	.682	500436
.866 (±.005)	.693	518745
.875 (±.005)	.707	500320
.880 (±.005)	.715	510178
.885 (±.005)	.723	510682
.891 (±.005)	.734	503300
.906 (±.005)	.759	501166
.938 (±.005)	.813	500336
.962 (±.005)	.855	509446
.968 (±.005)	.866	501282

DIAMETER (")	WT./FT.	SECTION NO.
.985 (±.006)	.896	500432
1.000 (±.005)	.923	500305
1.016 (±.006)	.954	505583
1.026 (±.006)	.973	509447
1.029 (±.006)	.978	509211
1.031 (±.006)	.982	501150
1.062 (±.006)	1.042	500340
1.088 (±.006)	1.094	509438
1.094 (±.006)	1.128	501167
1.125 (±.006)	1.169	500314
1.151 (±.006)	1.223	509439
1.156 (±.006)	1.235	501156
1.188 (±.006)	1.303	500307
1.219 (±.006)	1.372	503273
1.235 (±.006)	1.409	508115
1.250 (±.006)	1.443	500310
1.260 (±.006)	1.466	510179
1.266 (±.005)	1.480	517697
1.276 (±.006)	1.504	509440
1.281 (±.006)	1.516	501159
1.312 (±.006)	1.590	500311
1.344 (±.006)	1.669	503280
1.375 (±.006)	1.746	500324
1.401 (±.006)	1.813	509441
1.438 (±.006)	1.910	500312
1.468 (±.006)	1.991	517015
1.500 (±.006)	2.078	500302
1.531 (±.006)	2.165	501161
1.563 (±.006)	2.257	500420
1.593 (±.006)	2.344	500822
1.625 (±.006)	2.439	500313
1.688 (±.006)	2.631	500344
1.750 (±.006)	2.828	500309
1.776 (±.006)	2.913	509442
1.812 (±.006)	3.033	500442
1.875 (±.006)	3.247	500317
1.938 (±.006)	3.494	501157
1.969 (±.007)	3.581	519537
2.000 (±.008)	3.695	500319
2.031 (±.008)	3.888	501138
2.062 (±.008)	3.927	503286

DIAMETER (")	WT./FT.	SECTION NO.
2.125 (±.008)	4.171	500325
2.188 (±.008)	4.422	502371
2.250 (±.008)	4.676	500343
2.312 (±.008)	4.936	500443
2.375 (±.008)	5.210	500444
2.380 (±.008)	5.232	509443
2.438 (±.008)	5.490	503288
2.485 (±.005)	5.704	526741
2.500 (±.008)	5.773	500183
2.510 (±.008)	5.938	501148
2.563 (±.008)	6.020	500445
2.625 (±.008)	6.365	501169
2.750 (±.008)	6.985	500318
2.875 (±.008)	7.635	500323
2.957 (±.008)	8.076	509444
3.000 (±.008)	8.313	500327
3.062 (±.012)	8.662	500337
3.119 (±.012)	8.985	509445
3.125 (±.012)	9.019	500322
3.250 (±.012)	9.756	500171
3.281 (±.012)	9.943	501174
3.286 (±.012)	9.974	508719
3.375 (±.012)	10.520	511631
3.500 (±.012)	11.314	500328
3.562 (±.014)	11.599	519790
3.625 (±.012)	12.138	516990
3.750 (±.012)	12.989	500338
4.000 (±.017)	14.778	500330
4.125 (±.034)	16.037	501726
4.250 (±.017)	16.683	500428
4.312 (±.017)	17.173	511670
4.500 (±.017)	18.703	501160
4.750 (±.017)	20.839	503297
5.000 (±.017)	23.091	503296
5.250 (±.022)	25.458	515662
5.500 (±.022)	27.939	515663
5.750 (±.022)	30.537	515664
6.000 (±.022)	33.250	515665
6.250 (±.022)	36.079	516101
6.500 (±.022)	39.023	516102

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



Alcoa Engineered Products

Standard Sizes

ECON-O-HEX™ Close Tolerance Extruded Aluminum Bar

DIAMETER (")	WT./FT.	SECTION NO.
.438 (±.005)	.195	500387
.500 (±.005)	.255	500380
.562 (±.005)	.320	500360
.590 (±.005)	.355	514709
.625 (±.005)	.397	500358
.688 (±.005)	.481	500355
.750 (±.005)	.573	500353
.813 (±.005)	.671	500354
.827 (±.005)	.696	500379
.866 (±.005)	.763	500375
.875 (±.005)	.780	500361
.938 (±.005)	.896	500239
.945 (±.006)	.909	501190
1.000 (±.006)	1.018	500352
1.057 (±.006)	1.138	508383
1.062 (±.006)	1.149	500362
1.064 (±.005)	1.152	507571
1.125 (±.006)	1.289	500356
1.188 (±.006)	1.438	500368
1.250 (±.006)	1.591	500371
1.312 (±.006)	1.755	500377
1.375 (±.006)	1.925	500359
1.438 (±.006)	2.106	500381
1.500 (±.007)	2.292	500364
1.625 (±.007)	2.688	500363
1.688 (±.007)	2.904	500370
1.750 (±.007)	3.116	500357
1.812 (±.007)	3.344	502752
1.875 (±.008)	3.584	500366
2.000 (±.008)	4.074	500369
2.250 (±.012)	5.156	501187
2.375 (±.012)	5.748	500367
2.438 (±.012)	6.053	500374
2.500 (±.012)	6.368	501188
2.625 (±.005)	7.018	521426
2.750 (±.012)	7.702	500376
2.875 (±.012)	8.418	500385
3.250 (±.012)	10.757	500382

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