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ALUMINASTIC EXTRUSIONS

Aluminastic Corporation has a patented process that enhances physical and mechanical properties over standard aluminum alloys. Through our process we improve strength, formability and finish. These improvements have allowed us to offer superior materials to the industry at very competitive prices.

Our company offers precision porthole extrusion profiles for cold drawing, hydro forming and fabrication. Please see our products page for a listing.

<http://www.aluminastic.com/ourproducts.htm>

Aluminastic Corporation considers itself a one-stop shop, offering value added machining and pre-fabrication options to better serve our customers.

ALUMINASTIC EXTRUSIONS

(AA CHEMISTRY DESIGNATION)

The chemistry listed below (for sample 2A) reflects the same for samples 1A and 4 thru 7 listed in the strength results on the following page. All samples were extruded from the same heat...meeting AA designation requirements. Sample 3 was the base chemistry of the melt prior to processing.

II. Chemical Analysis

	Sample 2A	Sample 3	6061 Control	6061 Spec
Silicon	0.62	0.73	0.63	0.40 - 0.80
Iron	0.11	0.14	0.11	0.7 max
Copper	0.22	0.21	0.22	0.15 - 0.40
Manganese	0.03	0.02	<0.01	0.15 max
Magnesium	0.92	0.85	0.81	0.8 - 1.2
Chromium	0.06	0.06	0.08	0.04 - 0.35
Zinc	0.03	0.03	0.05	0.25 max
Titanium	0.01	0.01	0.01	0.15 max

ALUMINASTIC EXTRUSIONS (STRENGTH)

The following tensile results were obtained from as-extruded tubing, after T-6 precipitate heat-treating. Notice the increase in strength; Aluminastic's yield strength is equal to/or greater than the control sample's UTS with improved elongation.

(Note: Samples 1A and 2A were extruded into rectangular tubing 1.50" x .75" OD with a .064 wall. Samples #4 thru #7 and the control sample were extruded into (.598 OD x .049 wall) circular tubing for testing and fabrication.)

TEST RESULTS:

I. Mechanical Properties

Sample	YS (ksi) 0.2% Offset	UTS (ksi)	%EL 2-inch GL
1A	43.8	48.2	9.9
2A	39.2	42.6	10.0
*3	N/A	N/A	N/A
4	43.8	46.4	10.9
5	43.0	45.9	10.3
6	41.8	44.6	11.3
7	43.6	46.4	11.4
6061 Control	38.8	41.8	10.7

YS = Yield Strength; UTS = Ultimate Tensile Strength; EL = Elongation; GL = Gage Length

Note: * denotes that extrusion press froze up during trial

NOTE: The reduced strength on sample 2A was due to low billet temperature (760 F) trial during the extrusion.

ALUMINASTIC EXTRUSIONS

(Dimensional Control/As-Extruded)

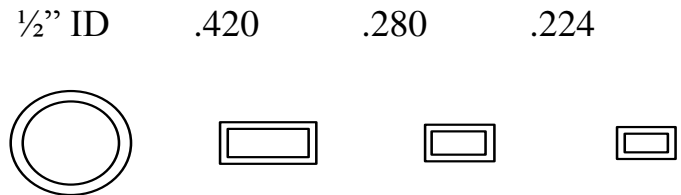
Samples 1A and 2A were extruded (reference the below Mill Spec rectangular hollow tubing...maintaining very tight tolerances +/- .003) from a 1450 Ton 6" direct extrusion press. Industry standard tolerances for this type and size of press are normally (+/- .008).

ITEM	Mill Spec		Aluminastic		Insp Method
	Requirement		Actual		
	Low	High	Low	High	
OD Wide	1.496	1.504	1.5	1.501	MIC
OD Narrow	0.746	0.754	0.752	0.753	MIC
ID Wide	1.368	1.376	1.371	1.372	CAL
ID Narrow	0.618	0.626	0.623	0.624	CAL/PIN
Ref Wall	0	0.064	0.063	0.066	WAL MIC
OD radius	0.016	0.031	0.016	0.019	RAM
ID radius	0	0.0312	0.02	0.022	RAM
Lenth ft.	0	12'	0	12'	TAPE
ID Surface	0	63	11	41	POCKET SURF

ALUMINASTIC EXTRUSIONS

(Dimensional Control/Cold Drawn)

The (3) rectangular dimensions were achieved after cold-drawing the annealed (as-extruded) 6061 Aluminastic tubing (.598 OD x .049 wall) on the left, reducing the cross-section dramatically with each draw...producing precise dimensions and an excellent finish. A large test group with (2) companies, proved that Aluminastic material allows for multiple severe cross-section reductions without failure.



Inside Dimension	Std Tol +/-	Outside Dimension	Wall Thickness (nominal)
.420x.170	0.002	.500x.250	0.04
.280x.140	0.0015	.360x.220	0.04
.224x.112	0.001	.304x.192	0.04

ALUMINASTIC EXTRUSIONS

(Dimensional Control/Cold Drawn)-cont.



Another example of cold-drawn Aluminastic material is the above tubing that was drawn from 1.9" OD x 0.145" wall round tube into 1.346" +/-0.004" OD by 1.093" +0.000"/-0.002" ID with the following results.

Input tubing (1.9" OD x 0.145" wall) physicals;

	Industry Mins	T-4 as-extruded Aluminastic material
Yield	16,000 psi	18,655 psi
UTS	26,000 psi	31,780 psi
Elongation	16%	24.50%

Finished drawn dimensions and physicals (T-8);

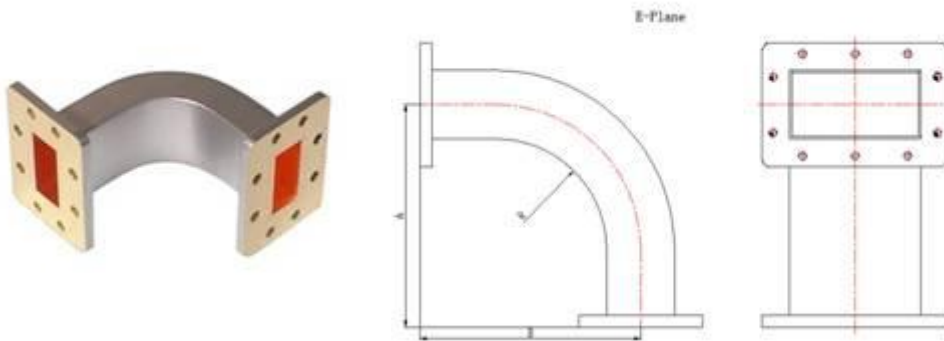
Aluminastic Material						
	OD	WALL	ID	TENSILE	YLD	%E
STK	1.8965	0.1447	1.6071	31780	18655	24.5
FINISH SIZE	1.348	0.1285	1.091	42341	41708	9

ALUMINASTIC EXTRUSIONS

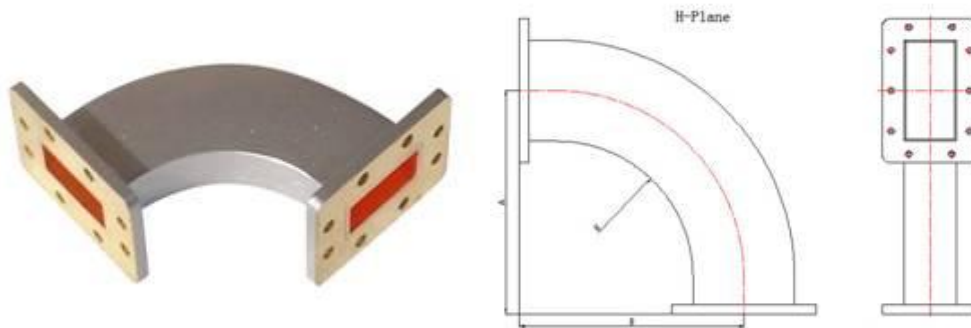
(Formability-Bends)

Aluminastic Corporation offers E and H plane bends.

90° E-Plane



90° H-Plane



ALUMINASTIC EXTRUSIONS (FINISH)

Notice the excellent ID Surface (14/21 RMS) readings taken from the .420x.170 drawn sample. Note: 63 RMS is the highest/worst surface reading that is acceptable.

ITEM	Mill Spec		Results
	Requirement		
	Low	High	
OD Wide	0.447	0.503	0.501
OD Narrow	0.247	0.253	0.251
ID Wide	0.418	0.422	0.422
ID Narrow	0.168	0.172	0.169
Ref Wall	0	0.040	0.040/0.041
OD radius	0.016	0.031	0.016/0.021
ID radius	0	.0156 max	0.007/0.012
Length ft.	0	12'	
ID Surface	0	63 RMS max	14/21 RMS

6061 Aluminastic tubing (.598 OD x .049) alongside the .420x.170 drawn sample.



ALUMINASTIC EXTRUSIONS

(SELLING POINTS)

- **meets AA chemistry designations**
- **increased strength**
- **improved formability- extreme cross-section reduction and bending capabilities**
- **superior finish**
- **dimensional control (tight tolerances down to +/-0.001)**
- **flexible on order sizes, typically accepting smaller minimum orders than other suppliers**
- **reduced lead-times**

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