



Overview

When it comes to delivering quality products that will last, Bonnell Aluminum™ offers a variety of anodizing treatments that deliver value, including our own revolutionary Acid Etch Anodizing treatment. As a leader in aluminum and soft alloy extrusion, Bonnell has the experience to make sure your products have the right coating to address the specific needs for your intended application.



Process & Benefits

Anodizing is an electrochemical process that accelerates and thickens the naturally occurring protective oxide. The resulting reacted finish is integrated with the underlying aluminum for total bonding and unmatched adhesion. The anodic coating is part of the metal, but has a porous structure that allows secondary infusions, such as coloring.

Its benefits include:

- Increased durability
- Lower maintenance costs
- Aesthetically pleasing appearance
- No chipping
- No peeling
- No flaking
- No fingerprints
- No chalking

In addition to these benefits, the process is environmentally safe and proven.

Acid Etch Anodizing-The Bonnell Difference

Our Acid Etch Anodizing treatment offers a superior uniform matte finish that meets or exceeds all AAMA 611 specifications. The resulting product is free of the streaks caused by other processes.

Also, the lower gloss reading reduces glare in bright sunlight. Other benefits include:

- Reduced etch time
- Reduced aluminum removal
- Effectively hides extrusion lines, scuffs and die lines

Available in both clear and electrolytic color, Bonnell has the current in-house capabilities to handle any size run with total run-to-run consistency.

ANODIZE CODE DESIGNATION CROSS-REFERENCE

FINISH CLASS	FINISH CODE	BONNELL FINISH DESIGNATION	ALUM. ASSN. DESIGNATION	ALCOA DESIGNATION	MIN. COATING THICKNESS (mil / μ m)	MEETS MIL-A-8625F*
PROTECTIVE AND DECORATIVE	040	B/Lite (Bright Dip)	AA-M11-C31-A21	200-R5	0.10 / 3	
	140	B/Lite Gold (Bright Dip Gold)	AA-M11-C31-A23	200-R5(gold)	0.10 / 3	
	050	B/Lux (Buff & Bright Dip)	AA-M11-M21-C31-A21	200-A2-R5	0.10 / 3	
	150	B/Lux Gold (Buff & Bright Dip Gold)	AA-M11-M21-C31-A23	200-A2-R5(gold)	0.10 / 3	
	060	Tal (Buff & No Etch Anodize)	AA-M21-C12-A21	n/a	0.15 / 4	
	062	Alumarine (Buff & Flash Anodize)	AA-M21-C20-A21	n/a	0.15 / 4	
	021	15-Minute Velo (Clear/Satin)	AA-M12-C22-A21	201-R1	0.15 / 4	
	121	15-Minute Velo Gold (Satin Gold)	AA-M12-C22-A23	201-R1(gold)	0.15 / 4	
	022	20-Minute Velo (Clear/Satin)	AA-M12-C22-A21	202-R1	0.20 / 5	
	122	20-Minute Velo Gold (Satin Gold)	AA-M12-C22-A23	202-R1(gold)	0.20 / 5	
ARCHITECTURAL CLASS II	023	30-Minute Velo (Clear/Satin)	AA-M12-C22-A31	204-R1	0.4 / 10	
	301	Light Bronze 2-Step	AA-M12-C22-A34	n/a	0.4 / 10	
	302	Medium Bronze 2-Step	AA-M12-C22-A34	n/a	0.4 / 10	
	303	Dark Bronze 2-Step	AA-M12-C22-A34	n/a	0.4 / 10	
	10736	Brushed Nickel (Satin)	AA-M35-C22-A34	n/a	0.4 / 10	
	10738	Brushed Nickel (Bright)	AA-M35-C32-A34	n/a	0.4 / 10	
	11463	30-Minute Velo Acid Etch (Clear/Satin)	AA-M12-C21-A31	n/a	0.4 / 10	
	40502	Medium Bronze 2-Step Acid Etch	AA-M12-C21-A34	n/a	0.4 / 10	
	40503	Dark Bronze 2-Step Acid Etch	AA-M12-C21-A34	n/a	0.4 / 10	
ARCHITECTURAL CLASS I	024	60-Minute Velo (Clear/Satin)	AA-M12-C22-A41	215-R1	0.7 / 18	Y
	201	Light Bronze 2-Step	AA-M12-C22-A44	n/a	0.7 / 18	Y
	202	Medium Bronze 2-Step	AA-M12-C22-A44	n/a	0.7 / 18	Y
	203	Dark Bronze 2-Step	AA-M12-C22-A44	n/a	0.7 / 18	Y
	204	Black 2-Step	AA-M12-C22-A44	n/a	0.7 / 18	Y
	208	Gold 2-Step (Champagne)	AA-M12-C22-A44	n/a	0.7 / 18	Y
	10730	Brushed Nickel (Satin)	AA-M35-C22-A44	n/a	0.7 / 18	Y
	10729	Brushed Nickel (Bright)	AA-M35-C32-A44	n/a	0.7 / 18	Y
	11463	60 Min Velo Acid Etch	AA-M12-C21-A41	n/a	0.7 / 18	Y
	40402	Medium Bronze 2-Step Acid Etch	AA-M12-C21-A44	n/a	0.7 / 18	Y
	40403	Dark Bronze 2-Step Acid Etch	AA-M12-C21-A44	n/a	0.7 / 18	Y
	40404	Black 2-Step Acid Etch	AA-M12-C21-A44	n/a	0.7 / 18	Y
	40408	Gold 2-Step Acid Etch (Champagne)	AA-M12-C21-A44	n/a	0.7 / 18	Y

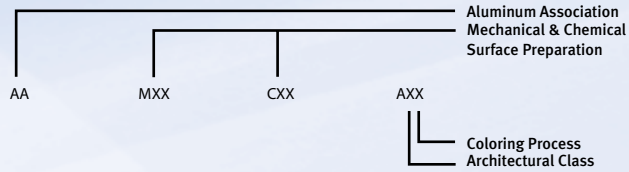
Notes: One mil equals one one-thousandth of an inch. μ m = Micron (one-thousandth of a millimeter), or about 0.00004 inches. Other chemical and mechanical finishes available upon request but not widely used. Finish designations are specific to Bonnell only and meets conformance within Bonnell Color Range samples for same alloy. Cracking of anodize coating may occur on post-fabrication bending. Alloy and temper shall be same for all anodized aluminum, to ensure consistent color and appearance. Bonnell Aluminum manufactures products that meet or exceed AAMA 611 and AAC-1119 (automotive) specifications. Visit aamanet.org or contact AAMA for the latest revisions and changes.

* Check with your Bonnell Sales Representative for specific details on Military Specs.

ANODIZING SPECIFICATIONS TABLE

Aluminum Association Standards for Anodized Architectural Aluminum

Because each type of anodizing offers different benefits and appearances, the Aluminum Association Designation System for Aluminum Finishes was created to clearly communicate specifications. The “AA” in front stands for the fact this is an Aluminum Association designation.



MECHANICAL FINISHES (M) AS FABRICATED

M10	Unspecified
M11*	Specular as fabricated
M12*	Nonspecular as fabricated
M1X	Other (to be specified)

BUFFED

M20	Unspecified
M21*	Smooth specular
M22*	Specular
M2X	Other (to be specified)

DIRECTIONAL TEXTURED

M30	Unspecified
M31	Fine satin
M32	Medium satin
M33	Coarse satin
M34	Hand rubbed
M35*	Brushed
M3X*	Other (to be specified)

NONDIRECTIONAL TEXTURED

M40	Unspecified
M41	Extra fine matte
M42	Fine matte
M43	Medium matte
M44	Coarse matte
M45	Fine shot blast
M46	Medium shot blast
M47	Coarse shot blast
M4X	Other (to be specified)

CHEMICAL FINISHES (C) NONETCHED CLEANED

C10	Unspecified
C11	Degreased
C12*	Inhibited chemical cleaned
C1X	Other (to be specified)

ETCHED

C20	Unspecified
C21*	Fine matte
C22*	Medium matte
C23*	Coarse matte
C2X	Other (to be specified)

BRIGHTENED

C30	Unspecified
C31*	Highly specular
C32*	Diffuse bright
C3X	Other (to be specified)

CHEMICAL COATINGS

C40	Unspecified
C41	Acid chromate-fluoride
C42	Acid chromate-fluoride-phosphate
C43	Alkaline chromate
C44	Non-chromate
C45	Non-rinsed chromate
C4X	Other (to be specified)

ANODIC COATINGS GENERAL

A10	Unspecified
A11	Preparation for other applied coatings
A12	Chromic acid anodic coatings
A13	Hard, wear and abrasion resistant coatings
A1X	Other (to be specified)

PROTECTIVE AND DECORATIVE COATING LESS THAN 10 µm (0.4 mil)

A21*	Clear
A22	Integral color
A23*	Impregnated color
A24	Electrolytically deposited color
A2X	Other (to be specified)

ARCHITECTURAL CLASS II 10-18 µm (0.4–0.7 mil) COATING

A31*	Clear
A32	Integral color
A33*	Impregnated color
A34*	Electrolytically deposited color (non-black)
A3X	Other (to be specified)

ARCHITECTURAL CLASS I 18 µm (0.7 mil) AND THICKER ANODIC COATINGS

A41*	Clear
A42	Integral color
A43*	Impregnated color
A44*	Electrolytically deposited color
A4X	Other (to be specified)

RESINOUS AND ORGANIC COATINGS (R)

R10	Unspecified
R1X	Other (to be specified)

*Processes available through Bonnell Aluminum.

Facilities and Abilities

In keeping with our dedication to provide local responsiveness along with the capacity and abilities of a multi-plant operation, Bonnell offers a range of anodizing capabilities. This allows customers the opportunity to take full advantage of our expertise in this key area.

Anodizing and the Environment

Anodizing's environmental friendliness and relative safety are among its best properties. In fact, The U.S. Environmental Protection Agency regards anodizing as an environmentally friendly process. Anodizing uses simple water-based chemicals that can be treated easily and that release no harmful by-products. The liquid by-products are recycled and returned to the process. Solid by-products can be isolated and diverted for use in the manufacture of alum, baking powder, cosmetics, newsprint, fertilizer and water purification systems. Bonnell Aluminum's anodizing facilities are fully compliant with all environmental regulations. We are proud to contribute to the utilization of by products for other uses and we continually strive to find new ways to responsibly reduce waste.

TYPE II ANODIZE: COMPARATIVE PERFORMANCE REQUIREMENT BY SPECIFICATION

	MIL-A-8625 TYPE II	AAMA 611	AAC-1119
CORROSION RESISTANCE	336 Hours Salt Spray (5% Salt Solution)	Class I = 3,000 hrs. Salt Spray Class II = 1,000 hrs. Salt Spray	16 Hours: Copper Accelerated-Salt Spray
COATING WEIGHT	1,000 mg/ft ²	Class I = 14.18 mg/cm ² Class II = 2.40 mg/cm ²	20-40 g/m ²
COATING THICKNESS	.0007" - .001"	Class I = .0007" mg/cm ² Class I = .0004" mg/cm ²	8-15 μm (.0003" - .0006")
LIGHT FASTNESS (COLOR ONLY)	3 ΔE	5 ΔE	No Visual Change
ABRASION RESISTANCE	n/a	Not degraded by abrasive glass paper	n/a

Contact AAMA (American Architectural Manufacturers Association) for latest revisions and changes to AAMA specifications – www.aamanet.org.



To find out more see your Bonnell Aluminum representative or visit us on the web.

WWW.BONLALUM.COM