

### Aluminum Association Finishes Designation

To obtain an etched, matte surface, protected by an anodic treatment suitable for unmaintained exterior exposure, the designation would be as follows:

AA – Aluminum Association

C12 – Chemical Treatment (inhibited alkaline coating)

C22 – Medium Matte etched surface

A41 – Clear anodic coating at least 0.7 mil thick

**The designation would read:**

**AA-C12-C22-A41**

### Mechanical Finishes

Type of Finish	AA Designation	Description	Examples of Methods of Finishing
As Fabricated	M10	Unspecified	
	M11	Specular, as fabricated	
	M12	Nonspecular, as fabricated	
	M1X	Other	To be specified
Buffed	M20	Unspecified	
	M21	Smooth Specular	Polished with aluminum oxide compound. Grits coarser than 320; final polishing with a 320 grit using peripheral wheel speed of 6,000 fpm. Polishing followed by buffing using aluminum oxide buffing compound and peripheral wheel speed of 7,000 fpm
	M22	Specular	Buffed with aluminum oxide compound using peripheral wheel speed of 7,000 fpm.
	M2X	Other	To be specified
Directional Textured	M30	Unspecified	
	M31	Fine Satin	Wheel or belt polished with aluminum oxide grit of 320 to 400 size; peripheral wheel speed of 6,000 fpm.
	M32	Medium Satin	Wheel or belt polished with aluminum oxide grit of 180 to 220 size; peripheral wheel speed of 6,000 fpm.
	M33	Coarse Satin	Wheel or belt polished with aluminum oxide grit of 80 to 100 size; peripheral wheel speed of 6,000 fpm.
	M34	Hand-Rubbed	Hand-rubbed with stainless steel wool lubricated with neutral soap solution. Final rubbing with a No. 00 steel wool.
	M35	Brushed	Several varieties of directional finish with parallel scratch lines may be produced by using power-driven stainless steel wire-wheel brushes, brushed-backed sander heads, abrasive-impregnated foam nylon discs or abrasive cloth wheels.
	M3X	Other	To be specified

### Mechanical Finishes

Type of Finish	AA Designation	Description	Examples of Methods of Finishing
Non-Directional Textured	M40	Unspecified	
	M41	Extra-fine Matte	Air-blasted with finer than 200-mesh washed silica or aluminum oxide. Air pressure 45 lb. gun 8-12 in. at 90° angle.
	M42	Fine Matte	Air-blasted with finer than 100- to 200-mesh silica sand if darkening is not a problem; otherwise aluminum oxide type abrasive. Air pressure 30 to 90 lb. (depending upon thickness of material); gun distance 1 foot from work at angle of 60° to 90°.
	M43	Medium Matte	Air-blasted with finer than 40- to 50-mesh silica sand if darkening is not a problem; otherwise aluminum oxide type abrasive. Air pressure 30 to 90 lb. (depending upon thickness of material); gun distance 1 foot from work at angle of 60° to 90°.
	M44	Coarse Matte	Air-blasted with finer than 16- to 20-mesh silica sand if darkening is not a problem; otherwise aluminum oxide type abrasive. Air pressure 30 to 90 lb. (depending upon thickness of material); gun distance 1 foot from work at angle of 60° to 90°.

### Chemical Finishes

Type of Finish	AA Designation	Description	Examples of Methods of Finishing
Nonetched Cleaned	C10	Unspecified	
	C11	Degreased	Organic solvent treated
	C12	Inhibited-chemical cleaned	Inhibited chemical type cleaner used
	C1X	Other	To be specified
Etched	C20	Unspecified	
	C21	Fine Matte	Trisodium phosphate, 3-6 oz. per gallon used at 140-160°F for 3 to 5 minutes
	C22	Medium Matte	Sodium hydroxide, 4-6 oz. per gallon used at 140-150°F for 5 minutes.
	C23	Coarse Matte	Sodium fluoride, 1-1/2 oz., plus sodium hydroxide, 4-6 oz. per gallon used at 140-150°F for 5 minutes.
	C2X	Other	To be specified
Brightened	C30	Unspecified	
	C31	Highly Specular	Chemical bright dip solution of the proprietary phosphoric-nitric acid type used, or proprietary electrobrightening or electropolishing treatment.
	C32	Diffuse Bright	Etched finish C22 followed by brightened finish C31
	C3X	Other	To be specified

**Anodic Coatings**

Type of Finish	AA Designation	Description	Examples of Methods of Finishing
Protective & Decorative (coatings less than 0.4 mil thick)	A21	Clear (natural) coating	Coating thickness to be specified, 15% H2SO4, used at 70°F +/- 2°F, at 12 amp per sq. ft.
	A22	Coating with integral color	Coating thickness to be specified. Color dependent on alloy and processing methods.
	A23	Coating with impregnated color	Coating thickness to be specified, 15% H2SO4, used at 70°F +/- 2°F, at 12 amp per sq. ft. followed by dyeing with organic or inorganic colors.
	A2X	Other	To be specified
Architectural Class 11 (0.4 to 0.7 mil coating)	A31	Clear (natural) coating	15% H2SO4, used at 70°F +/- 2°F, at 12 amp per sq. ft. for 30 minutes, or equivalent.
	A32	Coating with integral color	Color dependent on alloy and anodic process.
	A33	Coating with impregnated color	15% H2SO4, used at 70°F +/- 2°F, at 12 amp per sq. ft. for 30 minutes, or equivalent followed by dyeing with organic or inorganic colors.
	A3X	Other	To be specified
Architectural Class 1 (0.7 mil and greater anodic coating)	A41	Clear (natural) coating	15% H2SO4, used at 70°F +/- 2°F, at 12 amp per sq. ft. for 60 minutes, or equivalent.
	A42	Coating with integral color	Color dependent on alloy and anodic process. May include Duranodic and certain architectural colors.
	A43	Coating with impregnated color	15% H2SO4, used at 70°F +/- 2°F, at 12 amp per sq. ft. for 60 minutes, or equivalent followed by dyeing with organic or inorganic colors.
	A4X	Other	To be specified

**Anitquing Brass or Bronze**







There are many commercially available products that can be applied to copper alloys to accelerate the oxidization process. Many of these are available in local hardware store paint departments. For the names of product suppliers, contact Wagner directly.

Here is a blacksmith recipe provided by Travis Fleming of Fleming Iron Works:

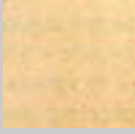
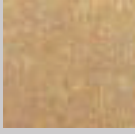
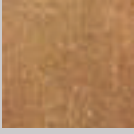
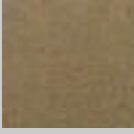
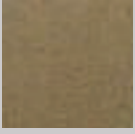
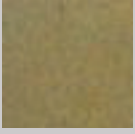
- 1 qt. white vinegar
- 1 qt. ammonia
- 1 cup lemon juice
- 1 tbs. salt

Clean the copper, then spray it on. It will turn in a few minutes

The following color charts are based on the Copper Development Association’s Architectural Guide and indicate aging patterns on various copper alloys.

<b>C23000 - Red Brass</b>						
Nominal Composition: 85% copper; 15% zinc						
Color: Natural – reddish yellow Weathered – from chocolate brown to gray-green patina in six years						
	Natural	1 Week	1 Month	1 Year	5 Years	10 Years

<b>C28000 - Muntz Metal</b>						
Nominal Composition: 60% Copper; 40% Zinc						
Color: Natural – reddish yellow Weathered – from red brown to gray-brown in six years						
	Natural	1 Week	1 Month	1 Year	5 Years	10 Years

<b>C38500 - Architectural Bronze</b>						
Nominal Composition: 57% Copper; 40% Zinc; 3% Lead						
Color: Natural – reddish yellow Weathered – from russet-brown to dark brown in six years						
	Natural	1 Week	1 Month	1 Year	5 Years	10 Years

Sheet and Plate Alloys	Extrusions	Castings	Fasteners	Tube & Pipe	Rod & Wire	Filler Metals
Alloy C28000 Muntz Metal	Alloy C38500 Architectural Bronze	Alloys C85500, C85700	Alloys C26000, C36000, C46400, C46500	Alloy C23000 Red Brass	Alloy C28000 Muntz Metal	Alloy C68100 low fuming bronze

BHMA = Builders Hardware Manufacturing Association Standard A156.18  
 CDN = Canadian Equivalent

US = U.S. Equivalent  
 Other = Codes used by other manufacturers  
 Base = Base metal finish is applied to

BHMA	US	CDN	Other	Base	Description
600	USP	CP	P	Steel	Primed for painting
601	US1B	C1B	1B	Steel	Bright black japanned
602	US2C	C2C	2C	Steel	Zinc plated
603	US2G	C2G	2G	Steel	Zinc plated
605	US3	C3	3	Brass	Bright brass, clear coated
606	US4	C4	4	Brass	Satin brass, clear coated
609	US5	C5	5	Brass	Satin brass, blackened, satin relieved, clear coated
610	US7	C7	7	Brass	Satin brass, blackened, bright relieved, clear coated
611	US9	C9	9	Bronze	Bright bronze, clear coated
612	US10	C10	10	Bronze	Satin bronze, clear coated
613	US10B	C10B	10B	Bronze	Antique bronze, oiled
616	US11	C11	11	Bronze	Satin bronze, blackened, satin relieved, clear coated
618	US14	C14	14	Brass/Bronze	Bright nickel plated, clear coated
619	US15	C15	15	Brass/Bronze	Satin nickel, clear coated
620	US15A	C15A	15A	Brass/Bronze	Satin nickel plated, blackened, satin relieved, clear coated
621	US17A	C17A	17A	Brass/Bronze	Nickel plated, blackened, relieved, clear coated
622	US19	C19	19	Brass/Bronze	Flat black coated
623	US20	C20	20	Brass/Bronze	Statuary bronze, light
624	US20A	C20A	20A	Brass/Bronze	Statuary bronze, dark
625	US26	C26	26	Brass/Bronze	Bright chromium plated
626	US26D	C26D	26D	Brass/Bronze	Satin chromium plated
627	US27	C27	27	Aluminum	Satin aluminium, clear
628	US28	C28	28	Aluminum	Anodized dull aluminium
629	US32	C32	32	Stainless Steel	Bright stainless steel
630	US32D	C32D	32D	Stainless Steel	Satin stainless steel
632	US3	C3	3	Steel	Bright brass plated, clear coated
633	US4	C4	4	Steel	Satin brass plated, clear coated
636	US7	C7	7	Steel	Satin brass plated, blackened, bright relieved, clear coated
637	US9	C9	9	Steel	Bright bronze plated, clear coated
638	US5	C5	5	Steel	Satin brass plated, blackened, bright relieved, clear coated
639	US10	C10	10	Steel	Satin bronze plated, clear coated
640	US10B	C10B	10B	Steel	Antique bronze, oiled
641	US10A	C10A	10A	Steel	Antique bronze, lacquered
643	US11	C11	11	Steel	Satin bronze plated, blackened, bright relieved, clear coated
645	US14	C14	14	Steel	Bright nickel plated, clear coated
646	US15	C15	15	Steel	Satin nickel plated, clear coated
647	US15A	C15A	15A	Steel	Satin nickel plated, blackened, bright relieved, clear coated
648	US17A	C17A	17A	Steel	Nickel plated, blackened, relieved, clear coated
649	US20	C20	20	Steel	Statuary bronze, light
650	US20A	C20A	20A	Steel	Statuary bronze, dark
651	US26	C26	26	Steel	Bright chromium plated
652	US26D	C26D	26D	Steel	Satin chromium plated

#### Cleaning and Corrosion Prevention

**Cleaning Aluminum:** Cleaning anodized aluminum is easy with the right technique. Because anodizing is so hard, you want to use an abrasive cleaning technique with a gentle soap. Do not use harsh acidic or alkaline cleaners because they may destroy the finish. Use solvents with care as they may stain the finish. Regardless of the technique, be sure to try a test area first. One recommended technique is to use an abrasive cleaning sponge with mild dishwashing liquid. Always test a small area first to prevent a widespread problem.

**Galvanic Corrosion:** Metals are rated according to their “nobility.” When dissimilar metals are in contact with each other in the presence of oxygen and moisture, the more noble metal will corrode the less noble one. Contact between dissimilar metals should always be avoided. If contact cannot be avoided, the adjacent surfaces should be painted with bituminous paint or zinc chromate primers or paints. Taping or gasketing with non-absorptive materials is also effective.

Care should be taken to prevent the wash from copper alloy surfaces onto adjacent, exposed, less noble metal surfaces, since the traces of copper salts carried in the wash can accelerate the corrosion of less noble metals.

**Stainless Corrosion:** Stainless or stain resistant? Stainless steels contain at least 12% chromium and form a thin, invisible protective, corrosion-resistant, passive film on their surface. This film forms spontaneously when the chromium reacts with oxygen in air and water. If the film is damaged or removed during fabrication or polishing, it self-repairs immediately, so long as the surface is clean. If stainless steel corrodes, typically highly localized metal loss or pitting occurs - rarely general or uniform corrosion of the entire surface.

While problems with stainless products are infrequent, the name stainless can be somewhat misleading. It is not actually stainless, but stain resistant - it is a corrosion resistant alloy, not rustproof. Stainless steel may show some forms of corrosion and/or deterioration depending upon the degree of contaminants in its particular environment. Under certain conditions, it can rust unless a program of preventive maintenance is followed.

The environment in and around swimming pools and salt water contain salts which actively attack stainless steel. Heat and humidity increase the corrosive activity of chlorine and bromine salts. In addition, the corrosive action caused by salts that occurs from ice melting agents, such as calcium chloride and sodium chloride, can create the formation of rust. Other chemical reactions that can cause deterioration include carbon picked up from bending or fabricating tools, finishing equipment or steel covered work benches. It is also typical for contractors or masons to use muriatic acid solution on masonry - even the fumes from this liquid can attack stainless steel.

The material's mechanical finish - satin or mirror - also plays a role in corrosion resistance. Corrosion-causing agents will collect in the fine lines of a satin finish as opposed to the smooth surface of a mirror finish.

Stainless steel is manufactured in various formats and can sometimes be selected to perform better in certain environments or applications. They are identified by T-304, T-316, etc. as well as L Grades (low carbon).

If you experience difficulty with your stainless products, it is likely that there is a contaminant in the environment. The first step is to identify the contaminant and to eliminate it. After that, assure that a preventive maintenance program is in place and being followed.

**Stainless Steel Preventative Maintenance Suggestions:** Inspect the installation on a frequent schedule, taking note of discoloration and stains. Discoloration can and should be removed by cleaners recommended for stainless steel.

Ongoing maintenance, consisting of a fresh water wash and wiping with a clean cloth, is recommended to minimize deterioration. In all but the most severe cases, this regular washing will eliminate the need for polishing.

*Note: Never use steel wool or harsh abrasive elements.*

### Differences Between Castings and Extrusion

This page is intended to show the difference in color and match between a casting and an extrusion. It is clear from the photos that there is a noticeable color difference and the two pieces do not fit together perfectly. The mismatch fit of the extrusion and casting will require blending by the end user.

