

Metal Comparisons Reference



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Just the Basics

Brass

Brass is any alloy of copper and zinc; the proportions of zinc and copper can be varied to create a range of brasses with varying properties.

Typical Uses – decorative, applications where low friction is required, musical instruments for its acoustic properties.

Copper

Copper is a chemical element.
Copper does not react with water, but will react with air – forming a layer of copper oxide on the copper metal with extended exposure.

Typical Uses – electrical conductor, heat conductor, a building material and as a component of various alloys.

Galvanized Steel

Galvanized steel is steel that has been coated in layers of zinc for corrosion protection. When steel is submerged in melted zinc, the chemical reaction permanently bonds to zinc to the steel through galvanizing. The zinc goes through a reaction with the iron molecules within the steel to form galvanized steel. The most external layer is all zinc, but successive layers are a mixture of zinc and iron, with an interior of pure steel.

Typical Uses – Automotive, transportation, architectural, HVAC

Stainless Steel

Stainless Steel is an iron-carbon alloy with a minimum of 11.5 wt% chromium content. There are different grades and surface finishes of stainless steel to suit the environment to which the material will be subjected in its lifetime.

Typical Uses – Cookware, cutlery, hardware, surgical instruments, major appliances, industrial equipment, automotive, aerospace, architectural.

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Key Features & Characteristics

	Anodized Aluminum		Stainless Steel			Brass	Copper	Galvanized
	5005	MacPac-S	304L	316L	430	260	110	
Alloy Composition	Aluminum + Magnesium	Aluminum + Magnesium	Chromium + Nickel	Chromium + Nickel + Molybdenum	Chromium	70% Copper 30% Zinc	Copper	
Nickel Content			8%	10%	0%			
Mechanical Properties								
Hardness	B70	B70	B80	B80	B85		B42	
UYS: Yield Strength	15 min KSI	45 min KSI	30-42 KSI	30-42 KSI	40-50 KSI	51 KSI	37 KSI	
UTS: Tensile Strength	20-25 KSI	51-52 KSI	80-85 KSI	80-85 KSI	70-75 KSI	57-67 KSI	37-46 KSI	
Elongation	3%	8%	50-60%	50-60%	30-35%	30%	20%	
Density – lb / in3	0.098	0.098	0.285	0.290	0.278	0.305	0.321	
Feature & Characteristics								
Abrasion Resistance								
Anti Microbial	No	No				Yes	Yes	
Coefficient of Thermal Exp.						11.1	9.8	
Corrosion Resistance	High	High	High	High	Good	High	High	
Density	0.098	0.098	0.285	0.290	0.278	0.305	0.321	
Dent Resistance								
Ductility	High	High			Good		High	
Electrical Conductivity	Low*	Low*					High	
Formability	High	High	High	High	High			
Insulative	Yes	Yes						
Magnetic	No	No	No	No	Yes	No	No	
Melting Point	1220° F	1220° F				1652° F		
Recyclable	Yes	Yes				Yes		
Reflectivity	High	High						
Thermal Conductivity	High	High					High	

* Electrical Conductivity of anodized is low. Electrical conductivity of raw aluminum is high.

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Metal Finishes

Stainless Finish #	General Description	Key Applications	Lorin Product	Aluminum / Anodize Finish
No 1	Rough, dull, non-uniform appearance.	Industrial Applications Non-Visual Applications		
No. 2B	Reflective finish that resembles a cloudy mirror.	Deep Draw applications – bake ware, flatware, solar collector panels, wheel covers.	ClearMatt DuraMatt 3000 DuraMatt 3001	5005 MF / Etched 5005 MF / Brightened 5205 OSB / Brightened
No. 2D	Uniform, dull silver gray finish.	Deep drawn components. Painted parts.		
Bright Annealed (BA or 2BA)	Mirror finish with some cloudiness or other imperfections. "BA" – Bright Annealed "2BA" – Bright Annealed + Roll Polished	Applications where a highly reflective surface is desired. Appliance, Architectural, Foodservice, Scientific / Medical	ClearBrite 5657 250 Film ClearBrite Ultra 250 Film DuraMatt 3001	5657 OSB / Brightened 1085 BMF / Brightened 5205 OSB / Brightened
No. 3	Short line brush finish extending uniformly along the length of the coil. Moderately reflective. Surface Roughness = Ra 40 micro inches or less.	Foodservice, Scientific / Medical Equipment	AlumaPlus SL AlumaPlus LL (Kool Line) ClearBrite Brushed SL ColorIn – Lt Bronze Brush	5205 C150 / Brightened 5205 M160 / Brightened 5205 C150 / Brightened 5205 C150 / ColorIn
No. 4	Deeper brushed version of No. 3 short line brush finish above.	Appliance, Architectural Panels, Beverage Equipment, Clean Rooms, Column Covers, Elevator Doors & Interiors, Escalator Trim, Foodservice, Scientific / Medical, Store Fronts	AlumaPlus SL AlumaPlus LL (Kool Line) ClearBrite Brushed SL ColorIn – Lt Bronze Brush	5205 C150 / Brightened 5205 M160 / Brightened 5205 C150 / Brightened 5205 C150 / ColorIn
No. 7	Mirror-like appearance with some remnants of fine polishing lines. No. 4 Finish with additional polishing.	Column Covers, Ornamental Trim, Wall Panels	PreMirror 11 ClearBrite 5657 ClearBrite Ultra	C985 BMF / Brightened 5657 OSB / Brightened 1085 BMF / Brightened
No. 8	Mirror-like appearance – more visual clarity than a No. 7 finish. No. 4 Finish with additional polishing.	Clean Rooms, Column Covers, Ornamental Trim, Press Plates, Reflectors, Signage, Wall Panels	PreMirror 41 PreMirror OPTIMA 060	C985 BMF / Brightened 1085 BMF / Brightened

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Brass Finish	General Description	Key Applications	Lorin Product	Aluminum / Anodize Finish
260 Brass	Semi-Specular Type Appearance.		GoldBrite 5657 GoldBrite Brush GoldMatt – Medium GoldMatt – Dark GoldMatt Brush	5657 OSB / Brightened 5205 C150 / Brightened 5005 MF / Etched 5005 MF / Etched 5205 C150 / Etched
Copper Finish	General Description	Key Applications	Lorin Product	Aluminum / Anodize Finish
110 Copper	Semi-Specular Type Appearance		CopperBrite CopperMatt Copper Enhanced CopperMatt Brush ColorIn Copper	5657 OSB / Brightened 5005 MF / Etched 5005 MF / Clean Only 5205 C150 / Etched Finish TBD