


ACABADOS DECORATIVOS

COPPER


Characteristics	Process Name	Description / Key Features	Operation parameters (replenishment: L/10.000Ah)	Ecology
<p>Bright / Leveled</p> <p>High</p>  <p>Low</p>	CUBRAC 660	Dye-based acid. Deep throwing power and highest leveling. Suitable for POP and Zn Die Cast	Base: 0.4 Leveler: 0.75 Brightener: 0.5	Free of complexing agents.
	CUBRAC 600	Dye-based acid. Deep throwing power and superior leveling. Suitable for POP and Zn Die Cast	Base: 0.4 Leveler: 0.75 Brightener: 0.5	Free of complexing agents.
	ACCLAIM MARQUEE	Dye-based acid. Deep recesses. Deposit easily polished / buffed. Aluminum Wheels	Make-Up: 0.45 Leveler: 0.75 Brightener: 0.46	Free of complexing agents.
	CUBRAC 480	Dye-based acid. Excellent for high production applications: automatic plating machines. Suitable for POP and Zn Die Cast	Base: 0.4 Leveler: 0.75 Brightener: 0.5	Free of complexing agents.
	CUBRAC 440	Dye-based acid. Excellent for multiple applications such as job shop applications on automatic line. Suitable for POP and Zn Die Cast	Base: 0.2 Leveler: 0.5 Brightener: 0.5	Free of complexing agents.
	CUBRAC 200	Non-dye acid. Soft deposit with excellent elongation	Part A: 0.25 ml/l weekly Part B: 2.0 Part C: as needed	Less requirement for carbon treatments
	ACCLAIM BULLET	Non-dye acid. Barrel plating of Pb or Cu-core bullets. Ductile deposit	Part A: 1.3 Part B: 2.8 LCD: if needed	Free of complexing agents.
	ACCLAIM 1:1	Non-dye acid. Printed circuit boards / electronics	1:1: 3.0	Free of complexing agents.

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Functional	ACCLAIM GR	Non-dye acid. High speed-ground rods	GR: 1.4	Free of complexing agents
	ACCLAIM GR-CE	High efficiency, non-dye acid. High speed	GR : 1.4 CE Add: 0.3	Free of complexing agents
Hard: 190-220 Hv	CUBRAC 540	Non-dye acid. Printing rolls	Additive: 1.0 Brightener: 1.0	Free of complexing agents
Hard: 180-240 Hv	CUBRAC 542	Non-dye acid. Printing rolls	Additive: 1.5	Free of complexing agents
Satin	CUBRAC SATIN 120	Acid. Alternative to satin Ni where hypoallergenic finishes are required	Additive 1: 0.5 Additive 2: 3.0	Nickel-free applications
Semi-Bright Flash/Plate	DIASTAR 100	Alternative to CN processes for barrel and rack plated steel and rack plated Zn die cast	CPLX: 15 Surfact: 1.0 Brightener (if required): 0.3	Cyanide free
Bright	CUPROPLATE K	Rack & barrel. Potassium cyanide based	Base: 1.5 Brightener: 2.0 Conductor: 1.0 Surfact: 0.5	
	CUPROPLATE RAPID	Rack & barrel. Sodium cyanide based	Base: 1.5 Brightener: 1.5 Condi: 1.0 Surfact: 0.5	
	CUPROPLATE BCC	Rack & barrel. Potassium cyanide based. Bright low current density	Base: 1.0 Brightener: 2.5 Cu Additive: as needed	
Bright and/or dull	CUPROPLATE NA	Rack & barrel. Sodium cyanide based	Brightener: 2.0 Base: 1.5 Conductor: 1.0 Surfact : 0.5	
Strike deposit (Pre-Copper)	CUPROPLATE PRE	Rack & barrel. Sodium or potassium cyanide based	Conductor: as needed Surfact: as needed	

NICKEL

Characteristics	Process Name	Description / Key Features	Operation parameters (replenishment: L/10.000Ah)	Ecology
Bright / Leveled	CRYSTAL 101	Rack. Very short cycle-job shop application	101: 1.3 45S: 1.0 44F: 2.0	
	CRYSTAL 301	Rack. Enhanced bright throwing power (low current density). Automatic line-job shop application	Brightener: 2.5 45S: 1.0 44F: 2.0	
	CRYSTAL 501	Automatic rack. Superior for steel. High production of like product	501: 2.1 45S: 1.0 44F: 2.0	
	CRITERION ANTHEM	Rack. Leveler-only based. Extremely high or low cathode current densities	Brightener: 3.8	
	CRITERION PREMIER	Leveler-only based. High concentrations of Leveler	Brightener: 4.2	
	CRITERION AP	Leveler-only based. Economical. Job shop variety	Brightener: 4.2	
	CRYSTAL LC	Very low nickel metal concentrations. 50% reduction in drag-out	Base: 1.1 Brightener: 2.1 Leveler: 0.75 55S: 1.0	Reduced waste water demands and costs
	ASTRA 102	Manual & automatic rack. Wide application	102: 5.0	
	ASTRA 350	Manual & automatic rack. Economical. Superior for steel	350: 2.8	
	ASTRA 1000	Manual & automatic rack. Eyewear, fashion and accessories	1000: 2.0 55PS: 1.0 44F: 2.0	
	CRYSTAL BARREL 110	Barrel. Minimal thicknesses	Bright: 3.0 35S: 0.7 44F: 2.0	
	CRYSTAL BARREL 169	Barrel. Zn die cast, brass and Cu.	169: 3.5 45S: 1.0 44F: 2.0	

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	CRYSTAL BARREL 210	Barrel. Low operating current densities and minimal thicknesses	Bright: 3.5 45S: 3.0 44F: 2.0	
Sulfur Free-Columnar <0.005% by weight sulfur	CRITERION SB 100	Duplex Ni applications. Bright and ductile deposits.	Base: 0.75 Bright: 0.75 Additive:1.25 or single via Replenisher: 2.0	
Sulfur Free-Columnar <0.005% by weight sulfur	CRITERION INTRIGUE LG	Duplex Ni applications. Unusually bright and ductile deposits. T/2R: 80%	Carrier: 1.6 Leveler : 1.6 SB-2: maintain mV	
High Sulfur >0.15% by weight sulfur	CRITERION HS	Triple layer Ni. Additional mV potential between the semi and bright Ni deposits	MP 200: 1.8 HS 100: 0.3	
High Sulfur >0.15% by weight sulfur	CRITERION HS ²	Triple layer Ni. Sulfur deposited via cathode current density	Carrier: 1.7 HS ² : 4.5	
Micro Cracked (fissured)	CRITERION MC 300	High degree and uniform micro-cracks (fissures) in the subsequent Cr deposit	MC 300: 1.0 kg for every 5 kg of NiCl ₂ added MC 300: 2.5	
Micro Porous 10,000 cm ² to a maximum of 100,000 cm ²	CRITERION MP 250	Smaller and more uniform particle size. Superior degree of micro- porosity and uniformity in the subsequent Cr deposit	Carrier: 1.1 Bright: 3.0 F: 0.3 Powder 1 & 2: Dependent upon pore count	
Micro Porous 10,000 cm ² to a maximum of 20,000 cm ²	CRITERION MP 200	High degree of micro- porosity and uniformity in the subsequent Cr deposit	MP 200: 1.1 MP 10: 3.0 MP 18:1.5-2.0 MP F: 0.3	
Electroforming Stress : 500-1000 psi Hardness: 150-350 Hv	CRISAL 300	Intended for use in sulfamate nickel plating applicable to engineering and functional deposits	300 Make-Up: based on Ni metal analysis 300 Additive: based upon production experience	

Characteristics	Process Name	Description / Key Features	Operation parameters (replenishment: L/10.000Ah)	Ecology
Electroforming Stress : 500-1000 psi Hardness: 150-350 Hv	CRITERION EFN	Intended for use over zincated aluminum wheels.	AC: pH adjustment AW: 0.03% / 8h	
<p style="text-align: center;">Satin</p> <p style="text-align: center;">Ra Gloss</p> <p style="text-align: center;">Low Bright</p>  <p style="text-align: center;">High Matte</p>	SATIN CRYSTAL 960	Limited life suspension: 6-8h. Light satin effect. Ra: 93.92 Gloss: 247	200:1.7 Base: 1.2 960: 25% of make- up dose per hour.	
	SATIN CRYSTAL FM	Limited life suspension: 6-8h. Light satin with white effect. Ra: 109 Gloss:237	200: 18 Base: 1.3 FM: 25% of make- up dose per hour.	
	SATIN CRYSTAL 230	Limited life suspension: 6-8h. Slightly white. Ra: 162 Gloss: 144	200 1.7 Base: 1.2 230: 0.5 ml/l, 0.1 ml/l/h.	
	SATIN CRYSTAL ST	Limited life suspension: 6-8h. White satin effect. Ra: 164 Gloss: 136	200: 1.7 Base: 1.2 ST: 25% of make- up dose per hour.	
	SATIN CRYSTAL GFS	Limited life suspension: 6-8h. White-silver effect. Ra: 147 Gloss: 135	GFS: 1.5 Base: 1.2 GFS: 25% of make-up dose per hour.	
	SATIN CRYSTAL V	Indefinite life emulsion due to heat/cool cycle. Matte/Anti-glare. Ra: 191 Gloss: 128	D100: 1.3 M30: 3.0	
Note: Time, current density, salt & additive concentration, filtration, and bath maintenance effect appearance.				
Black-Gun Metal	CRYSTAL BLACK 700	Rack. Color based on nickel oxide	700: 3.5 700-M: 10	Cyanide Free
Deep Black	CRYSTAL BLACK 710	Rack & barrel. Sulphate / thiocyanide based	Part A: per analysis Part B: per analysis	

Characteristics	Process Name	Description / Key Features	Operation parameters (replenishment: L/10.000Ah)	Ecology
Deep Black	CRYSTAL BLACK 720	Rack & barrel. Chloride / thiocyanide based.	720 Salt: per analysis Additive 1: per analysis Additive 2: per analysis.	
Grey Black with blue tones	CRYSTAL BLACK 730	Rack and barrel. CN based.	See TDS for details	
Tin (65%) / Nickel (35%) Grey with rose hues. 600 Vickers	NISTLA 70 AC	Rack & barrel. Acid / fluoride based	70 AC: based on bivalent tin analysis 70 AC B: based upon 70 AC A Addition	
Tin (65%) / Nickel (35%) Grey with rose hues. 600 Vickers	APEX TN	Rack and barrel. Acid / fluoride based	Make-Up: 1.0l / 1.3kg of SnCl ₂	
Tin (65%) / Nickel (35%) Grey-Black 600 Hv	NISTLA 650	Rack. Acid / fluoride based	Additive: drag-out NC: pH adjust and Ni content SC: 2.5 l/kg SnCl ₂	
Tin (65%) / Nickel (35%) Light Grey to Grey Black	NISTLA ECO	Rack. Neutral pH. Low Sn & Ni concentrations. Flash deposits	Eco: 1.8ml/l/0.1g add of Ni Eco: 2.5 ml/l/0.1 add of Ni Eco 3: based on sp. gr. Eco: 0.35 g/l/0.1 g/l Sn	Ammonia and Fluoride free
Tin (65%) / Nickel (35%) Grey Black 600 Hv	NISTLA ECO Black	Rack & barrel (no streaks)	Eco NI CL: 1.1 ml/l/ 0.1g Ni Eco SN CL: 0.2 g/l/ 0.1gr Sn Eco 3 Cond: drag out Color: 4.0 ml/1000 Ah	Ammonia and Fluoride free. No Cyanide complex

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Tin (65%) / Nickel (35%) Grey Black 600 Vickers	NISTLA 65 AL	Rack. CN based. Single additive used in combination with sodium cyanide	65 AL X 70:10 g/l for every 2 g/l NaCN addition.	
Tin (78%) / Cobalt (22%) White with blue hue	CEDIA	Barrel, suitable for rack. Neutral pH. Excellent throwing & covering power	Salt 1: based on Co Salt 2: based on Tin Complexor: 1:1 with Salt 2	Cyanide Free
Tin (78%) / Cobalt (22%) Grey Black	CEDIA Black	Barrel, but suitable for rack. Mildly alkaline. Excellent throwing & covering power	Make Up: drag-out Tin Salt: 0.5 g/l/0.1g/l Bivalent tin; Co Salt: 5.0 g/l/0.1g/l Co; Additive: based on need	Cyanide Free
Nickel-Iron (35%)	CRITERION NF	Rack & barrel. Reduces nickel metal consumption	Carrier : 2.5 Additive: 4.0 Complexor: 75 g/10,000Ah	Reduction of Nickel usage
High Corrosion 87-89% Ni 550/600 Hv	CRYSTAL SHIELD	Rack & barrel. Intermediate deposit	Brightener: 5 kg/10,000Ah Additive: 6 kg/10,000Ah	Chloride free

TRIVALENT CHROME

Characteristics	Process Name	Description / Key Features	Operation parameters	Ecology
White Deposit closely matches hexavalent Chrome color Deposit closely matches hexavalent Chrome color	TRISTAR 300	Chloride based utilizing graphite anodes. Liquid and powder Cr(III) additives	See TDS	Cr(VI) free electrolyte
	TRISTAR 310	Chloride based utilizing graphite anodes. Powder Cr(III) additives	See TDS	Cr(VI) free electrolyte
	TRISTAR 300 AF	Sulphate based utilizing specially coated Ti anodes	See TDS for various make-up and replenishment possibilities	Cr(VI) and ammonium free electrolyte
Black-Transparent	TRISTAR 710	Chloride based utilizing graphite anodes. Pass 66h- CASS	See TDS	Cr(VI) free electrolyte
	TRISTAR 720	Sulphate based utilizing specially coated Ti anodes	See TDS for various make-up and replenishment possibilities	Cr(VI) and ammonium free electrolyte

HEXAVALENT CHROME

Characteristics	Process Name	Description / Key Features	Operation parameters	Ecology
Blue-Decorative 900-950 Hv	CHROME 200	Based on chromic acid and a particular catalyst system	Additive: 0.4 kg/100 kg of Chrome Salt 200 Catalyst: 4.0 kg/100 kg Chrome Salt	
	SUPER CAT	Liquid Catalyst	Super Cat: 0.08l for every 1 kg of Chrome Salt	
Blue-Decorative Micro-Cracked 900-950 Hv	CHROME NMP	Provides micro-cracked (fissured) chrome deposits	NMP 1: 10 kg per 100 kg of Chrome Salt NMP 2: 10 kg per 100 kg Chrome Salt	
Black	CHROME NERO	Based on chromic acid and a special catalyst	See TDS	

BRASS

Characteristics	Process Name	Description / Key Features	Operation parameters	Ecology
Cu (70%) / Zn (30%)	BRASS 15	Large automatic rack. Lemon yellow color. Sodium cyanide based. Lighting & furniture applications	See TDS	
Cu (70%) / Zn (30%)	BRASS 20	Potassium cyanide based. Decorative & intermediate coatings. Single additive make-up	See TDS	
	BRASS 30	Sodium cyanide based. Suitable for recovery systems (evaporation)	See TDS	
Cu (70%) / Zn (30%)	BRASS 40	Sodium cyanide based formulated for barrel	See TDS	
	BRASS 42	Barrel. Decorative & thick coatings. Mass production of small parts	See TDS	
	BRASS 82	Rack & Barrel. Gold color. Sodium cyanide based. Thin deposits (flash)	See TDS	

WHITE BRONZE

Characteristics	Process Name	Description / Key Features	Operation parameters	Ecology
Cu (60%) / Sn (29%) / Zn (10%) / Pb (1%) Bright silver-white 450-550 Hv Melting Pt: 350-400° C	AURALLOY 300	Rack. Decorative: jewelry, accessories & fragrance / cosmetics applications. Functional: connectors	See TDS	
Cu (53-57%) / Sn (40-45%) / Zn (3-5%) Bright silver-white	AURALLOY 400 LF	Barrel. Decorative: jewelry, accessories, fragrance / cosmetics applications.	See TDS	Lead Free