

TECHNIC INC

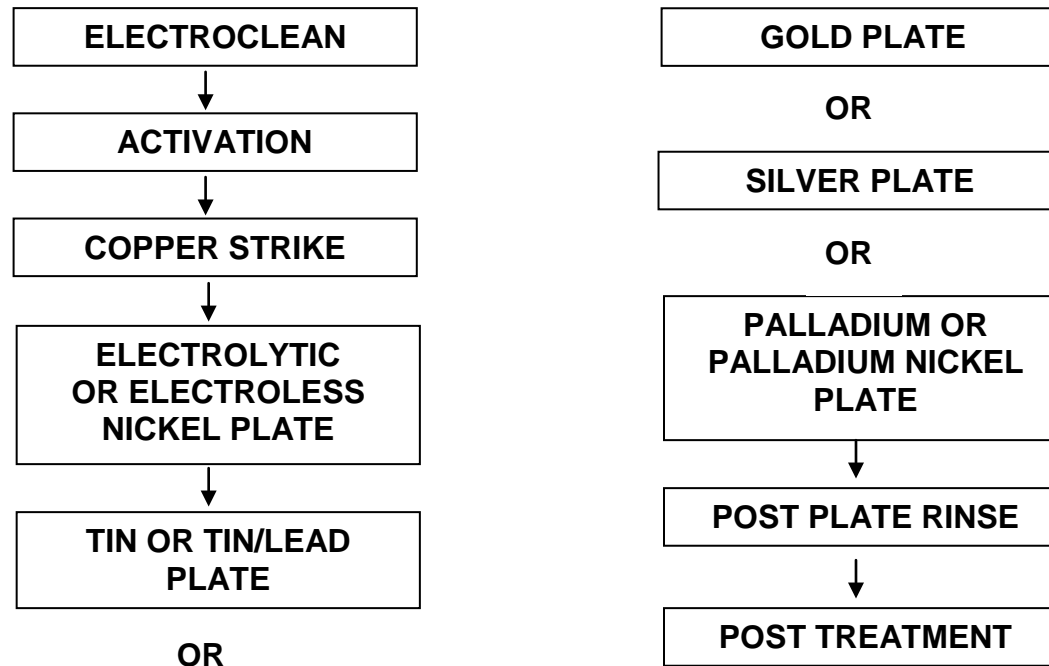
PROCESS APPLICATION GUIDE

CONNECTOR PLATING IN BARREL APPLICATIONS

PLEASE NOTE: All makeup conditions presented are for barrel applications. This document is for guidance only. Please refer to the appropriate Technical Data Sheet for additional information.

Rev 1215

Process Flow



CONNECTOR PLATING IN BARREL APPLICATIONS (CONVENTIONAL) – RECOMMENDED PROCESS SEQUENCE

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments
Electroclean	Technic TEC 1016	Electrolytic cleaner	Technic TEC 1016: 15-45 g/l DI water: balance	60-71°C	Steel, copper, brass: 6-9v anodic Non-ferrous metals 4-6v cathodic	5-20 sec	Renew solution when contaminated	Alkaline low foaming; chelated. Rapidly removes oils, grease, and other contaminants
Activation	Techni Acid Salt TAS-1 OR	Powder acid activator	Brass and copper: TAS#1 60-120 g/l DI water: balance Nickel (reactivation) TAS#1 120-240 g/l DI water: balance	21-55°C	N/A 4v cathodic	Dependent on application	Maintain by volumetric titration	Acid salt, non- fluoride, replacement for mineral acids in pickling operations. Used to activate all base metals.
	Techni Acid Salt TAS-3Z		Zinc diecast and brass TAS-3Z 30-60 g/l DI water: balance Steel and copper TAS-3Z 120-360 g/l DI water: balance	21-26°C	N/A	15-60 sec ≤3 min	Maintain by volumetric titration	Acid salt with fluoride for nickel alloys, copper, brass activation. Similar to TAS-1, but more aggressive for hard to activate surfaces.
Copper Strike	Techni MSI CuCN Bright Copper Cyanide OR	Alkaline copper cyanide strike	Copper Cyanide 60 g/l Potassium Cyanide 105 g/l Potassium Hydroxide 30 g/l CUCN-CA 40 ml/l CUCN-SE 3.5 ml/l CUCN-BR 2 ml/l	54-82°C	0.1-10 ASD	Dependent on thickness requirement	CUCN-CA: Hull cell CUCN-SE: 7500- 10,000 A hr/l CUCN-BR: 2500- 3750 A hr/l	Full bright process used for both strike and full build applications.

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	Techni Copper C	Semi-bright cyanide copper strike	Potassium Cyanide 28.5 g/l Potassium Copper Cyanide 240 g/l Potassium Hydroxide 22.5 g/l Rochelle Salts 45 g/l Copper "C" Brightener 20 ml/l	65-74°C	0.5-6.0 ASD	Dependent on thickness requirement	Hull cell	Semi bright strike process. Recommended for difficult to plate metals.
Electrolytic Nickel Plate	Goldeneye Nickel	Proprietary nickel plating process	Goldeneye Nickel Conc: 168 ml/l Goldeneye Makeup Solution: 410 ml/l Boric acid: 60 g/l Goldeneye Nickel Stress Reducer: 20 ml/l HN-5: 5 ml/l DI water: Balance	55-60°C	0.1-1.0 ASD	Dependent on thickness requirement ~0.12µm/min @ 0.5 ASD	Replenish based on analysis	A low stress/highly corrosion resistant process which exhibits superior thickness distribution, higher line speeds/yields and lower waste treatment costs.
	OR Techni Nickel S	Low stress, semi-bright, ductile nickel plating process for rack/barrel and SBE	Nickel Sulfamate Conc: (180 g/l Ni metal): 440 ml/l Nickel Bromide Conc: 40 ml/l Boric Acid: 30 g/l HN-5: 10 ml/l Nickel Sulfamate Semi-bright Additive (optional): 7.5 ml/l Nickel Sulfate Stress Reducer (optional): 25 ml/l DI water: balance pH: 3.0 – 4.5	50-60°C	0.3-5.0 ASD	Dependent on thickness requirement	Replenish based on analysis	Can be used as a nickel underplate or final finish. Easy to operate and control. Full bright deposit. A general purpose bath which should be recommended for all non-critical applications. Uses nickel bromide for anode corrosion.

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OR								
Electroless Nickel	Techni EN 2600 OR	Mid phos (7-8% P) electroless nickel plating process	Techni EN 2600 A: 60 ml/l Techni EN 2600 B: 150 ml/l DI water: balance	85-93°C	NA	Dependent on thickness requirement	Replenish based on nickel analysis	Full bright EN deposit, deposition rate 500-1000 µ-in/hr (12-25 µm/hr)
	Techni EN 2600 SB OR	Mid phos (7-8% P) electroless nickel plating process	Techni EN 2600SB Part A: 60 ml/l Techni EN 2600SB Part B: 150 ml/l DI water: balance	85-93°C	NA	Dependent on thickness requirement	Replenish based on nickel analysis	Semi bright EN deposit, deposition rate 500-1000 µ-in/hr (12-25 µm/hr)
	Techni EN 3500 OR	High phos (10-12% P) electroless nickel plating process	Techni EN 3500 A: 60 ml/l Techni EN 3500 B: 150 ml/l DI water: balance	85-93°C	NA	Dependent on thickness requirement	Replenish based on nickel analysis	Semi bright EN deposit, deposition rate 400-600 µ-in/hr (10-15 µm/hr). Highest level of corrosion resistance.
	Techni EN 1400	Low phos (1-4% P) electroless nickel plating process	Techni EN 1400 A: 90 ml/l Techni EN 1400 B: 200 ml/l DI water: balance	85-93°C	NA	Dependent on thickness requirement	Replenish based on nickel analysis	Semi bright EN deposit, deposition rate 300-400 µ-in/hr (7-10 µm/hr)
Tin Plate	Techni NF JM 6000 LS OR	MSA based matte tin	Techni Solder NF Tin Conc: 33.3 ml/l Techni Solder NF Acid: 100 ml/l JM 6000 Makeup: 50 ml/l JM 6000 Secondary A: 15 ml/l Techni Antioxidant #8: 20 ml/l	43-49°C	0.1-0.5 ASD	Dependent on thickness requirement	Replenish all materials by analysis. JM 6000 Makeup: approx 125 ml / 1000 A-hrs JM 6000 Secondary A: approx 40 ml / 1000 A-hrs.	Matte whisker resistant deposit based on MSA. Recommended for barrel plating applications.

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments
	Technistan JM 7000 OR	Sulfate based matte tin	Technistan Tin Conc: 120 ml/l Tin Metal: 20 g/l Sulfuric Acid ⁴ 65 ml/l Technistan JM 7000 Primary: 125 ml/l Technistan JM 7000 Secondary: 10 ml/l Technistan Antioxidant: 20 ml/l DI water: balance	25-40°C	0.5-3.0 ASD	Dependent on thickness requirement	Replenish based on analysis	Matte whisker resistant deposit based on sulfuric acid. Excellent reflow performance.
	Techni NF BT2 OR	MSA-based bright tin	Techni Solder NF Acid: 200 ml/l Techni Solder NF Tin Concentrate (300 g/l): 43.3 ml/l Techni BT Wetter 2: 80 ml/l Techni BT Brightener 2: 80 ml/l Techni BT Booster: 1.5 ml/l Techni Antioxidant #8: 20 ml/l DI water: balance	23-27°C	0.25-0.5 ASD	Dependent on thickness requirement	Replenish based on analysis. Techni BT Brightener 2: approx 250 ml / 1000 A-hrs Techni BT Booster: approx 5 ml / 1000 A-hrs	Operates over a wide CD range for increased output and flexibility in production. Produces brilliant deposits with good ductility. Exhibits good throwing power and distribution characteristics.
	TechniBrite HT 1000	Sulfate-based bright tin electroplating process	Sulfuric Acid: 50-100 ml/l Technistan Tin Concentrate: 60-300 ml/l TechniBrite HT 1000 Starter: 100 ml/l TechniBrite HT 1000 Booster: 1 ml/l Technistan Antioxidant: 20 ml DI water: Balance	15 – 35°C	0.3 – 10 ASD	Dependent on application	Tin Metal, Sulfuric Acid and Technistan Antioxidant: Based on Analysis TechniBrite HT 1000 Booster and Replenisher: Based on drag-out only	Produces brilliant deposits and exhibits good low CD throwing power and distribution characteristics while plating at a high cathode efficiency. Allows operation at high temperature (up to 35°C) and high tin conc. (+40 g/l) without sacrificing low CD brightness.

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments
	Techni Gold 300	Nickel hardened Au	Techni-Gold 300 Salt A: 45 g/l Techni-Gold 300 Salt B: 90 g/l Techni-Gold 300 Salt C: 23 g/l Techni-Gold 300 Brightener: 80 ml/l Additive S-3: 5 ml/l Gold as Techni-Gold 300R Gold Salts: 2.0-8.2 g/l DI water: balance	38 – 65°C	0.1 – 0.6 ASD	Dependent on thickness requirement	Replenish based on analysis	General purpose, Nickel hardened gold plating process for connector applications. See TDS for rack and high speed formulations.
	OR							
	Techni-Gold 434 HS	Near neutral pH pure gold plating process. Produces matte to semi-bright deposit.	434 CS Liquid Conducting Solution: 322 ml/l 434 HS Electrolyte Additive: 30-60 g/l Gold as 434 HS Gold Salt: 4.1 g/l 434 HS Additive A (optional): 2 ml/l 434 HS Additive B (optional): 2.6 ml/l DI water: balance	60 – 71°C	0.05–0.5 ASD	Dependent on thickness requirement	Replenish based on analysis	Choice of metallic brighteners (Pb and non-Pb). Excellent solderability, die attach and wire bond properties. Meets Type III Grade A requirements of ASTM B488.
OR								
Silver Plate	Techni Silver 1025	Full bright silver	Potassium Cyanide: 112.5 g/l Potassium Carbonate: 15 g/l Silver metal as Potassium Silver Cyanide (54.2%): 32.8 g/l 1025B Brightener: 20 ml/l 1025A Additive: 5.28 ml/l DI water: balance	20 – 30°C	0.3 – 1.0 ASD	Dependent on thickness requirement	Replenish based on analysis	Selenium (Se) brightener. Good solderability. Good for most electronic applications except where Se brightener is not desired/permitted; e.g., RF applications.
	OR							

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments
	Techni Silver 1006	Full bright silver	Potassium Cyanide: 120 g/l Potassium Carbonate: 15 g/l Silver metal as Potassium Silver Cyanide (54.2%): 32.8 g/l 1006 B Brightener: 30 ml/l 1006 A Additive: 10 ml/l DI water: balance	20 – 30°C	0.3 –1.0 ASD	Dependent on thickness requirement	Replenish based on analysis	Antimony (Sb) brightener. Good for all electronic applications. Good solderability.
OR								
Palladium Plate	Pallaspeed VHS	Bright pure Pd plating process	Pallaspeed VHS Makeup: 396 ml/l Pallaspeed VHS Replenisher: 52.8 ml/l Pallaspeed VHS Brightener: 26.4 ml/l DI water: Balance	35-50°C	0.1-0.5 ASD	Dependent on thickness requirement ~0.5µm/min @ 0.2 ASD	Replenish based on analysis	Deposits exhibit good ductility and wear resistance as well as corrosion resistance and good solderability.
	OR Pallaspeed® 990	Pure Pd plating process	Pallaspeed® 990 Makeup Solution: 500 ml/l Pallaspeed® 990 Palladium Salt: 53 g/l Pallaspeed® Additive 25 ml/l DI water: Balance	57-63°C	1 – 30 ASD	Dependent on thickness requirements ~1µm/min @ 5 ASD	Replenish based on analysis	Chloride free, low ammonia Pd process based on palladium tetramine sulfate
OR								
Palladium Nickel Plate	Pallaspeed Palladium Nickel NFA	Semi-bright to bright PdNi alloy plating process (70-90% Pd)	Palladium Nickel NFA Makeup: 300 ml/l Palladium Nickel NFA Nickel Conc: 150 ml/l Palladium metal as Palladium Nickel NFA Palladium Salt: 24 g/l Palladium Nickel NFA Additive: 30 ml/l DI water: Balance	55-66°C	20-50ASD* *See TDS	Dependent on thickness requirement ~7.5µm/min @ 30 ASD	Replenish based on analysis	A chloride-free process with no free ammonia. Deposits exhibit good ductility, low porosity and superior corrosion resistance leading to reduced thicknesses and cost.

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments
Postplate Rinse	Techni Aqua Shed-1	Watershed	Techni Aqua Shed-1: 25 ml/l DI water: balance	21 – 24°C	NA	10 –60 sec	Replenish based on drag-out	Creates hydrophobic surface to increase rinseability and reduce water staining.
Post Treatment	Refer to Surface Protection Process Application Guide							

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