



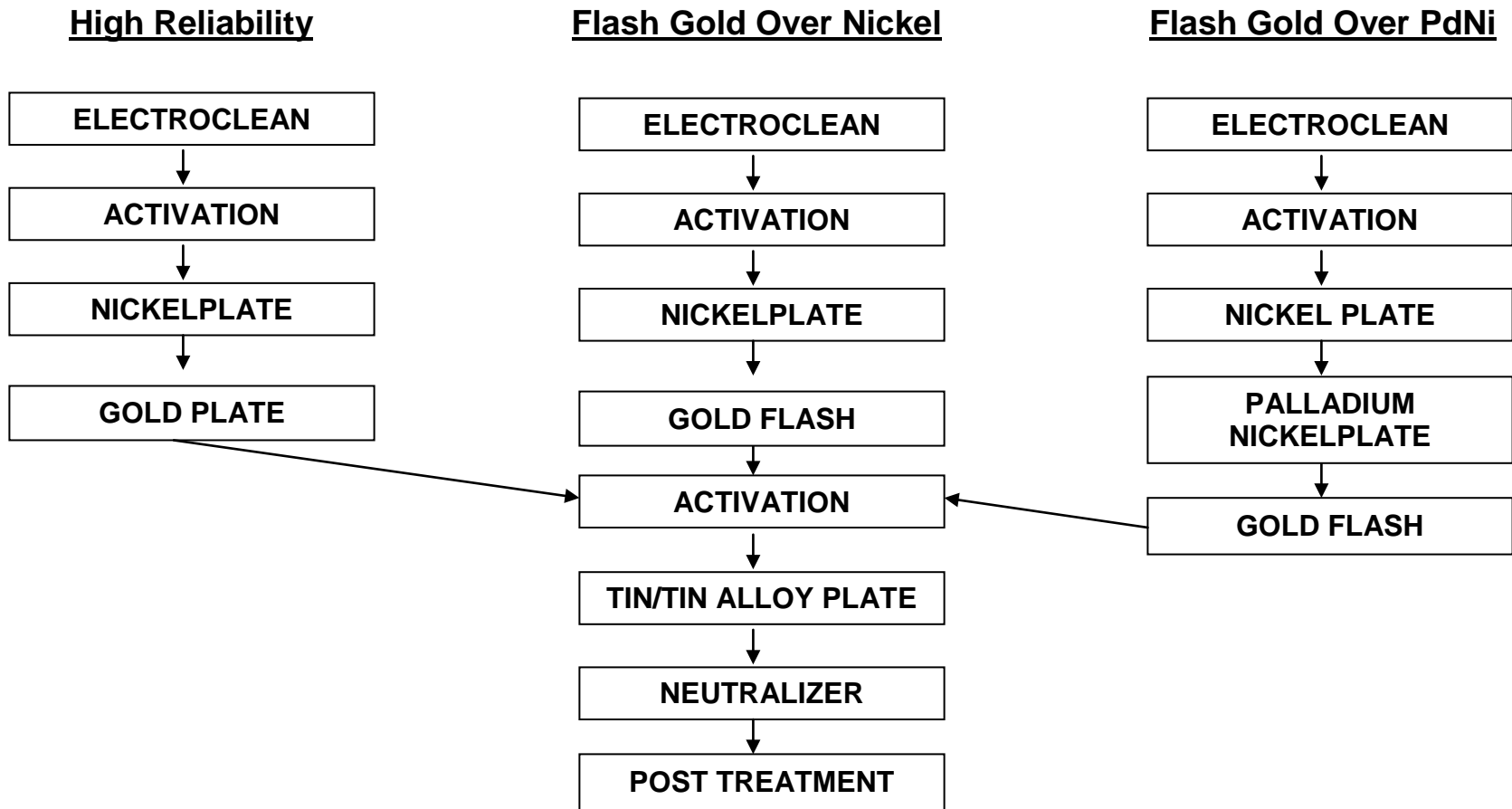
PROCESS APPLICATION GUIDE

HIGH SPEED REEL-TO-REEL CONNECTOR PLATING

PLEASE NOTE: This document is for guidance only.
Please refer to the appropriate Technical Data Sheet for additional information.

Rev 1215

Process Flow



HIGH SPEED REEL-TO-REEL CONNECTOR PLATING

HIGH RELIABILITY APPLICATIONS

- 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
Mild Activation	Techni ACT 9600	Mild descaler	ACT 9600: Cu alloys: 50 g/l Alloy 42: 150 g/l DI Water: balance	18-29°C	NA	20-60 sec	Replenish based on analysis	Acidic, non-foaming, mildly aggressive. Etch rate(1-3 µ-in/min). Effectively removes oxides & heat scale
Nickel Plate	Goldeneye Nickel	High speed proprietary nickel plating process	Goldeneye Nickel Conc: 300 ml/l Goldeneye Makeup Solution: 550 ml/l Boric acid: 50 g/l Goldeneye Nickel Stress Reducer: 20 ml/l HN-5: 5 ml/l DI water: Balance	60-65°C	5-30 ASD	Dependent on thickness requirement ~3µm/min @ 15 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.
Gold Plate	Techni Gold 800 OR	Nickel brightened gold	Techni Gold 800 Electrolyte: 1 l/l Gold as Techni Gold 800 Gold Salt: 12 g/l	38-65°C	3-10 ASD	Dependent on thickness requirement ~1.6µm/min @ 5 ASD	Replenish based on analysis	General purpose nickel hardened gold plating process for connector applications. Features reduced porosity and good tolerance for metallic contamination

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments
	Techni Gold 900	Cobalt brightened gold	Techni Gold 900 Electrolyte: 1 l/l Gold as Techni Gold 900 Gold Salt: 12 g/l	38-65°C	3-10 ASD	Dependent on thickness requirement ~1.6µm/min @ 5 ASD	Replenish based on analysis	General purpose cobalt hardened gold plating process for connector applications. Features reduced porosity and good tolerance for metallic contamination
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HIGH SPEED REEL-TO-REEL CONNECTOR PLATING FLASH GOLD OVER NICKEL - 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
Mild Activation	Techni ACT 9600	Mild descaler	ACT 9600: Cu alloys: 50 g/l Alloy 42: 150 g/l DI Water: balance	18-29°C	NA	20-60 sec	Replenish based on analysis	Acidic, non-foaming, mildly aggressive. Etch rate(1-3 µ-in/min). Effectively removes oxides & heat scale
Nickel Plate	Goldeneye Nickel	High speed proprietary nickel plating process	Goldeneye Nickel Conc: 300 ml/l Goldeneye Makeup Solution: 550 ml/l Boric acid: 50 g/l Goldeneye Nickel Stress Reducer: 20 ml/l HN-5: 5 ml/l DI water: Balance	60-65°C	5-30 ASD	Dependent on thickness requirement ~3µm/min @ 15 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.
Gold Flash	Techni Gold Flash 850 OR	Nickel brightened gold flash	Techni Gold Flash 850 Salt #1: 45 g/l Techni Gold Flash 850 Salt #2: 45 g/l Techni Gold Flash 850 Brightener: 30 ml/l Techni Gold Flash 850 Additive: 25 ml/l Gold as Techni Gold Flash 850 Gold Salts: 3.3 g/l DI water: balance	35-52°C	3-8 ASD	Dependent on thickness requirement ~0.075µm/ 12 sec @ 7.5 ASD	Replenish based on analysis	Acid nickel brightened gold plating process recommended for applying a highly uniform 2.5 microinch flash over nickel, palladium and palladium nickel alloys

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments
	Techni Gold Flash 950	Cobalt brightened gold flash	Techni Gold Flash 950 Salt #1: 45 g/l Techni Gold Flash 950 Salt #2: 45 g/l Techni Gold Flash 950 Brightener: 30 ml/l Techni Gold Flash 950 Additive: 25 ml/l Gold as Techni Gold Flash 950 Gold Salts: 3.3 g/l DI water: balance	35-52°C	3-8 ASD	Dependent on thickness requirement ~0.075µm/ 12 sec @ 7.5 ASD	Replenish based on analysis	Acid cobalt brightened gold plating process recommended for applying a highly uniform 2.5 microinch flash over nickel, palladium and palladium nickel alloys
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HIGH SPEED REEL-TO-REEL CONNECTOR PLATING FLASH GOLD OVER PALLADIUM NICKEL - 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
Mild Activation	Techni ACT 9600	Mild descaler	ACT 9600: Cu alloys: 50 g/l Alloy 42: 150 g/l DI Water: balance	18-29°C	NA	20-60 sec	Replenish based on analysis	Acidic, non-foaming, mildly aggressive. Etch rate(1-3 μ-in/min). Effectively removes oxides & heat scale
Nickel Plate	Goldeneye Nickel	High speed proprietary nickel plating process	Goldeneye Nickel Conc: 300 ml/l Goldeneye Makeup Solution: 550 ml/l Boric acid: 50 g/l Goldeneye Nickel Stress Reducer: 20 ml/l HN-5: 5 ml/l DI water: Balance	60-65°C	5-30 ASD	Dependent on thickness requirement ~3μm/min @ 15 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.
Palladium-Nickel Alloy Plate	Pallaspeed Palladium Nickel NFA	High speed 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
Gold Flash	Techni Gold 850	Nickel brightened gold	Techni Gold Flash 850 Salt #1: 45 g/l Techni Gold Flash 850 Salt #2: 45 g/l Techni Gold Flash 850 Brightener: 30 ml/l Techni Gold Flash 850 Additive: 25 ml/l Gold as Techni Gold Flash 850 Gold Salts: 3.3 g/l DI water: balance	35-52°C	3-8 ASD	Dependent on thickness requirement ~0.075µm/ 12 sec @ 7.5 ASD	Replenish based on analysis	Acid nickel brightened gold plating process recommended for applying a highly uniform 2.5 microinch flash over nickel, palladium and palladium nickel alloys
	OR							
	Techni Gold 950	Cobalt brightened gold	Techni Gold Flash 950 Salt #1: 45 g/l Techni Gold Flash 950 Salt #2: 45 g/l Techni Gold Flash 950 Brightener: 30 ml/l Techni Gold Flash 950 Additive: 25 ml/l Gold as Techni Gold Flash 950 Gold Salts: 3.3 g/l DI water: balance	35-52°C	3-8 ASD	Dependent on thickness requirement ~0.075µm/ 12 sec @ 7.5 ASD	Replenish based on analysis	Acid cobalt brightened gold plating process recommended for applying a highly uniform 2.5 microinch flash over nickel, palladium and palladium nickel alloys
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HIGH SPEED REEL-TO-REEL CONNECTOR PLATING ALL METHODS (CONTINUED) RECOMMENDED PROCESS SEQUENCE

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments
Activation	Techni NF Acid	Acid Activation prior to tin plating	Techni NF Acid: 100-200 ml/l DI water: balance	RT-45°C	NA	5-20 sec.	Replenish based on drag-out	
Matte Tin Plate	Technistan JM 7000 OR	Matte tin, high speed plating process. Sulfate based electrolyte.	Sulfuric Acid: 30 ml/l Technistan Tin Conc: 350 ml/l Technistan JM 7000 Primary: 100 ml/l Technistan JM 7000 Secondary: 20 ml/l Techni Additive C: 30 ml/l Technistan Antioxidant: 20 ml/l DI water: balance	40-50°C	5-40 ASD	Dependent on thickness requirement	Replenish based on analysis	High speed process which exhibits minimal tin whisker growth. Also recommended for reflow applications.
	Techni NF JM 8000	Matte tin plating process. MSA based electrolyte	Techni Solder NF Acid: 75 ml/l; Techni Solder NF Tin Conc: 216 ml/l; JM 6000 Additive: 40 ml/l; Techni Antioxidant #8: 20 ml/l; DI water: balance (See TDS for makeup of medium and ultra high speed solutions)	40-50°C	10-30 ASD Can also be formulated for medium speed 5-15 ASD and ultra high speed 30-100 ASD	Dependent on deposit thickness requirement ~7.5µm/min @ 15 ASD	Replenish JM 8000 Additive based on analysis.	Medium grained, high speed, pure tin whisker resistant plating process based on MSA. Satisfies all requirements of JEDEC JESD 201.
Bright Tin Plate	Techni NF JB 3000 OR	High speed bright tin plating process. MSA based electrolyte.	Techni Solder NF Acid 60 ml/l; Techni Solder NF Tin Conc 150 ml/l; JB 3000 Makeup 50 ml/l; JB 3000 Replenisher 15 ml/l; Techni Antioxidant #8 20 ml/l; DI water: balance (Optimum reflow conditions)	21-40°C	5-15 ASD	Dependent on thickness requirement	JB3000 Makeup: ~200ml/A/hr JB3000 Brightener based on drag-out only; JB3000 Replenisher ~300 ml/A/hr	Mirror bright, whisker free pure tin based on MSA. Satisfies all requirements of JEDEC JESD 201.

Process Step	Recommended Process	Description	Process Makeup	Temp	Current Density	Dwell Time	Recommended Control and Replenishment Schedule	Comments	
	Techni NF JB 3000 NS	High speed bright tin plating process, MSA based electrolyte	Techni Solder NF Acid: 100 ml/l Techni Solder NF Tin Conc (300 g/l): 116 ml/l JB 3000 NS Makeup: 100 ml/l JB 3000 NS Replenisher: 20 ml/l Techni Antioxidant #8: 20 ml/l DI water: balance (optimum reflow conditions)	34°C	10 ASD	Dependent on thickness requirement	Replenish all components except JB 3000 NS Replenisher by analysis	Recommended for deposits subjected to post plate steam aging.	
OR									
Bright Tin/Lead Plate	Techni NF JB 3400 OR Techni NF JB3500 OR Technibrite TL-12	High speed bright tin/lead plating process 90/10 to 60/40 tin lead available	See Tin Lead Alloy Plating Process Selector Guide						
OR									
Tin/silver Alloy Plate	Technistan Ag	Semi-bright high speed tin/silver alloy plating process	Technistan Ag Acid: 85 ml/l Technistan Ag Tin Conc (300 g/l): 83 ml/l Technistan Ag Makeup: 200 ml/l Technistan Ag Brightener: 25 ml/l Technistan Ag Silver Conc (200 g/l): 7.5 ml/l DI water: balance	18-32°C	7.5-25 ASD	Dependent on thickness requirement	Control Technistan Ag Brightener by Hull cell. Replenish all other components by analysis	Semi-bright to bright tin/silver alloy. 93-99% tin. Excellent anti-whiskering properties.	
Tin/silver Post Treatment	Technistan Ag Post Dip	Immersion post treatment process	Technistan Ag Post Dip Conc: 500 ml/l	21-42°C	NA	2-15 seconds	Replenish based on analysis	Designed to remove immersion silver from tin/silver deposits and preserve the deposit appearance from heat exposure.	
Post treatment	Refer to Surface Protection Application Guide.								

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