TECHNIC INC

PROCESS APPLICATION GUIDE

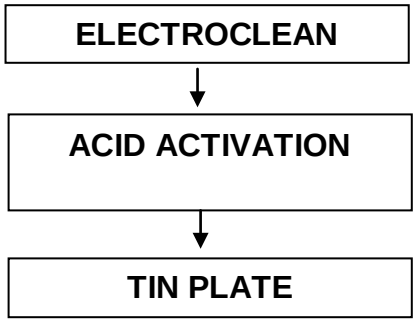
TIN PLATING PROCESSES FOR INDUSTRIAL APPLICATIONS

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

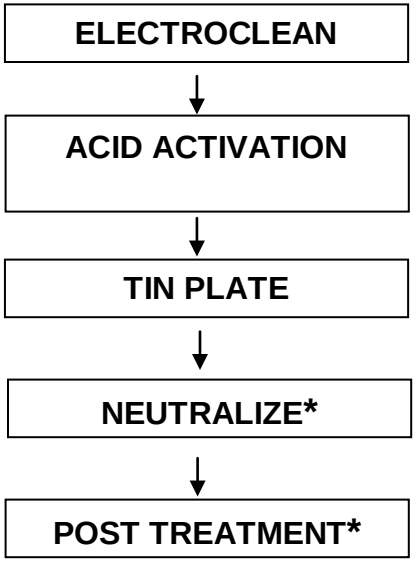
Rev 1215

Process Flow

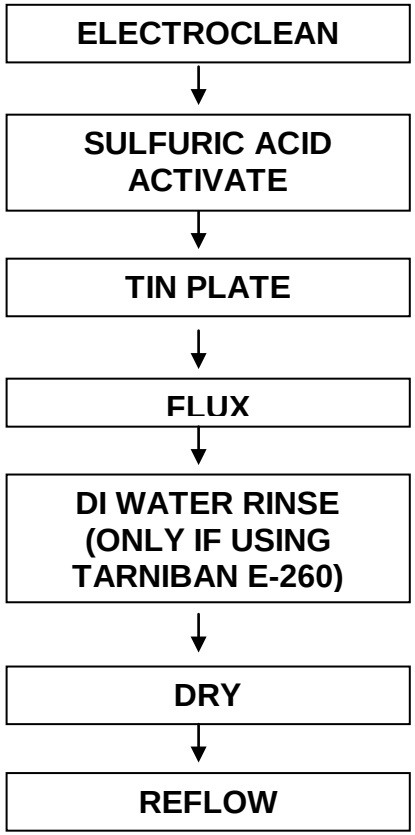
Wire
Rack & Barrel
(MATTE/BRIGHT)



Strip



Reflowed Tin Strip & Connector



***Recommended, but optional**

TIN PLATING PROCESSES FOR INDUSTRIAL APPLICATIONS
WIRE PLATING - RECOMMENDED PROCESS SEQUENCE

Process Application	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 seconds	Maintain by volumetric titration	Alkaline low foaming; chelated. Rapidly removes oils, grease, and other contaminants
Acid Activation	Sulfuric Acid	Acid Activation	5 - 10 % Sulfuric Acid	RT	NA	0.5 – 5 seconds	Based on analysis	
Tin Plate	Technistan TP-W	High speed matte/satin pure tin electroplating process for the wire industry	Sulfuric Acid: 40 ml/l Technistan Tin Conc (170 g/l) 206 ml/l Technistan TP-W Additive 100 ml/l Technistan Antioxidant 20 ml/l DI water: balance	35-55°C	10-80 ASD	As required to obtain desired deposit thickness	Replenish Technistan Tin Conc, Sulfuric Acid and Technistan Antioxidant and Technistan TP-W Additive based on analysis	Sulfate based technology offers significant cost advantages compared to MSA systems.

TIN PLATING PROCESSES FOR INDUSTRIAL APPLICATIONS
MATTE TIN RACK AND BARREL PLATING
- RECOMMENDED PROCESS SEQUENCE

Process Application	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 seconds	Maintain by volumetric titration	Alkaline low foaming; chelated. Rapidly removes oils, grease, and other contaminants
Acid Activation	Sulfuric Acid	Acid Activation	5 - 10 % Sulfuric Acid	RT	NA	0.5 – 5 seconds	Based on analysis	
Tin Plate	Technistan JM 7000	Sulfate based matte tin	Technistan Tin Conc: 120 ml/l Tin Metal: 20 g/l Sulfuric Acid“ 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	Excellent throwing power solderability. Uniform deposit appearance across the current density range.

TIN PLATING PROCESSES FOR INDUSTRIAL APPLICATIONS
BRIGHT TIN RACK AND BARREL PLATING
- RECOMMENDED PROCESS SEQUENCE

Process Application	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 seconds	Maintain by volumetric titration	Alkaline low foaming; chelated. Rapidly removes oils, grease, and other contaminants
Acid Activation	Sulfuric Acid	Acid Activation	5 - 10 % Sulfuric Acid	RT	NA	0.5 – 5 seconds	Based on analysis	
Tin Plate	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 – 35ºC	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.

TIN PLATING PROCESSES FOR INDUSTRIAL APPLICATIONS
STRIP PLATING - RECOMMENDED PROCESS SEQUENCE

Process Application	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 seconds	Maintain by volumetric titration	Alkaline low foaming; chelated. Rapidly removes oils, grease, and other contaminants
Acid Activation	Sulfuric Acid	Acid Activation	5 - 10 % Sulfuric Acid	RT	NA	0.5 to 5 seconds	Based on analysis	
Tin Plate	Technistan TP 5000	Satin finish high speed sulfate based tin process	<u>Low Line Speed (<50 m/min)</u> Technistan Tin Concentrate (170 g/l): 205 ml/l Sulfuric Acid: 30 ml/l Technistan TP 5000 Additive: 50 ml/l Technistan Antioxidant: 20 ml/l <u>High Line Speed (>250 m/min)</u> Technistan Tin Concentrate (170 g/l): 88 ml/l Sulfuric Acid: 40 ml/l Technistan TP 5000 Additive: 50 ml/l Technistan Antioxidant: 20 ml/l	35 – 50° C	5 – 50 ASD	As required to deposit specified thickness	All components replenished on basis of analysis	Exceptionally uniform deposit across a wide current density range. Offers significant cost benefits compared to MSA based processes.
Neutralize (optional)	Technic PST Neutralizer	Neutralize/ rinse aid	PST Neutralizer: 20 g/l DI water: balance	45-55ºC	NA	5-20 sec	Replenish based on analysis	Effectively neutralizes acid films from tin and tin/lead plating process
Post Treatment (optional)	Tarniban® C48	Post treatment for tin, nickel and copper	Tarniban C48: 20 ml/l DI water: balance	21-30ºC	NA	3-60 seconds	Replenish based on drag-out or UV/VIS analysis	Specifically designed for use on tin and tin alloy deposits which are subjected to post-plate thermal exposure in high humidity/steam environments. For optimal results, Tarniban C48 should be used in combination with Technic PST.

TIN PLATING PROCESSES FOR INDUSTRIAL APPLICATIONS
REFLOWED TIN STRIP & CONNECTOR - RECOMMENDED SEQUENCE

Process Application	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 seconds	Maintain by volumetric titration	Alkaline low foaming; chelated. Rapidly removes oils, grease, and other contaminants
Acid Activation	Sulfuric Acid	Acid Activation	5 - 10 % Sulfuric Acid	RT	NA	0.5 to 5 seconds	Based on analysis	
Tin Plate	Technistan TP 5000	Satin finish high speed sulfate based tin process	<u>Low Line Speed (<50 m/min)</u> Technistan Tin Concentrate (170 g/l): 205 ml/l Sulfuric Acid: 30 ml/l Technistan TP 5000 Additive: 50 ml/l Technistan Antioxidant: 20 ml/l <u>High Line Speed (>250 m/min)</u> Technistan Tin Concentrate (170 g/l): 88 ml/l Sulfuric Acid: 40 ml/l Technistan TP 5000 Additive: 50 ml/l Technistan Antioxidant: 20 ml/l	35 – 50 C	5 – 50 ASD	As required to deposit specified thickness	All components replenished on basis of analysis	Exceptionally uniform deposit across a wide current density range. Offers significant cost benefits compared to MSA based processes.
Flux	HCl **OR**		0.5 to 1.5% v/v	RT	NA	0.5 – 2 seconds	By analysis	Flux will brighten thick deposits. High concentrations can cause stain.
	Tarniban® E260	Post treatment for tin and tin/lead deposits	Tarniban® E260: 100 ml/l	25-35°C	NA	3-20 seconds	Replenish based on analysis	Protects tin and tin alloy deposits from discoloration when subjected to thermal conditioning (heat, reflow, etc.)

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