DATE 10-25-61 SHEET 3 OF 4	TMC SPECIFICATION NO. S-423	B
16 COMPILED / CHECKED	TITLE: IRIDITE SILVER-KOTE (18-P)	
APPROVED		

CONTROL METHODS

Titration Control

Equipment:

Pipette	10 ml.
Burette	50 ml.
Beaker	400 ml.
Graduate	10 ml.
Stirring rod	

Solutions:
1. Sodium thiosulfate $Na_2S_2O_3$, 0.1 N standardized against $K_2Cr_2O_7$
2. Potassium Iodide KI 10%
3. Starch indicator

Method:
1. Pipette 10 ml. of solution into beaker and dilute to 250 ml. with distilled water.
2. Add 10 ml. of potassium iodide and 5 ml. of conc. sulfuric acid. Stir.
3. Titrate with sodium thiosulfate solution to a light yellow color.
4. Add 1 to 2 ml. starch solution.
5. Continue titration adding thiosulfate solution dropwise with constant stirring until the dark blue color produced by the starch fades to a clear solution. Solution may be slightly milky if the concentration of silver is high.

Calculations: Ml. thiosulfate x normality x 1.95 = oz/gal. compound.

After addition of any necessary Iridite #18-P compound adjust pH by adding small quantitites of technical grade Nitric Acid.

pH Determination

Measure pH with electrometric pH meter.

Electrometric pH adjustment per 100 gallons

Iridite #18-P Compound	1 pound
Nitric Acid (42°Be')	6.5 fl. ounces
(will lower pH 0.05 units)	

PRE-CLEANING PROCEDURES

Freshly Plated Silver should be thoroughly rinsed and then immersed in the neutralizing dip of 1/2% Nitric Acid for 5 to 10 seconds. This will remove or neutralize any possible cyanide or alkaline contamination of the metal surface. After neutralizing, rinse thoroughly and then Iridite.

Silver surfaces which have been dried and become soiled should be cleaned in a solution of sodium or potassium hydroxide at 6 oz/gallon at a temperature of 160° to 180°F. until a surface free from water breaks is observed. Rinse thoroughly and re-activate and remove tarnish from the surface by immersion in a solution of sodium or potassium cyanide at 4 to 6 oz/gallon at room temperature until tarnish is removed. Follow by rinsing and neutralizing.

Where only a light tarnish is present the activation in the cyanide dip is sufficient and should be followed by rinsing and neutralizing.

No chemical polishing occurs in the Iridite #18-P solution. Consequently, if a bright surface is desired, a bright plating solution must be used or work must be mechanically or electrolytically polished.

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RINSING AND DRYING PROCEDURES

Rinsing After Iriditing- the rinse after Iriditing should be a running rinse to flush off clinging Iridite solution. Final hot rinse to facilitate drying can be used up to 160° F., and an in-and-out dip is recommended. Long immersion times are detrimental to the Iridite coating.

Drying - drying may be accomplished by air blast, centrifuge or warm circulating air. Temperatures over 160°F. should be avoided since they will tend to lower the corrotion protective value of the finish.

WARRANTY

All formulas referred to in these instructions are guaranteed as to formulated quality upon shipment from our plant. If the above recommended procedures and instructions are followed, desired results will be obtained. However, as actual use of our product by others is beyond our control, no guarantee, expressed or implied, is made as to the effects of such use, or the results to be obtained.

Note: All gallon measurements are U. S. Gallons.

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INTRODUCTION

Iridite #18-P Silver-Kote is a chemical dip process for producing a clear, protective, tarnish resistant chromate film on silver.

Iridite #18-P Silver-Kote is very economical to use and has a number of advantages over treatments usually used to provide corrosion protection and tarnish resistance of silver.

The film is practically colorless, causes no dimensional change, can be easily soldered. The electrical contact resistance is quite low.

QUICK GLANCE FLOW CHART

1. Silver Plate or Activate
2. Warm or Cold Running Rinse
3. Neutralizing Dip 1/2% Nitric Acid
4. Warm or Cold Running Rinse
5. Iridite #18-P Silver-Kote
6. Warm or Cold Running Rinse
7. Hot Rinse
8. Dry

OPERATING DATA

Tank linings for working solution

Stainless steel 18-8
Rubber
Koroseal
Tygon

Heating Coils

Stainless steel 18-8

The powdered compound as received is dissolved at the rate of 1-1/2 oz/gallon. Dissolve thoroughly before using. Use of warm water will speed the solution of the compound but the temperature should drop to 80°F. before use.

Operating Conditions

Concentration	1.5 to 3 oz/gallon
pH	1.5 to 2.1
Temperature	70° to 80°F.
Immersion time	1/2 to 2 minutes

Formation of a dark coating indicates too high a concentration, too high a temperature, too low a pH, or excessive agitation of the work. Concentration of 1.5 oz/gallon is satisfactory for still or rack work while 3 oz/gallon is recommended for barrel work.

Note: Large concentrations of chlorides in the Iridite solution or in the rinses will cause subsequent staining due to the photosensitivity of silver chloride. While concentrations of a few parts per million of chlorine in tap water usually give no trouble, deionized or distilled water is sometimes necessary.

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DATE 6/12/59 SH. 1 OF 4 COMPILED BY	TMC SPECIFICATION NO. S - 423 B	
APPROVED	TITLE: IRIDITE 18-P SILVER-KOTE	JOB

1. Applicable Metals

Silver Plate

2. Applicable Specifications

Technical information for Iridite 18-P Silver-Kote, as supplied by Allied Research Products, Inc., Baltimore, Maryland. MIL Spec - None.
(SEE SHEETS 2, 3, & 4 OF THIS SPEC.)

3. Type of Coating

3a. Iridite 18-P Silver-Kote shall be of the following types:

Type 1 - Yellow cast

Type 2 - Clear

NOTE: Type 2 clear, normally should be specified for TMC parts.

4. Material and Workmanship

4a. Material - The material used in the process of giving a protective coating on Silver Plate shall be as outlined in paragraph #2.

4b. Workmanship - The application operation or Iridite 18-P Silver-Kote shall be such that the resultant finish obtained shall match in every detail to sample chips marked.

Type 1 - Yellow cast

Type 2 - Clear

All details of Workmanship shall conform to the type best practice for high quality treatment.

5. General Information

Iridite 18-P Silver-Kote is a chemical dip process producing a Yellow Cast or Clear, protective, highly corrosive and tarnish resistant Silver Plate chromate film.

NOTE - SEE SHEETS 2, 3, & 4 OF THIS SPEC. FOR PROCEDURE

REVISION SHEET	THE TECHNICAL MATERIEL CORP. MAMARONECK NEW YORK	S-423

MODEL _____ PROJECT NO. _____

DATE	REV.	PAGE	EMN#	DESCRIPTION	CHK.	APP.
10/25/61	A	ALL		ADDED PAGES 2, 3, & 4		
5/19/65	B	1	14062	Revised shts 1 as per EMN		