

DATE 6/12/59

SH. 1 OF 1

COMPILED BY

TMC SPECIFICATION NO. S - 425

TITLE: IRIDITE 17-P CUPREOUS-KOTE

JOB

APPROVED

1. Applicable Metals

Copper, Brass, Bronze, Nickel and Gold.

2. Applicable Specifications

Technical information for Iridite 17-P Cupreous-Kote, as supplied by Allied Research Products, Inc., Baltimore, Maryland. MIL Spec - None.

3. Type of Coating

3a. Iridite 17-P Cupreous-Kote shall be of the following types:

Type 1 - Brownish, mix

Type 2 - Clear, mix

NOTE: When type is not specified, Type 1 shall be used.

4. Material and Workmanship

4a. Material - The material used in the process of giving a protective coating, on copper, brass, bronze, nickel and gold shall be as outlined in paragraph #2.

4b. Workmanship - The application operation or Iridite 17-P Cupreous-Kote shall be such that the resultant finish obtained shall match in every detail to sample chips marked.

Type 1 - Brown, mix

Type 2 - Clear, mix

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

5. General Information

Iridite #17-P Cupreous-Kote provides copper, brass, and bronze with a heavy chromate conversion coating for maximum protection against corrosion or a thin film which provides protection plus an excellent base for paint.

IRIDITE #17-P CUPREOUS-KOTE

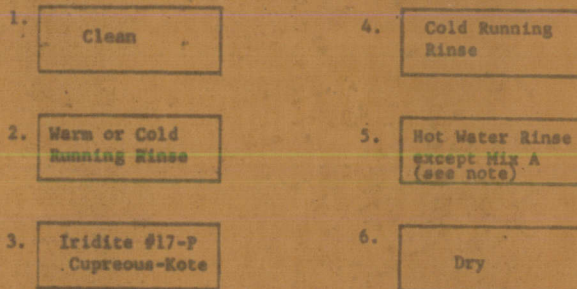
For Copper and Cupreous Alloys

INTRODUCTION

Iridite #17-P Cupreous-Kote provides copper, brass and bronze with a heavy chromate conversion coating for maximum protection against corrosion or a thin film which provides protection plus an excellent base for paint.

Iridite #17-P coatings formed by the addition of hydrochloric acid can be dyed various colors using regular Iridite dyes. These dyes are organic types which fade on constant exposure to sunlight, but provide excellent colors for part identification purposes.

QUICK GLANCE FLOW CHART



Note: Cold water must be used as a final rinse when using Mix A on copper.

OPERATING DATA

Tank linings to hold working solution

Stoneware crock
Koroseal or equal
Polyethylene
Stainless steel 18-8 (Mix B only)

Iridite #17-P Cupreous-Kote is received as a balanced powder. The powdered concentrate is mixed with water to which Hydrochloric Acid is added if a heavy film and maximum corrosion protection are desired; or Nitric Acid is added for a protective film for paint bonding.

Mix A - for maximum corrosion protection and dyed coatings

Working Solution	#17-P Compound	Conc. Hydrochloric Acid
1 gal.	1 oz.	2.0 ml.
5 gal.	5.5 oz.	10.0 ml.
10 gal.	11.0 oz.	20.0 ml.
20 gal.	1.5 lbs.	40.0 ml.
50 gal.	3.5 lbs.	100.0 ml.
75 gal.	5.0 lbs.	150.0 ml.
100 gal.	7.0 lbs.	200.0 ml.

Mix B - for protective film and bond for paint

Working Solution	#17-P Compound	Conc. Nitric Acid (40%Be')
1 gal.	1 oz.	12 ml.
5 gal.	5.5 oz.	2 fl. oz. (60 ml.)
10 gal.	11.0 oz.	4 fl. oz. (120 ml.)
20 gal.	1.5 lbs.	8 fl. oz. (240 ml.)
50 gal.	3.5 lbs.	20 fl. oz. (1.5 pts.)
75 gal.	5.0 lbs.	30 fl. oz. (2 pts.)
100 gal.	7.0 lbs.	40 fl. oz. (3 pts.)

Operating Conditions

Immersion time 5 seconds to 3 minutes
Solution temperature 75° to 90°F.

Maintenance

Solution is maintained within plus or minus 10% of the original concentration by using the titration method. Compound and acid are added to maintain this concentration using the original ratio.

Caution: Iridite powdered mix or solution on the skin should be washed off immediately with a good quantity of water. It should be kept from contact with wood and other organic materials since it is oxidizing in nature. Iridite #17-P solution is an acid solution and should be handled with the same care as other acid mixes.

Caution: Iridite #17-P should never be mixed with water in a steel container. See tank linings for proper containers.

Be sure to replace lid tightly on #17-P container.

CONTROL METHODS

Hexavalent Chromium Determination

Equipment: Pipettes 2 ml. and 50 ml. capacity
Graduated cylinders 500 ml. and 10 ml. capacity
Beaker 400 ml. capacity
Stirring rod
Burette with glass stopcock capacity 50 ml.

Solutions

- Standard 0.1 N Potassium Permanganate
- Ferrous Ammonium Sulfate solution, prepared by dissolving 35.0 grams of $FeSO_4(NH_4)_2SO_4 \cdot 6H_2O$ and 10 ml. CP H_2SO_4 in one liter of distilled water.
- Sulfuric Acid (Sp. Gr. 1.84)
- Phosphoric Acid (Sp. Gr. 1.7)

Method A

- Pipette a 20 ml. portion of the ferrous ammonium sulfate into a 400 ml. beaker.
- Dilute with 100 ml. of distilled water.
- Add 5 ml. of concentrated sulfuric acid and 4 ml. of phosphoric acid.
- Cool to room temperature and titrate with the standard permanganate. At the end point the color ranges from pale yellow to pinkish. The color should hold for one minute after stirring.
- Read the burette.
- Record the reading, A ml.

Method B

- Pipette a 2 ml. sample of the #17-P solution into a 400 ml. beaker and dilute with 100 ml. of distilled water.
- Pipette a 20 ml. portion of the ferrous ammonium sulfate into the beaker.
- Add 5 ml. of concentrated sulfuric acid and 4 ml. of phosphoric acid.
- Cool to room temperature and titrate with the standard permanganate until the clear blue-green color changes to a purple grey shade.
- Read the burette.
- Record the reading, B ml.

Calculation

$$\text{Oz/gallon of Compound} = (A-B) \times 0.254$$

PRE-CLEANING PROCEDURES

Fire scale or other oxide conditions should be removed by pre-pickling before treatment with Iridite.

Surfaces which are coated with light oils, and other materials which are easily removed, may be cleaned by vapor degreasing or by alkali cleaning and rinsing.

Contaminants such as pigmented drawing compounds, paints, carbonized oils, etc. should be pre-cleaned in a cold solvent emulsion tank or hot emulsion spray, followed by spray rinse, alkali cleaning and rinsing.

A 10% to 20% Hydrochloric Acid dip operated at room temperature for 5 to 10 seconds will neutralize any alkali carried over from the alkaline cleaner; and also by activation, help prepare the surface for the Iridite coating.

RINSING AND DRYING PROCEDURES

Good flowing rinses are recommended throughout the Iridite operation and are a must for optimum results. A warm rinse is preferable when practical. Agitation in the rinse is advantageous.

Rinse After Iridite- this rinse should be regular running tap water to remove excess chromate solution carried out of the Iridite bath.

Last Rinse- the last rinse should be warm and used to accelerate drying of the processed parts. It should be maintained at a temperature not higher than 150°F. Higher temperatures will cause a dulling of the Iridite coating. A quick in-and-out dip will be found most beneficial.

Cold water must be used as a final rinse when using Mix A on copper.

Drying- drying may be done by air blast or centrifuge. Temperatures in excess of 150°F. will tend to dull film and somewhat lower the corrosion resistance.

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.

June 10, 1934