

**TEST FOR DICYCLOHEXYLAMMONIUM NITRITE**

**Application**

This procedure is used to determine the amount of volatile corrosion inhibitor in treated papers. It should only be used for papers which have dicyclohexylammonium nitrite as the single corrosion inhibitor in the paper.

**Apparatus Required**

**Photometer or Spectrophotometer**

The Photometer or Spectrophotometer used in this test shall have a transmission band at 540 Mu with maximum band width of 60 Mu.

**Solutions Required**

**Hydrochloric Acid (1:1)**

Dilute 25 mL of HCl Sp. Gr. 1.18 with an equal volume of distilled water.

**Sulfanilamide Solution - 0.2 %**

Weigh 1.0 g of the reagent, Eastman No. 4378, dissolve in distilled water and dilute to 500 mL. Store in a dark bottle and renew the solution every two months.

**N-1 Naphthylethylenediamine Dihydrochloride - 0.1 % Solution**

Weigh 1.0 g of the reagent, Eastman No. 4835, dissolve in distilled water and dilute to 1000 mL. Store in a dark bottle and renew the solution every two months.

**Standard Sodium Nitrite Solution**

Dissolve 1.0000 g of CP  $\text{NaNO}_2$  in distilled water and dilute to 1000 mL in a volumetric flask and mix thoroughly. Dilute 10 mL of this solution to 1000 mL with distilled water and mix thoroughly. Each mL of the resulting dilute standard solution contains 10 micrograms (0.010 milligrams) of sodium nitrite equivalent to 33 micrograms of dicyclohexylammonium nitrite. This solution should be stored in a dark bottle and made fresh every two months.

| Date       | Action  | Revisions                                  |
|------------|---------|--------------------------------------------|
| 2001 01 31 | Revised | Editorial – no technical change A. Cockman |
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**Standardization**

Prepare a curve on graph paper plotting the Photometer reading vs. dicyclohexylammonium nitrite as follows:

Introduce 1, 2, 3, 4 and 5 mL of the dilute sodium nitrite solution into separate 50 mL volumetric flasks and proceed with development of the color as directed in the procedure for analysis, starting with Step 4. To another 50 mL flask add the reagents alone starting with Step 4 of the procedure. This solution will contain no nitrite but will be used as a blank on the reagents.

Measure the absorption of each solution and subtract the reading of the blank from those of the other standards. Plot these corrected readings against the number of micrograms of dicyclohexylammonium nitrite (3.3 times sodium nitrite values).

**Conditioning and Test Conditions**

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

**Procedure**

1. Cut an accurately measured 1 inch square piece of coated carrier into strips 1/8 x 1/2 inch (approx.) and place in a 500 mL volumetric flask.
2. Fill the flask to the mark with distilled water, stopper and shake well. Allow to stand for 20 - 30 minutes with occasional agitation.

Note: Dicyclohexylammonium nitrite is completely extracted for most treated carriers within 20 or 30 minutes with less time required for paper than for cardboard or laminated materials. In some cases where the dicyclohexylammonium nitrite has been occluded, a supplementary analysis should be made several hours later to determine completeness of extraction.

3. Place approximately 15 mL of distilled water in a 50 mL volumetric flask and pipette a 5 mL aliquot of the above extract into this flask.
4. Add 1 mL of dilute HCl (1:1).