



Test Monitoring Center

Carnegie Mellon University
6555 Penn Avenue, Pittsburgh, PA 15206, USA

<http://astmtmc.cmu.edu>
412-365-1000

CBT Information Letter 13-1
Sequence No. 10

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ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.

TO: CBT Mailing List

SUBJECT: Removal of Microscope Reference
New Degreasing Solvent
New Glassware Cleaning Solution
Tetrahydrofuran Replacement
Editorial Revisions

Removal of Microscope Reference

As approved by the Corrosion Bench Test Surveillance Panel, the microscope referenced in 5.3.7 has been deleted from D5968 as it is not used in the test method as written. Section 5.3.7 has been deleted and subsequent sections have been renumbered accordingly. This change is effective August 15, 2013.

New Degreasing Solvent

As approved by the Corrosion Bench Test Surveillance Panel, the degreasing solvents Trichlorotrifluoroethane or 1,1,1-trichloroethane have been replaced with heptane. Section 6.7 has been revised accordingly. This change is effective August 15, 2013.

New Glassware Cleaning Solution

As approved by the Corrosion Bench Test Surveillance Panel, the glassware cleaning solution defined in 6.8 has been replaced with Contrad® 70. Section 6.8 has been revised accordingly and footnote 12 added to show a source for this material. This change is effective August 15, 2013.

Tetrahydrofuran Replacement

As approved by the Corrosion Bench Test Surveillance Panel, the material Tetrahydrofuran has been replaced with acetone. Section 6.10 has been deleted, and Sections 7.4.1, 7.4.2.2, 8.4.1 and 8.4.2 have been revised. This change is effective August 15, 2013.

Editorial Revisions

Several editorial revisions have been made to bring the standard in conformance with ASTM Blue Book guidelines. Most of the revisions involve proper formatting between a value and its unit specification. Additionally, for SI compliance weight was changed to mass and ppm was changed to mg/kg.

Gil Reinhard
Chairman
CBT Surveillance Panel

Frank M. Farber
Director
ASTM Test Monitoring Center

Attachment

c: ftp://ftp.astmtmc.cmu.edu/docs/bench/cbt/procedure_and_ils/cbt13-1.pdf

Distribution: Email

1.2 The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Specific hazard statements are given in 5.3.1, 6.6, 6.7, 6.8, 6.9, 6.10, 7.1.1, 7.1.2, 7.1.5, and 7.4.1.*

5.2.1 Spacers (for metal specimen), of borosilicate glass, standard wall, 9 mm outside diameter, 6 mm length.

5.2.2 Oil Sampling Tube, Borosilicate Glass, 4 mm outside diameter, with sampling end approximately 600 mm to reach into main sample tube. Tube is bent U-shape with exit end fitted by a one-hole stopper to a 25 mL filtering flask. Exit end may be any convenient length.

5.3.1 Heating Bath, constant temperature control within ± 0.5 °C (± 1 °F) of test temperature with an immersion depth of 23 cm to 35 cm. Oil or aluminum baths are recommended.

5.3.4 Flowmeter, capable of measuring (10 ± 1) L/h.

5.3.6 Balance, Laboratory, 2500 g capacity, 0.1 g sensitivity.

{Section 5.3.7 has been deleted.}

{Renumber sections 5.3.8 to 5.3.13 as appropriate.}

6.7 *Degreasing Solvent*, Heptane. (Warning—Flammable. Health hazard.)

6.8 *Glassware Cleaning Solution*, Contrad® 70.^{8,11A} (Warning—Health hazard.)

{Section 6.10 has been deleted.}

{Renumber sections 6.11 to 6.14 as appropriate.}

7.1.2 Fill or immerse the sample tube, air tube, and the 9 mm glass spacers in carbon remover at room temperature until carbonaceous deposits are removed. Water rinse after removal. (Warning—Corrosive, causes severe burns.)

7.4.1 Wash a length of the metal tying wire with acetone and allow to dry. (Warning—This and the following preparation processes should be performed under a fume hood.)

7.4.2.2 In all succeeding steps, handle the squares only with tongs or filter paper until the final weighing. If large defects or particles are present on the metal coupons, coarse sand paper should be used first to remove them; this is followed by polishing with the 240 and 400 grit abrasive paper.

- (1) Store the polished metal coupon in acetone and proceed until all coupons are polished.
- (2) Remove each square from the acetone; clean all metal dust from the square by rubbing vigorously with clean pads of absorbent cotton until a fresh pad remains unsoiled.
- (3) Wash the squares in acetone and allow them to dry in a desiccator.
- (4) Immediately weigh each square to within 0.1 mg.
- (5) Arrange all squares in the wooden assembly fixture in the pattern shown in Fig. 7. The sequence should be: lead, copper, tin, phosphor bronze.

8.1.2 Add (100 ± 1) mL of oil to the test tube, reweigh the air tube, test tubes, and contents together to within 0.1 g, and determine the mass of oil added.

8.1.3 Assemble the test tube and condenser and mount the assembly so that the test tube is submerged 23 cm to 35 cm in the bath with the test oil temperature set at $(121 \pm 0.5) ^\circ\text{C}$.

8.2 To begin testing connect the source of clean, dry air (5 ± 0.5) L/h to the air tube and allow the air to flow for 168 h.

8.3 End of Test—After 168 h at $121 ^\circ\text{C}$, shut off the air-flow, disassemble, and check test setup as follows:

8.3.3 Re-weigh the air tube, test tube, and contents to within 0.1 g, determine mass of oil sample remaining, and compute the percentage of mass loss resulting from evaporation of oil.

If the evaporation loss is greater than 8 %, leakage is present. Correct the leak, and repeat the determination, using fresh oil sample and new coupons.

8.4.1 Using forceps, wash each square individually in acetone.

8.4.2 Repeat the washing, using fresh acetone, scrubbing the squares with the short-bristled brush until the acetone shows no additional discoloration. Use a piece of Kimwipe, dampened with acetone, to rub and wipe the coupons repeatedly until the tissue remains clean after wiping. Allow the squares to air-dry. The reaction products that are to be removed by this cleaning process may tend to have a stronger affinity to the bronze material, and therefore may be more difficult to remove from the bronze coupon. Improper removal of the reaction products from the coupons may result in inaccurate mass change measurements. With the bronze coupon, brushing may need to be more vigorous to remove the reaction products, but take care not to scrub to the point where any of the coupon surfaces are being polished or abraded.

8.5.1 Re-weigh each square to the nearest 0.1 mg and compute (in mg/cm^2 of surface) the change in mass of each square (see 10.1).

9.1.5 Evaluation of Reference Test Oil Results—Upon receipt of the transmitted TMC reference oil test results, the TMC reviews the test for operational adherence to the published procedure. If the test is found to be operationally valid, the reference oil results are evaluated using acceptance criteria established by the governing surveillance panel. The reference oil acceptance criteria are subject to change at the discretion of the surveillance panel.

10.1 Change in Metal Square Mass:

where:

M = change in metal mass per surface area, mg/cm^2 ,

M_1 = final mass, mg,

M_2 = original mass, mg,

W = width of metal square, cm, and

L_e = length of metal square, cm.

10.2.1 Correction Factor—

where:

$C_{\text{Lead Corrected}}$ = corrected change in lead concentration,
mg/kg, and

C_{Lead} = change in lead concentration, before and after test,
mg/kg, as determined in 10.2.

11.4 Report the change in mass of each of the coupons in mg/cm^2 .

Add footnote 12 as:

¹² Contrad® 70 is available from Decon Laboratories, Inc. 460 Glennie Circle, King of Prussia, PA 19406. (800)332-6647.

and renumber existing footnotes 12-13.