



SUBJECT:

SUPERSEDES Aug. 24, 1949

* This specification covers the Bulb Preparation Section (Cathode-Ray Tube Factory) hand washing processes for: (1) all-glass bulbs with screen and graphite coating, (2) new all-glass bulbs and all-glass bulbs with screen which are used in small quantities and which cannot be accomodated on the automatic machines, and (3) any new bulb or bulb with screen, alternate to automatic processes.

1. EQUIPMENT

- a. Wash sink.
- b. Beakers
- c. Rubber gloves, apron, and goggles.

2. MATERIALS

- * a. A609 Ammonium Bifluoride or H7 Hydrofluoric Acid.
- b. P30 Potassium Dichromate
- c. A24 Sulfuric Acid
- d. S109 Sand
- e. Tap Water

AMMONIUM BIFLUORIDE SAFETY PRECAUTIONS: See 33-2-7C.
 HYDROFLUORIC ACID SAFETY PRECAUTIONS: See 33-2-7A.
 SULFURIC ACID SAFETY PRECAUTIONS: See 33-2-7C.
 CHROMIC ACID SAFETY PRECAUTIONS: See 33-2-7B.

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3. PREPARATION OF ACIDS

a. Hydrofluoric Acid.

Fill one 400-cc. plastic bottle half full of cold tap water. Add 50 cc. of H7 hydrofluoric acid. Fill bottle to about 1/2 in. from the top with cold tap water. Mix well by shaking.

b. Chromic Acid.

Dissolve 45-50 gm. P30 potassium dichromate in 150 cc. cold tap water in a 1-liter Pyrex beaker. Add A24 sulfuric acid slowly in small quantities from a 9-lb. bottle until a thick sludgy precipitate is formed, stirring well with a glass rod to distribute the reaction in the solution and allowing sufficient time for cooling between additions of acid. (The total amount of acid added should be at least 150 cc.) When cool add the material in the beaker in small quantities to the sulfuric acid remaining in the 9 lb. bottle. After each addition pick up the bottle (in both hands, one at the top of the bottle and the other at the bottom) and leaving it unstoppered, shake gently to mix the materials and distribute the evolved heat. Do not allow the bottle to reach a temperature greater than 50° C. and do not replace the stopper in the bottle until the solution cools to room temperature.

(Cont. on page 2)

SCALE—

DIMENSIONS IN

UNLESS OTHERWISE SHOWN.

DIMENSIONS SHOWN WITHOUT TOLERANCES ARE DESIGN CENTERS

2-508-14-60 PCL13301-121JD

* CHANGE
 ** ADDITION
 *** DELETION

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MAY 1955

4. PROCEDURE

The following are the procedures referred to on the bulb assemblies, each letter representing a particular step or procedure in the bulb cleaning schedule.

"A" Hot tap rinse. Rinse thoroughly with hot tap water spray (80 ± 5°C.) for about 1/2 minute. Drain.

"B" Sand swirl. For a 10-in. bulb use 300-400 gm. 33-S-109 sand and 300-400cc. hot tap water. Wash by swirling vigorously. Pour suspension into stainless beaker from which the water is decanted and the sand is used over and over again. For larger or smaller bulbs use proportionately more or less of sand-water mixture.

"C" Chromic acid rinse. For a 10-in. bulb use approximately 200 cc. of chromic acid. Swirl in such a way as to bring the acid in contact with all inside surfaces of the bulb. Pour the acid into a Pyrex beaker, draining only momentarily. (Use the acid over and over again until spent. It is usually good for five to ten bulbs. It is definitely spent when the color turns green, but may be spent before this change in color is observed.) Add approximately 100 cc. of tap water to the acid drainings remaining in the bulb. Swirl again. Pour this dilute acid into the sink.

For larger or smaller bulbs, use proportionately more or less chromic acid and water.

"D" Ammonium bifluoride or hydrofluoric acid rinse. For a 10-in. bulb use approximately 200 cc. of 10-12% ammonium bifluoride or 6% hydrofluoric acid. Swirl in such a way as to bring the solution in contact with the conductive coating on the sides of the bulb; pour the solution into a beaker. (Use the solution over and over again, until its dissolving power is spent. One lot of solution, with make-up, is usually good for about five bulbs.) Repeat this washing if necessary. Use a steel-wool swab to remove the last traces of conductive coating if they can not otherwise be removed.

"E" Hydrochloric acid rinse. Fill bulb with a 20% solution of hydrochloric acid. Let soak for approximately 2 min. or more. Pour out and rinse.

NOTE: If cases arise in which the screen can not be completely removed by the procedures specified for "salvaged bulbs with screens", follow up with ammonium bifluoride solution or hydrofluoric acid and hot tap rinses.

§ Bulbs of the following tube types shall be washed with 6% hydrofluoric acid: 5TP4 kinescope and all oscilloscopes except 905A, 912 and 914A.

* Correction

ENGINEERING SECTION
STANDARDIZING

SCALE—

DIMENSIONS IN

UNLESS OTHERWISE SHOWN. DIMENSIONS SHOWN WITHOUT TOLERANCES ARE DESIGN CENTERS

14-528-27-60

RH-126JK

* CHANGE
** ADDITION
*** DELETION

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