



Standard Method of Test for **ARSENIC IN PAPER AND PAPERBOARD¹**



ASTM Designation: D 2173 - 68

This Standard of the American Society for Testing and Materials is issued under the fixed designation D 2173; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

Scope

1. This method² covers the determination of arsenic in paper and paperboard. It is also applicable to pulp. It is a colorimetric procedure applicable in the range from 0 to 10 μg of arsenic per sample. A 4-g pulp or paper sample is specified; hence the range of arsenic level in the material under test can range up to 2.5 ppm.

Summary of Method

2. The specimen is wetted with a saturated solution of magnesium nitrate and is then oven-dried. It is ashed in a muffle furnace to form magnesium pyroarsenate. The ash is dissolved in dilute hydrochloric acid and the arsenic is converted to arsine by treating with potassium iodide and metallic zinc. Arsine is distilled into a trap containing

iodine and then treated with ammonium molybdate to form heteropolymolybdiarsenate, which is reduced to molybdenum blue by hydrazine. The absorbance of the stable blue color at 840 $\text{m}\mu$ is proportional to the arsenic content of the specimen.

Apparatus

3. (a) *Evaporating Dishes*, 200-ml, fused silica.

(b) *Spectrophotometer* for measuring the light absorbance at 840 $\text{m}\mu$ with Corex cells having a 1.0-cm light path.

(c) *Arsine Generators* (see Fig. 1), assembled in the following order:

(1) A 125-ml Erlenmeyer flask with standard taper neck.

(2) A funnel with its top and stem having standard-taper joints with a coarse porosity fritted disk.

(3) A gas dispersion tube (12-mm diameter) with a standard-taper joint at one end and coarse porosity fritted glass cylinder at the other end. This tube shall be bent in such a manner that when the standard-taper joint is fitted to the top of the funnel, the other end is about 1 cm from the desk top. Required also is

¹ Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-6 on Paper and Paper Products. A list of members may be found in the ASTM Year Book.

Current edition accepted Sept. 13, 1968. Originally issued 1963. Replaces D 2173 - 63 T.

² This method is related to the TAPPI Method T 436 ts-64, Arsenic in Paper and Paperboard.