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Standard Method of Test for

PHTHALIC ANHYDRIDE CONTENT OF ALKYD RESINS AND ESTERS CONTAINING OTHER DIBASIC ACIDS (SPECTROPHOTOMETRIC)¹



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ASTM Designation: D 1307 - 56

ADOPTED, 1956.*

This Standard of the American Society for Testing Materials is issued under the fixed designation D 1307; the final number indicates the year of original adoption as standard or, in the case of revision, the year of last revision.

Scope

1. This method covers the spectrophotometric determination of phthalic anhydride in alkyd resins and esters that contain dibasic acids such as maleic, fumaric, adipic, and sebacic, which would interfere if the Standard Method of Test for Phthalic Anhydride Content of Alkyd Resins and Resin Solutions (ASTM Designation: D 563)² were used. In general, this method is applicable for the quantitative determination of phthalic anhydride when the phthalic anhydride saponification product is mixed with saponification products which are soluble in water but insoluble in 0.1 *N* aqueous hydrochloric acid, and which do not absorb light at 276 $m\mu$. This method is recommended for referee purposes.

Outline of Method

2. (a) The sample is saponified in

¹ Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-1 on Paint, Varnish, Lacquer and Related Products.

² Prior to its adoption as standard this method was published as tentative from 1954 to 1956.

* Appears in this publication.

alcoholic potassium hydroxide and benzene to precipitate quantitatively the potassium salt of phthalic acid as $C_6H_4(COOK)_2 \cdot C_2H_5OH$. With the exception of maleic and fumaric acids, interfering substances precipitated by saponification of the resin are eliminated by extracting the precipitate with water, acidifying the filtrate with hydrochloric acid, and filtering. The phthalic acid concentration is determined by measuring the absorbance at 276 $m\mu$.

(b) No method for detecting the presence of maleic or fumaric acid is provided. However, if either of these acids is known to be present, the method includes a procedure for correcting for the slight interference which these acids offer.

Apparatus

3. (a) *Spectrophotometer*, suitable for use in the ultraviolet region of the spectrum.⁴

(b) *Absorption Cells*.—Matched silica

⁴ The Beckman Model DU quartz ultraviolet spectrophotometer has been found satisfactory for this purpose.