

Standard Method of Test for
BUTADIENE DIMER AND STYRENE IN BUTADIENE
CONCENTRATES^{1, 2}



ASTM Designation: D 1024 - 59

This Standard of the American Society for Testing and Materials is issued under the fixed designation D 1024; 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.

*[The committee responsible for this standard has voted its withdrawal.
In the absence of substantial reasons that it should be continued,
the Society will approve withdrawal from publication in January, 1970.]*

Scope and Application

1. This method of test describes a procedure for the determination of butadiene dimer (4-vinyl-1-cyclohexene) and styrene monomer in butadiene concentrates. The method includes a distillation procedure for isolating the dimer, styrene, and nonvolatile matter before analysis. If determinations of butadiene and C₆ hydrocarbons on a dimer-free sample are also desired, reference shall be made to the distillation procedure described in ASTM Method D 1023, Test for Separation of Residue from Butadiene.³

¹ Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-2 on Petroleum Products and Lubricants. A list of members may be found in the ASTM Year Book.

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In 1959, the method was rewritten to include butadiene concentrates containing not less than 60 per cent of butadiene and to permit detection of styrene as well as butadiene dimer.

² This method is an adaptation of one developed and cooperatively tested by the Butadiene Producers' Committee on Specifications and Methods of Analysis of the Office of Rubber Reserve. It appears in the Butadiene Laboratory Manual, Office of Rubber Reserve, as Method No. 2.1.15.

Summary of Method

2. The butadiene sample, with chloroform added as a chaser, is rapidly distilled through a small, simple distillation column (Fig. 1). The dimer and styrene are retained in the residue while the butadiene is completely expelled without being condensed. The bromine number of the residue is then determined by the procedure described in former ASTM Method D 1158 - 59 T, Bromine Number of Petroleum Distillates by Color-Indicator Titration.⁴ In the absence of styrene, the dimer content of the residue is calculated directly from the bromine number. When styrene is present, a correction must be applied for its reaction with bromine.

Definitions

3. *Butadiene Concentrates* are mixtures of essentially C₄ hydrocarbons containing a minimum of 60 per cent by weight of 1,3-butadiene.

Interferences

4. The interference of inhibitor (*p*-tertiary butyl catechol) and nonvolatile

³ Appears in this publication.

⁴ Discontinued, see 1964 Book of ASTM Standards, Part 17.