



Designation: D3465 – 21

Standard Guide for Purity of Monomeric Plasticizers by Gas Chromatography¹

This standard is issued under the fixed designation D3465; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This gas chromatographic guide covers a procedure for extending the range of purity determination of monomeric plasticizers beyond that now determined by other methods. Due to the need to volatilize the plasticizer, only monomeric plasticizers having definitive boiling points and a molecular weight less than 1000 Daltons, such as dioctyl phthalate, are applicable to this guide.

1.2 The values in SI units are to be regarded as standard.

1.3 The text of this guide references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) are not to be considered as requirements of this guide.

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. Specific precautionary statements are given in Section 9.*

NOTE 1—There is no known ISO equivalent to this standard.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D883 Terminology Relating to Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics

D2124 Test Method for Analysis of Components in Poly(Vinyl Chloride) Compounds Using an Infrared Spectrophotometric Technique (Withdrawn 2020)³

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E260 Practice for Packed Column Gas Chromatography

E355 Practice for Gas Chromatography Terms and Relationships

E594 Practice for Testing Flame Ionization Detectors Used in Gas or Supercritical Fluid Chromatography

E1510 Practice for Installing Fused Silica Open Tubular Capillary Columns in Gas Chromatographs

IEEE/ASTM SI-10 Practice for Use of the International System of Units (SI), the Modernized Metric System

3. Terminology

3.1 *Definitions:*

3.1.1 *General*—Definitions are in accordance with Terminology **D883** and Terminology **D1600** unless otherwise indicated.

3.1.2 All gas chromatography terms and relationships used in this guide are consistent with, or refer to, Practice **E355**.

4. Summary of Guide

4.1 A test portion of the plasticizer to be analyzed is injected onto a gas chromatographic column and separated into its components, which are sensed by the detector and quantified by an electronic data acquisition system (computer). The purity is based on the percent total area response of the principal peak(s). All other components are impurities.

5. Significance and Use

5.1 Infrared techniques frequently cannot detect low-level materials. Gas chromatographic methods possess higher sensitivity and are used to extend limits of detection.

5.2 It is expected that this guide will be suitable for specifications, manufacturing control, and research and development. An area percent method of determining concentration of the components shall be used if the area percent of the plasticizer is 99.0 % or higher. However, if the area percent of

¹ This guide is under the jurisdiction of ASTM Committee **D20** on Plastics and is the direct responsibility of Subcommittee **D20.70** on Analytical Methods (Section D20.70.02).

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard