



Standard Test Method for Screening Fuels in Soils¹

This standard is issued under the fixed designation D5831; 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. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method is a screening procedure for determining the presence of fuels containing aromatic compounds in soils. If the contaminant fuel is available for calibration, the approximate concentration of the fuel in the soil can be calculated. If the contaminant fuel type is known, but the contaminant fuel is not available for calibration, an estimate of the concentration of the fuel in the soil can be determined using average response factors. If the nature of the contaminant fuel is unknown, this screening test method can be used to identify the possible presence of contamination.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- D2777 Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D19 on Water
- E131 Terminology Relating to Molecular Spectroscopy
- E169 Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis
- E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
- E275 Practice for Describing and Measuring Performance of Ultraviolet and Visible Spectrophotometers
- E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

¹ This test method is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.01.05 on Screening Methods.

Current edition approved July 1, 2009. Published August 2009. Originally approved in 1995. Last previous edition approved in 2008 as D5831 – 03 (2008). DOI: 10.1520/D5831-09.

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.

E925 Practice for Monitoring the Calibration of Ultraviolet-Visible Spectrophotometers whose Spectral Bandwidth does not Exceed 2 nm

3. Terminology

3.1 *Definitions*—For definitions of terms used in this screening test method, refer to Terminology E131.

4. Summary of Test Method

4.1 A sample of soil is extracted with isopropyl alcohol, and the extract is filtered. The ultraviolet absorbance of the extract is measured at 254 nm. If the contaminant fuel is available for calibration, the approximate concentration of contamination is calculated. If the contaminant fuel type is known, but the contaminant fuel is not available for calibration, an estimate of the contaminant concentration is determined using average response factors. If the nature of the contaminant fuel is not known, the absorbance value is used to indicate the presence or absence of fuel contamination. Calcium oxide is added to the soil as a conditioning agent to minimize interferences from humic materials and moisture present in the soil. Particulate interferences are removed by passing the extract through a filter.

5. Significance and Use

5.1 This test method is a screening procedure for determining the presence of fuels containing aromatic compounds in soils. If the contaminant fuel is available for calibration, the approximate concentration of the fuel in the soil can be calculated. If the fuel type is known, but the contaminant fuel is not available for calibration, an estimate of the contaminant fuel concentration can be calculated using average response factors. If the nature of the contaminant fuel is unknown, a contaminant concentration cannot be calculated, and the test method can only be used only to indicate the presence or absence of fuel contamination.

5.2 Fuels containing aromatic compounds, such as diesel fuel and gasoline, as well as other aromatic-containing hydrocarbon materials, such as crude oil, coal oil, and motor oil, can be determined by this test method. The quantitation limit for diesel fuel is about 75 mg/kg. Approximate quantitation limits for other aromatic-containing hydrocarbon materials that can be determined by this screening test method are given in Table