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Soil quality — Screening soils for isopropanol-extractable organic compounds by determining emulsification index by light attenuation

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Soil quality — Screening soils for isopropanol-extractable organic compounds by determining emulsification index by light attenuation

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
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Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **2**
4 Principle ... **2**
4.1 General ... 2
4.2 Interferences or other surfactants ... 2
5 Reagents ... **2**
6 Apparatus ... **2**
7 Procedure ... **3**
7.1 Calibration ... 3
7.2 Sample preparation ... 3
7.3 Measurement ... 3
7.4 Calculation ... 4
7.5 Report ... 4
8 Quality assurance (QA) and quality control (QC) ... **4**
9 Test report ... **4**
Annex A (informative) **Examples of turbidity indexes for various kinds of organic compounds** ... **6**
Annex B (normative) **Schematic procedure of the method and its analytical conditions** ... **7**
Annex C (informative) **Results on an interlaboratory test for determination of an emulsification index by light attenuation to screen soils for isopropanol-extractable organic compounds** ... **8**
Bibliography ... **11**

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Foreword

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The committee responsible for this document is ISO/TC 190, *Soil quality*, Subcommittee SC 3, *Chemical methods and soil characteristics*.

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Introduction

Light attenuation due to light scattering/absorption by emulsions can be used to screen for a variety of isopropanol-extractable organic substances such as total petroleum hydrocarbons (TPH). This is one of the main organic contaminants of many contaminated land sites.

Petroleum hydrocarbons do not typically have many functional groups or contain any hetero-atoms that are easily detected in common analytical procedures. When the non-polar nature of organic compounds is targeted, as in this proposed method, turbidity/emulsification is produced by a number of organic compounds including BTEX (benzene, toluene, ethylbenzene and xylenes); PNAs (poly-nuclear aromatics); fuels; oils and greases that frequently are found at contaminated land sites.

This method can be used for screening soil samples to estimate the total amount of recoverable petroleum hydrocarbon contamination in soil including a wide range of fuels, oils, and greases. The emulsification approach in this method is incorporated to rapidly screen soil samples using a system calibrated with the organic substance present on the investigated site. If the contaminant is unknown, commercially available diesel oil can be used for calibration. This makes turbidity/emulsification analysis a very versatile analytical method that can be used on most hydrocarbon/non-polar organic substance spills without prior knowledge of the exact BTEX or PNA content or composition of the contaminant. This method is more sensitive to non-polar heavier organic compounds from jet fuel to oils and greases, but less sensitive to more volatile and lighter hydrocarbon fuels. A turbidity analysis assists the user in recognizing the contamination by non-polar organic compounds at a given site.

This International Standard describes the procedure for on-site soil screening of organic compounds using emulsification and light attenuation due to light scattering/absorption analysis.

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