
**Soil quality — Determination of
selected explosives and related
compounds —**

Part 3:
**Method using liquid chromatography-
tandem mass spectrometry (LC-MS/
MS)**

*Qualité du sol — Dosage d'une sélection d'explosifs et de composés
apparentés —*

*Partie 3: Méthode utilisant la chromatographie en phase liquide
couplée à la spectrométrie de masse en tandem (CL-SM/SM)*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	2
4 Principle.....	2
5 Interferences.....	2
6 Reagents.....	2
6.1 General.....	2
6.2 Chemicals.....	2
6.3 Standard substances and solutions.....	3
6.3.1 Standard substances.....	3
6.3.2 Standard solutions.....	3
7 Apparatus.....	4
7.1 General.....	4
7.2 Equipment for extraction.....	4
7.3 Liquid chromatograph-tandem mass spectrometer (LC-MS/MS).....	4
8 Procedure.....	5
8.1 Sample pre-treatment, sample storage and determination of water content.....	5
8.2 Extraction.....	5
8.2.1 General.....	5
8.2.2 Extraction using ultrasonic waves.....	5
8.2.3 Extraction using mechanical shaking.....	6
8.3 Storage of extract.....	6
9 Liquid chromatography tandem mass spectrometry (LC-MS/MS).....	6
9.1 General.....	6
9.2 Identification and quantification.....	6
9.3 Calibration.....	7
10 Calculation of results.....	7
11 Quality assurance/quality control (QA/QC).....	8
12 Expression of results.....	9
13 Test report.....	9
Annex A (informative) Conditions of high performance liquid chromatography tandem mass spectrometry (LC-MS/MS).....	10
Annex B (informative) Comparison of LC-MS and LC-MS/MS application for PETN, 1,3,5-TNB and tetryl.....	13
Annex C (informative) Comparison of LOD and LOQ in the measurement of HPLC and LC-MS/MS.....	16
Annex D (informative) Comparison of extractive capability of acetonitrile and methanol when using LC-MS/MS.....	19
Annex E (informative) Report of interlaboratory validation study for ISO 11916-3.....	21
Bibliography.....	23