

DIN EN ISO 16181-1:2021-07 (E)

Footwear - Critical substances potentially present in footwear and footwear components - Part 1: Determination of phthalate with solvent extraction (ISO 16181-1:2021)

Contents		Page
European foreword		3
Foreword		4
1 Scope		5
2 Normative references		5
3 Terms and definitions		5
4 Principle		5
5 Reagents		5
5.1 Chemicals		5
5.2 Standard solutions		6
5.2.1 Target phthalates -- Stock solution		6
5.2.2 Internal standard -- Stock solution		6
5.2.3 Calibration solutions		7
5.2.4 Extraction solution with internal standard (optional)		7
6 Apparatus		7
7 Sampling		8
8 Test procedure		8
8.1 Extraction		8
8.1.1 Ultrasonic extraction		8
8.1.2 Alternative extraction procedure for PVC materials		8
8.1.3 Preparation of a method blank		9
8.2 Determination with GC-MS		9
9 Expression of results		9
9.1 Calibration curve		9
9.2 Determination of the phthalates content		9
9.2.1 For each phthalate		9
9.2.2 When a sum of phthalates is requested		10
9.3 Performance of the test method		10
10 Test report		10
Annex A (informative) Information on some identified phthalates		12
Annex B (informative) Information on some identified phthalates		13
Annex C (informative) Suitable gas chromatography-mass spectrometry (GC-MS) apparatus and detection limits for determination of phthalates		15
Annex D (informative) Results of the interlaboratory tests - Method using toluene extraction (8.1.1)		17
Annex E (informative) Example of a chromatogram for selected phthalates		19
Annex F (informative) Comparison of extraction of phthalates by using toluene and THF		20
Bibliography		22