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Cosmetics — Analytical methods — GC/MS method for the identification and assay of 12 phthalates in cosmetic samples ready for analytical injection

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The UK participation in its preparation was entrusted to Technical Committee CW/217, Cosmetics.

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

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English Version

**Cosmetics - Analytical methods - GC/MS method for the
identification and assay of 12 phthalates in cosmetic samples
ready for analytical injection**

Cosmétiques - Méthodes analytiques - Méthode GC-SM
pour l'identification et l'analyse de 12 phtalates dans des
échantillons de produits cosmétiques prêts à être injectés
dans un système analytique

Kosmetische Mittel - Analysenmethoden - GC/MS-Methode
für die Identifizierung und die Quantifizierung von 12
Phthalaten in zur direkten Injektion geeigneten Proben
kosmetischer Mittel

This European Standard was approved by CEN on 10 April 2014.

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Foreword

This document (EN 16521:2014) has been prepared by Technical Committee CEN/TC 392 “Cosmetics”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2014 and conflicting national standards shall be withdrawn at the latest by November 2014.

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Introduction

Phthalates are esters of phthalic acid (Figure 1). About 80 % of all phthalates manufactured are used as “plasticizers” to make plastics flexible without sacrificing strength or durability. These compounds are present in cosmetic products like perfumes and toiletries. Some phthalates, particularly those of low molecular weight, are introduced into cosmetics as ingredients, for examples DEP and DMP are used as solvents and perfume fixatives [1-3] or DEP can be used as alcohol denaturing [2, 4]. Their presence in such products may come from their use as ingredients during the manufacturing process or may come from the migration of phthalates from packaging when plastic is used. Their presence as contaminant could also be due to the manufacturing process or raw materials used. Some analytical methods are proposed in the literature for the determination of phthalates in cosmetic products [1, 4-12].

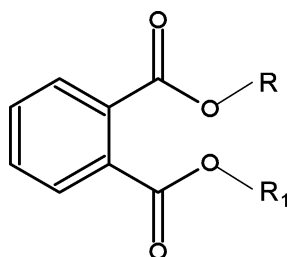


Figure 1 — Esters of phthalic acid

This standard proposes a GC/MS method for a simultaneous assay in cosmetic samples ready for analytical injection of 12 phthalates listed in Table 1. These chromatographic conditions are not suitable for the quantification of di-isononyl phthalate (DiNP) or di-isodecyl phthalate (DiDP). According to SCCP [13], the possible presence of DiNP or DiDP in cosmetics does not seem to be a problem for human health. A GC/MS method using positive chemical ionisation with ammonia as collision gas is proposed in literature for the determinations of those compounds in cosmetic products [14].

Analyses are carried out on a GC/MS system with electron impact ionization mode (Ei). The separation of phthalates is obtained on a cross-linked 5 %-phenyl/95 %-dimethylpolysiloxane capillary column 30 m × 0,25 mm (i. d.) × 0,25 µm film thickness using a temperature gradient. Phthalate quantification is performed by external calibration using an internal standard or by the standard addition. Cosmetic samples are analyzed directly or after a previous dilution in ethanol [15].