

Textiles - Dyestuffs - Part 3: Method for determination of certain carcinogenic dyestuffs (method using triethylamine/methanol) (ISO 16373-3:2014)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 16373-3:2014 sisaldab Euroopa standardi EN ISO 16373-3:2014 inglisekeelset teksti.	This Estonian standard EVS-EN ISO 16373-3:2014 consists of the English text of the European standard EN ISO 16373-3:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 04.06.2014.	Date of Availability of the European standard is 04.06.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 59.080.01

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English Version

**Textiles - Dyestuffs - Part 3: Method for determination of certain
carcinogenic dyestuffs (method using triethylamine/methanol)
(ISO 16373-3:2014)**

Textiles - Colorants - Partie 3: Méthode de détermination de
certains colorants cancérogènes (méthode à la triéthylamine
et au méthanol) (ISO 16373-3:2014)

Textilien - Farbstoffe - Teil 3: Verfahren zur Bestimmung
von bestimmten karzinogenen Farbstoffen
(Triethylamin/Methanol-Verfahren) (ISO 16373-3:2014)

This European Standard was approved by CEN on 17 April 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 16373-3:2014) has been prepared by Technical Committee ISO/TC 38 "Textiles" in collaboration with Technical Committee CEN/TC 248 "Textiles and textile products" the secretariat of which is held by BSI.

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 December 2014, and conflicting national standards shall be withdrawn at the latest by December 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 16373-3:2014 has been approved by CEN as EN ISO 16373-3:2014 without any modification.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Terms and definitions	1
3 Principle	1
4 Safety precautions	2
4.1 General.....	2
4.2 Handling.....	2
5 Apparatus	2
6 Reagents	3
7 Test specimen sampling and preparation	3
7.1 General.....	3
8 Procedure	3
8.1 Extraction.....	3
8.2 Detection, identification and quantification of carcinogenic dyestuffs.....	4
9 Test report	4
Annex A (informative) Chromatographic analysis	5
Annex B (informative) Round robin test results	22
Bibliography	27

Introduction

Due to concerns of consumers over safety and hygiene, many countries have introduced regulations regarding carcinogenic dyestuffs in textile articles. To support international and national regulations the development of a test method is very important and this part of ISO 16373 does just that.

The ISO 16373 series deal with dyestuffs used in textile for qualification and quantification.

- ISO 16373-1¹⁾ includes the definition of the dyestuff, and classes the description of some procedures to identify qualitatively the dyestuff class used in textile material. The other parts of ISO 16373 are related to the quantification of some dyestuffs.
- In ISO 16373-2, the principle of the test method is based on extraction using pyridine-water solution, which has been found to be the most efficient solution to extract a large range of dyestuffs, including allergenic and carcinogenic dyestuffs.
- In this part of ISO 16373, the principle of the test method is based on extraction using triethylamine-methanol solution. This solution has been found to be efficient at extracting some dyestuffs in some cases.

Additional information related to the recovery rate (to characterize the extraction efficiency) obtained from the application of ISO 16373-2 and this part of ISO 16373 is summarized in ISO 16373-1:—, Annex B.

It is important to note that there are other test methods related to azo dyes, for which a reduction of the extracted azo dyes leads to the release of some aromatic amines to be detected and determined using chromatography.^{[6][7]}

1) To be published.

Textiles — Dyestuffs —

Part 3:

Method for determination of certain carcinogenic dyestuffs (method using triethylamine/methanol)

1 Scope

This part of ISO 16373 specifies a method for the detection and quantitative determination of the presence of carcinogenic dyestuffs as listed in [Table 1](#) in dyed, printed or coated textile products by chromatographic analysis of their extracts.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

textile

woven fabric, knitted fabric, etc., formed by the interlocking of fibres and yarns having a certain cohesion and which is generally intended for clothing or furniture applications

Note 1 to entry: Textiles often include certain types of non-woven fabrics.

2.2

carcinogenic dyestuff

substance yielding a dye that is a substance known to be or suspected of being a human carcinogen

3 Principle

The dyestuff of a coloured test specimen is extracted by means of a solvent in an ultrasonic bath under specified conditions. The extract is analysed using either a high-performance liquid chromatography photodiode array detector (HPLC-DAD) or a high-performance liquid chromatography mass spectrometer (HPLC-MSD).

The carcinogenic dyestuffs are listed in [Table 1](#).

Table 1 — List of carcinogenic dyestuffs

C.I. Generic name	CAS number	C.I. Constitution number
C.I. Basic Red 9	569-61-9	42500
C.I. Disperse Orange 11	82-28-0	60700
C.I. Disperse Yellow 3	2832-40-8	11855
C.I. Acid Red 114	6459-94-5	23635
C.I. Acid Red 26	3761-53-3	16150
C.I. Direct Black 38	1937-37-7	30235
C.I. Direct Red 28	573-58-0	22120
C.I. Disperse Blue 1	2475-45-8	64500