

DIN EN 838



ICS 13.040.30

Supersedes
DIN EN 838:1995-12

**Workplace exposure –
Procedures for measuring gases and vapours using diffusive
samplers –
Requirements and test methods
English translation of DIN EN 838:2010-05**

Exposition am Arbeitsplatz –

Messung von Gasen und Dämpfen mit Diffusionssammlern –

Anforderungen und Prüfverfahren

Englische Übersetzung von DIN EN 838:2010-05

Exposition sur les lieux de travail –

Procédures pour le mesurage des gaz et vapeurs à l'aide de dispositifs de prélèvement
par diffusion –

Exigences et méthodes d'essai

Traduction anglaise de DIN EN 838:2010-05

Document comprises 42 pages

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original shall be considered authoritative.



A comma is used as the decimal marker.

National foreword

This document has been prepared by Technical Committee CEN/TC 137 "Assessment of workplace exposure to chemical and biological agents" (Secretariat: DIN, Germany).

The responsible German body involved in its preparation was the *Normenausschuss Sicherheitstechnische Grundsätze* (Safety Design Principles Standards Committee), Working Committee NA 095-03-01 AA *Messstrategien und Anforderungen an Messverfahren*.

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

Amendments

This standard differs from DIN EN 838:1995-12 as follows:

- a) The title of the standard has been changed.
- b) The criteria for assessing the performance of procedures for measuring gases and vapours have been adapted to the general requirements for the performance of procedures for measuring chemical agents in workplace atmospheres as specified in DIN EN 482:2006-10.
- c) The calculation model for the uncertainty of measurement has been revised and brought in line with the *Guide to the expression of uncertainty in measurement* (GUM, published as DIN V ENV 13005:1999-06).
- d) The classification scheme for sampler types has been modified.
- e) Annex A on the analysis of experimental data (two-factor experiment), Annex B on the evaluation of pumped samplers by means of field tests, Annex E on the multifactor test with regard to environmental influences and Annex F on the computational analysis of fractional factor data have been deleted.
- f) The standard has been editorially revised.

Previous editions

DIN EN 838: 1995-12

English Version

Workplace exposure —
Procedures for measuring gases and
vapours using diffusive samplers —
Requirements and test methods

Exposition sur les lieux de travail —
Procédures pour le mesurage des gaz et vapeurs à l'aide
de dispositifs de prélèvement par diffusion —
Exigences et méthodes d'essai

Exposition am Arbeitsplatz —
Messung von Gasen und
Dämpfen mit Diffusionssammlern —
Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 11 December 2009.

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 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 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Symbols and abbreviations	5
5 Types of samplers	7
6 Requirements	7
6.1 General.....	7
6.2 Sampler requirements	8
6.3 Measuring procedure requirements	9
7 General test conditions	11
7.1 Reagents	11
7.2 Apparatus	11
7.3 Independent method	12
7.4 Generation of a calibration gas mixture	12
8 Test methods.....	13
8.1 General.....	13
8.2 Sampler test methods	13
8.3 Measuring procedure test methods.....	16
8.4 Uncertainty of measurement	21
9 Test report	23
Annex A (informative) Fundamentals of diffusive sampling.....	24
Annex B (informative) Estimation of uncertainty of measurement	26
Annex C (informative) Example of estimation of expanded uncertainty	36
Bibliography	39

Foreword

This document (EN 838:2010) has been prepared by Technical Committee CEN/TC 137 "Assessment of workplace exposure to chemical and biological agents", the secretariat of which is held by DIN.

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 July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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.

This document supersedes EN 838:1995.

The major technical changes between this European Standard and the previous edition are as follows:

- a) adaptation of the framework for assessing the performance of procedures for measuring gases and vapours against the general requirements for the performance of procedures for measuring chemical agents in workplace atmospheres as specified in EN 482;
- b) revision of the calculation model for the uncertainty of measurement to comply with EN 482 and ENV 13005;
- c) modification of the classification scheme for sampler types;
- d) deletion of the informative annexes on the evaluation of diffusive samplers by means of field tests.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.