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Standards

Irish Standard
I.S. EN 13725:2003

Air quality - Determination of odour concentration by dynamic olfactometry

I.S. EN 13725:2003

Incorporating amendments/corrigenda/National Annexes issued since publication:
EN 13725:2003/AC:2006

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I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

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English version
Version Française
Deutsche Fassung

Air quality - Determination of odour concentration by dynamic olfactometry

Qualité de l'air - Détermination de la
concentration d'une odeur par olfactométrie
dynamique

Luftbeschaffenheit - Bestimmung der
Geruchsstoffkonzentration mit dynamischer
Olfaktometrie

This corrigendum becomes effective on 25 January 2006 for incorporation in the three official language versions of the EN.

Ce corrigendum prendra effet le 25 janvier 2006 pour incorporation dans les trois versions linguistiques officielles de la EN.

Die Berichtigung tritt am 25. Januar 2006 zur Einarbeitung in die drei offiziellen Sprachfassungen der EN in Kraft.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

I.S. EN 13725:2003**EN 13725:2003/AC:2006 (E/F/D)****English version**

The following tables, equations and phrases shall replace the ones in EN 13725:2003:

Table D.1 – Example of data for the calculation of precision

y_1	y_2	y_3	y_4	y_5	y_6	y_7	y_8	y_9	y_{10}	\bar{y}_w	s_r	<i>unit</i>
1709	2098	1467	2830	1325	1034	1277	1132	1622	1224	---	---	ou _E /m ³
0,0350	0,0285	0,0408	0,0211	0,0451	0,0578	0,0468	0,0528	0,0369	0,0489	---	---	μmol/mol
-1,4560	-1,5451	-1,3897	-1,6751	-1,3455	-1,2378	-1,3295	-1,2771	-1,4333	-1,3111	-1,4000	0,1326	log ₁₀ (μmol/mol)

Equation (36)

$$d_w = \bar{y}_w - \mu = -1,4000 + 1,3979 = -0,0021 \quad (36)$$

Table E.1 – Example of data for panel selection

y_1	y_2	y_3	y_4	y_5	y_6	y_7	y_8	y_9	y_{10}	\bar{y}_w	s_r	<i>unit</i>
512	2048	1024	2048	1024	2048	8192	2048	1024	4096	---	---	dilution
0,1168	0,0292	0,0584	0,0292	0,0584	0,0292	0,0073	0,0292	0,0584	0,0146	---	---	μmol/mol
-0,9326	-1,5346	-1,2336	-1,5346	-1,2336	-1,5346	-2,1367	-1,5346	-1,2336	-1,8356	-1,4744	0,3481	log ₁₀ (μmol/mol)

For equation (43):Additionally, the antilog of the average value $10^{-1,4744} = 0,034$ is compared with the panel selection criterion:

$$0,020 \leq 10^{\bar{y}_{ITE}} \leq 0,080 \quad (43)$$

ICS 13.040.99

English version

Air quality - Determination of odour concentration by dynamic olfactometry

Qualité de l'air - Détermination de la concentration d'une odeur par olfactométrie dynamique

Luftbeschaffenheit - Bestimmung der Geruchsstoffkonzentration mit dynamischer Olfaktometrie

This European Standard was approved by CEN on 6 December 2002.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

	page
Foreword.....	3
Introduction	4
1 Scope	4
2 Normative references	5
3 Terms, definitions and symbols	5
4 Principle of measurement	19
5 Performance quality requirements.....	19
6 Materials, gases and panel members	27
7 Sampling	35
8 Presentation of odorants to assessors	38
9 Data recording, calculation and reporting	40
Annex A (normative) Working conditions and working platform for sampling.....	46
Annex B (informative) Physiological principles	47
Annex C (informative) Example of calculation of instrumental accuracy and instability.....	51
Annex D (informative) Example of calculation of odour measurements within one laboratory	53
Annex E (informative) Example of calculations for panel selection	55
Annex F (informative) Example of the calculation of the odour concentration from a set of panel member responses	56
Annex G (informative) Example of the calculation used to determine the number of odour concentration measurements required to achieve a defined precision	60
Annex H (informative) Example of the calculation used to determine the number of odour concentration measurements required to detect a difference between two means.....	62
Annex I (informative) Example of the calculation of the odour flow rate (standard conditions) for a wet emission.....	65
Annex J (informative) Sampling strategy.....	66
Bibliography	70

Foreword

This document (EN 13725:2003) has been prepared by Technical Committee CEN/TC 264 "Air quality", 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 October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

Annex A is normative. Annexes B, C, D, E, F, G, H, I and J are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard and its quality criteria were validated in an Interlaboratory Comparison for Olfactometry (ICO) in 1996, that was funded by the participating laboratories.

Sampling aspects are included in the structure of this Standard, although further research is necessary to complete this issue. Due to lack of financial support, no progress has been made on this point. Improvements in sampling may be the subject of a future revision of this European Standard.

1 Scope

This European Standard specifies a method for the objective determination of the odour concentration of a gaseous sample using dynamic olfactometry with human assessors and the emission rate of odours emanating from point sources, area sources with outward flow and area sources without outward flow. The primary application is to provide a common basis for evaluation of odour emissions in the member states of the European Union.

This European Standard is applicable to the measurement of odour concentration of pure substances, defined mixtures and undefined mixtures of gaseous odorants in air or nitrogen, using dynamic olfactometry with a panel of human assessors being the sensor. The unit of measurement is the European odour unit per cubic metre: ou_E/m^3 . The odour concentration is measured by determining the dilution factor required to reach the detection threshold. The odour concentration at the detection threshold is by definition $1 \text{ ou}_E/\text{m}^3$. The odour concentration is then expressed in terms of multiples of the detection threshold. The range of measurement is typically from $10^1 \text{ ou}_E/\text{m}^3$ to $10^7 \text{ ou}_E/\text{m}^3$ (including pre-dilution).

The field of application of this European Standard includes:

- the measurement of the mass concentration at the detection threshold of pure odorous substances in g/m^3 ;
- the measurement of the odour concentration of mixtures of odorants in ou_E/m^3 ;
- the measurement of the emission rate of odorous emissions from point sources and surface sources (with and without an outward flow), including pre-dilution during sampling;
- the sampling of odorants from emissions of high humidity and temperature (up to $200 \text{ }^\circ\text{C}$);
- the determination of effectiveness of end-of-pipe devices used to reduce odour emissions.

The characterisation of odour emissions requires detailed measurement of the gas velocity, that shall be performed according to the relevant standards included in the normative references.

This European Standard is not applicable to:

- the measurement of odours potentially released by particles of odorous solids or droplets of odorous fluids suspended in emissions;
- the measuring strategy to be applied in case of variable emission rates;
- the measurement of the relationship between odour stimulus and assessor response above detection threshold;
- direct measurement of hedonic tone (or (un)pleasantness) or direct assessment of potential annoyance;
- field panel methods;
- measurement of recognition thresholds;

— measurement of identification thresholds.

Although the ultimate application of odour measurement is in reducing odour nuisance, the relation between measured thresholds of odour according to this standard and the occurrence of odour nuisance is highly complex. It is profoundly influenced by the atmospheric processes determining the dispersion of odours, the quality of the odour (hedonic tone) and finally by the receptor characteristics of those exposed to the odour. These characteristics not only vary strongly between individuals, but also in time within one individual. The relation between emissions, dispersion, exposure and annoyance is not within the scope of this European Standard.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO 10780, *Stationary source emissions - Measurement of velocity and volume flowrate of gas streams in ducts*.

3 Terms, definitions and symbols

3.1 Terms and definitions

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

3.1.1

accepted reference value

value that serves as an agreed upon reference for comparison, and which is derived as a consensus or certified value, based on collaborative experimental work under the auspices of a scientific or engineering group (derived from ISO 5725-1)

3.1.2

accuracy

closeness of agreement between test result and the accepted reference value

[ISO 5725-1]

NOTE The term 'accuracy', when applied to a set of test results, involves a combination of random components and a common systematic error or bias component.

3.1.3

(sensory) adaptation

temporary modification of the sensitivity of a sense organ due to continued and/or repeated stimulation

[ISO 5492]

3.1.4

anosmia

lack of sensitivity to olfactory stimuli

[ISO 5492]

3.1.5

assessor

somebody who participates in odour testing

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