



**NSAI**  
Standards

Irish Standard Recommendation  
S.R. EN 16897:2017

Workplace exposure - Characterization of  
ultrafine aerosols/nanoaerosols -  
Determination of number concentration  
using condensation particle counters

**S.R. EN 16897:2017**

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## National Foreword

S.R. EN 16897:2017 is the adopted Irish version of the European Document EN 16897:2017, Workplace exposure - Characterization of ultrafine aerosols/nanoaerosols - Determination of number concentration using condensation particle counters

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EUROPEAN STANDARD

EN 16897

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2017

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English Version

## Workplace exposure - Characterization of ultrafine aerosols/nanoaerosols - Determination of number concentration using condensation particle counters

Exposition sur les lieux de travail - Caractérisation des aérosols ultrafins/nanoaérosols - Détermination de la concentration en nombre à l'aide de compteurs de particules à condensation

Exposition am Arbeitsplatz - Charakterisierung ultrafeiner Aerosole/Nanoaerosole - Bestimmung der Anzahlkonzentration mit Kondensationspartikelzählern

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## **European foreword**

This document (EN 16897:2017) 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of an identical text or by endorsement, at the latest by December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

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## **EN 16897:2017 (E)**

### **Introduction**

Within occupational hygiene, aerosol concentrations have been traditionally measured in terms of mass concentrations. For ultrafine aerosols and nanoaerosols, other exposure metrics such as the number and surface area concentrations could become important for predicting health effects with some aerosols, depending on their chemical and physical properties. Even if actual occupational exposure metrics have not been established, this European Standard can be used by occupational hygienists and researchers to measure airborne particle concentrations in workplaces.

Recommendations on how to perform an assessment of inhalation exposure to nano-objects and their agglomerates and aggregates (NOAA), including which measurement strategy to adopt, will be provided in prEN 17058:2016 [16].



## 1 Scope

This European Standard gives guidelines on the measurement of the fine particle fraction of the aerosol, especially for the determination of the number concentration of ultrafine aerosols and nanoaerosols at workplaces by use of condensation particle counters (CPC).

This European Standard deals with the CPC's principle of operation, problems of sampling in the workplace environment, aspects for selecting a suitable instrument, limits of application, use of different working fluids and technologies, calibration, equipment maintenance, measurement uncertainty, and reporting of measurement results. Potential problems and limitations which are of relevance for workplace measurements are described.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1540, *Workplace exposure - Terminology*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1540 and the following apply.

### 3.1

#### **background (particle) measurement**

measurement of the particle concentration, at a location or a time not affected by the activity/process under investigation

### 3.2

#### **emission (particle) measurement**

measurement of the particle concentration in direct vicinity of a process or machine

### 3.3

#### **(particle) (electrical) mobility (equivalent) diameter**

diameter of a sphere carrying one elementary electric charge with the same electrical mobility as the particle in question

### 3.4

#### **exposure (particle) measurement**

measurement of the particle concentration close to a worker, preferably in the breathing zone of a worker

Note 1 to entry: Measurements performed outside the breathing zone give only an approximated exposure value.

### 3.5

#### **nanoaerosol**

aerosol comprised of, or consisting of, nano-objects and nanostructured particles

[SOURCE: ISO/TR 27628:2007, definition 2.11] [17]

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