



Designation: D8208 – 19

Standard Practice for Collection of Non-Fibrous Nanoparticles Using a Nanoparticle Respiratory Deposition (NRD) Sampler¹

This standard is issued under the fixed designation D8208; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice describes specified apparatus and procedures for collection of non-fibrous airborne metal nanoparticles generated during work activities.

1.2 Nanoparticle respiratory deposition (NRD) samplers are designed to follow a nanoparticulate matter (NPM) deposition curve based on the International Commission on Radiological Protection (ICRP) model for deposition of particles smaller than 300 nm (the minimum deposition for submicrometre particles) while removing the larger particles (1).²

1.3 This practice is applicable to personal and area sampling during work processes and situations where metal nanoparticles may be generated (for example, welding, smelting, shooting ranges).

1.4 This practice is intended for use by professionals experienced in the use of devices for occupational air sampling (such as cyclone samplers).

1.5 This practice is not applicable to the sampling of fibrous nanoparticles such as carbon nanotubes.

1.6 Detailed operating instructions are not provided owing to differences among various makes and models of suitable devices and instruments. The user is expected to follow specific instructions provided by the manufacturers of particular items of equipment. This practice does not address comparative accuracy of different devices nor the precision between instruments of the same make and model.

1.7 This practice contains notes that are explanatory and are not part of the mandatory requirements of the method.

1.8 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.9 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the*

responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.

1.10 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*³

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D4532 Test Method for Respirable Dust in Workplace Atmospheres Using Cyclone Samplers

D4840 Guide for Sample Chain-of-Custody Procedures

D5337 Practice for Flow Rate Adjustment of Personal Sampling Pumps

D6785 Test Method for Determination of Lead in Workplace Air Using Flame or Graphite Furnace Atomic Absorption Spectrometry

D6832 Test Method for the Determination of Hexavalent Chromium in Workplace Air by Ion Chromatography and Spectrophotometric Measurement Using 1,5-diphenylcarbazide

D7035 Test Method for Determination of Metals and Metalloids in Airborne Particulate Matter by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)

D7202 Test Method for Determination of Beryllium in the Workplace by Extraction and Optical Fluorescence Detection

D7439 Test Method for Determination of Elements in Airborne Particulate Matter by Inductively Coupled Plasma–Mass Spectrometry

E1370 Guide for Air Sampling Strategies for Worker and Workplace Protection

¹ This practice is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.04 on Workplace Air Quality.

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² The boldface numbers in parentheses refer to a list of references at the end of this standard.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.