



# Standard Practice for Handling Densified Articles of Aluminum Oxide Reinforced with Silicon Carbide Whiskers<sup>1</sup>

This standard is issued under the fixed designation E 1435; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This practice covers recommended procedures to reduce health and safety problems which may arise during the handling of densified articles made from nonfibrous aluminum oxide reinforced with silicon carbide (SiC) whiskers.

1.2 The information in this practice may be considered for use in a manufacturer's material safety data sheet (MSDS) for densified articles of aluminum oxide reinforced with SiC whiskers.

1.3 This practice applies to finished articles where neither SiC whiskers nor aluminum oxide are released during use in excess of the limits of this practice.

1.4 Other materials may be included in the article (for example, sintering aids); information specific to these additional materials should be included in each manufacturer's MSDS.

1.5 *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 and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard and precaution statements, see Sections 5, 7, 9 and 10.

## 2. Referenced Documents

### 2.1 ASTM Standards:

E 1437 Practice for Handling Respirable Silicon Carbide Whiskers<sup>2</sup>

E 1718 Guide for Administrative and Engineering Controls for Silicon Carbide Whisker Work Areas<sup>2</sup>

### 2.2 American National Standards Institute (ANSI) Standard:<sup>3</sup>

ANSI Z9.2—1979 Fundamentals Governing the Design and Operation of Local Exhaust Systems

### 2.3 Occupational Safety and Health Administration (OSHA) Standard:<sup>4</sup>

OSHA 8-hour Time Weighted Average (TWA) Permissible Exposure Limit (PEL) for alpha-Alumina from U.S. Code of Federal Regulations (CFR) 29 CFR 1910.1000, Air Contaminants, Table Z-1, 1994

## 3. Terminology

### 3.1 Definitions:

3.1.1 *aspect ratio, n*—ratio of whisker length to whisker diameter.

3.1.2 *respirable silicon carbide whiskers, n*—a crystalline silicon carbide fiber, approximately cylindrical in shape, with a diameter less than 3.0  $\mu\text{m}$  and an aspect ratio equal to or greater than 5:1.

## 4. Significance and Use

4.1 Handling or use of densified articles of aluminum oxide reinforced with SiC whiskers is not expected to be hazardous due to the presence of SiC whiskers unless the whiskers are released through a material removal process, such as (re)grinding.

4.2 This practice provides guidance, characteristics and data for handling and use of densified articles of aluminum oxide reinforced with SiC whiskers. It also provides guidance for determining when (re)finishing or other processing of densified articles of aluminum oxide reinforced with SiC whiskers will generate potentially hazardous conditions, and provides reference to relevant standards. If SiC whiskers are released, the implementation of Practice E 1437 may be required.

4.3 This practice is intended for use by health and safety professionals in determining whether an excessive exposure exists, in preparing procedures to establish a safe work environment, and in preparing relevant documentation.

## 5. Hazardous Ingredients/Identity Information

5.1 *Densified Articles*—Densified articles of aluminum oxide reinforced with silicon carbide whiskers are not expected to produce exposures which are hazardous to health. However

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee E34 on Occupational Health and Safety and is the direct responsibility of Subcommittee E34.70 on Single Crystal Ceramic Whiskers.

Current edition approved April 10, 1998. Published June 1998. Originally published as E 1435 – 91. Last previous edition E 1435 – 91.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 11.03.

<sup>3</sup> Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

<sup>4</sup> Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.