



Standard Guide for Personnel Training for Health and Safety Aspects of Working in Environments Containing Respirable Silicon Carbide Whiskers¹

This standard is issued under the fixed designation E 1717; 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 approval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

^{ε1} NOTE—Title was changed editorially October 1995.

1. Scope

1.1 This guide presents guidance on training and information that should be transmitted to employees that work with, or may be exposed to, airborne respirable silicon carbide whiskers in the course of their job assignments.

1.2 Transfer of workplace health and safety information is referred to as hazard communications and there are specific OSHA regulations that govern some aspects of the activity. This guide is intended to present information that relates to silicon carbide whiskers. It does not address nor take the place of regulatory requirements such as the OSHA Hazard Communication Standard.

1.3 *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.*

2. Referenced Documents

2.1 ASTM Standards:

E 1437 Practice for Handling Silicon Carbide Whiskers²

E 1451 Guide for Disposal of Wastes Containing Silicon Carbide Whiskers and Fibers²

E 1716 Guide for Selection and Use of Personal Protective Equipment for Humans Working with Respirable Silicon Carbide Whiskers²

2.2 OSHA Standard:

Title 29 CFR 1910.1200 Hazard Communication³

3. Terminology

3.1 Definition:

3.1.1 *respirable silicon carbide whiskers and fibers*—a crystalline silicon carbide material, approximately cylindrical in shape, with an aspect ratio equal to or greater than 5, and a

diameter less than 3.0 μm with the potential to become airborne.

4. General Considerations for Health and Safety Training for Silicon Carbide Whiskers

4.1 All individuals with significant potential for exposure to airborne silicon carbide whiskers and individuals that routinely work with silicon carbide whiskers should be provided with information and training needed to perform their work safely and to understand the nature of the specific hazards of silicon carbide whiskers. It is recommended that Practice E 1437, Guides E 1451 and E 1716, and the OSHA Standard for Hazard Communication be reviewed with employees as part of the training program.

4.2 Training should be provided prior to initial assignment.

4.3 It is recommended that training efforts be documented. This may be accomplished by retaining training outlines and rosters as records of training.

4.4 Training should be interactive to the extent necessary to ensure that those being trained understand the information provided.

4.5 A key source for current safety information on materials is the manufacturer's material safety data sheets (MSDS).

5. Health and Safety Training Program Content

5.1 Employees should be instructed in the methods for recognition of silicon carbide whiskers in their work areas.

5.2 Employees should be given current information on the potential health effects from exposure to silicon carbide whiskers as follows:

5.2.1 The current status of whiskers as a suspect carcinogen, this being based primarily on animal studies and no human data. The monograph on the evaluation of carcinogenic risks to humans should be reviewed.⁴

5.2.2 The similarity of potential health effects to those resulting from exposure to asbestos.

5.2.3 The possibility that smoking may increase the risk of

¹ This guide is under the jurisdiction of ASTM Committee E-34 on Occupational Health and Safety and is the direct responsibility of Subcommittee E34.70 on Single Crystal Ceramic Whiskers.

Current edition approved Aug. 15, 1995. Published October 1995.

² *Annual Book of ASTM Standards*, Vol 11.03.

³ Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

⁴ "Man-made Mineral Fibers and Radon," Monograph on the Evaluation of Carcinogenic Risks to Humans, International Agency for Research on Cancer (IARC), Lyon, France, Vol 43, 1988.

lung cancer to those exposed to whiskers.

5.2.4 The current exposure limits being used for whiskers.

5.2.5 General information about employee medical monitoring.

5.3 Employees should be provided information related to safe handling of whiskers in their specific work areas as follows:

5.3.1 A description of operations that may result in exposures to whiskers.

5.3.2 The results of any specific workplace air monitoring.

5.3.3 Types of engineering controls being used and how to recognize if they are not properly functioning. An example of this could be accomplished by attaching a simple flow indicator to ventilation hoods. The employee should then be instructed on reading the flow indicator.

5.3.4 Safe work practices as they relate to work procedures, prohibited practices (for example, dry sweeping) and house-keeping requirements.

5.3.5 Use of personal protective equipment.

5.3.6 Personnel and equipment decontamination and use of hygiene facilities.

5.3.7 Waste disposal procedures.

5.3.8 Emergency procedures.

5.4 Contractors, visitors, and workers assigned to non-routine tasks should be provided with basic instructions necessary to safely perform their tasks.

6. Keywords

6.1 fiber; manmade mineral fiber; silicon carbide whiskers; training; whisker

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

This standard is copyrighted by ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (<http://www.astm.org>).