



ANSI E1.40 - 2016 Recommendations for the Planning of Theatrical Dust Effects

F&S/2010-3003r3

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Approved as an American National Standard by the ANSI Board of Standards Review on
16 September 2016.

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The Fog & Smoke Working Group, which authored this Standard, consists of a cross section of entertainment industry professionals representing a diversity of interests. ESTA is committed to developing consensus-based standards and recommended practices in an open setting.

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Interest category codes:

CP = custom-market producer	DE = designer
DR = dealer rental company	G = general interest
MP = mass-market producer	U = user

Table of Contents

The ESTA Technical Standards Program.....	2
Investors in Innovation.....	3
Contact Information.....	4
Acknowledgments.....	5
Table of Contents.....	6
Basic Dust Use Guidelines.....	1
1 Scope	2
2 Introduction.....	2
3 Major Categories of Dust.....	2
3.1 Plant and animal-based.....	2
3.2 Mineral.....	2
3.3 Synthetic.....	2
4 Potential Hazards of Dust.....	3
4.1 Exposure.....	3
4.1.1 Topical Exposure and Allergies.....	3
4.1.2 Inhalation.....	3
4.2 Combustion.....	4
5 Risk Reduction.....	5
5.1 Product Selection.....	5
5.2 Product Usage.....	5
5.3 Use PPE and Appropriate Tools.....	6

Basic Dust Use Guidelines

- Determine the appropriate product for the application.
- Ensure you know the precise composition of the product you are using.
- Obtain an Safety Data Sheet (previously called a Material Safety Data Sheet, or MSDS) for the product and abide by any associated exposure limits.
- Use only as much dust as necessary.
- Use dust only where it is necessary.
- Use dust only when it is necessary.
- Avoid exposing unnecessary personnel.
- Monitor and control usage and ventilation throughout.
- Inform personnel on the products being used and post appropriate warnings.
- Follow manufacturers' instructions.
- Use appropriate Personal Protective Equipment (PPE).
- Use appropriate equipment and tools.
- Read this document and follow the recommendations listed.

1 Scope

A wide variety of products are used to create dust effects in entertainment productions. Such effects are most commonly used in motion picture and television production; However, they are also used in theatrical productions and within theme parks. The use of dust in this manner raises concerns for potential hazards including combustibility and health effects from inhalation or ingestion, which, although well known in some sectors of the industry, are poorly understood in others. This document provides recommendations for how to plan the use and assess the safety of such effects.

2 Introduction

The word *dust* is non-specific and means different things to different people. Dust is used in this document as a generic term referring to any solid particles scattered or suspended in the air where the common denominator is the use to which it is put, as a set dressing or as a special effect. Dust can be used in small quantities, such as to sprinkle on books or props to age them or to enhance artificial cobwebs, all the way up to extensive use on film sets where a complete realistic environment is being created. Dust use in film sets for special effects is very common, and the users in that industry are usually more familiar with the techniques than those in theatrical venues. However, the same basic principles of safe operation apply to everyone, no matter the application.

3 Major Categories of Dust

The dust used in theatrical effects generally can be broken down into three major categories—plant and animal-based, mineral, and synthetic—depending on the source of the dust.

3.1 Plant and animal-based

Plant and animal-based dusts are those based on naturally occurring products from plants or animals. Examples of common products derived from plants or animals that have been used as a theatrical dust effect include wheat flour, rice flour, rice gluten, corn starch, coffee creamers, and crushed nutshells.

3.2 Mineral

Mineral-based dusts include fuller's earth, kaolin, aluminum magnesium silicate, pyrolite, pyrophyllite, and diatomaceous earth. Diatomaceous earth is the fossilized remains of diatoms and hard-shelled algae, so it could be classified as a plant or animal-based dust, but fossilization leaves only the mineral remains of those life-forms, particularly silica, behind in the diatomaceous earth.

3.3 Synthetic

There are many synthetic products that might be used to make dust. Colored dyes, ground plastics, and extremely high density glycols, such as polyethylene glycol 3350, might be among the things considered for dust effects.

Note: None of these classifications (plant and animal-based, mineral, or synthetic) is inherently safer than another. For example, wood dust is a plant product, but most wood dusts are confirmed carcinogens. Titanium dioxide is a white pigment that is found in minerals such as rutile and anatase. (Rutile is about 98% titanium dioxide.) The International Agency for Research on Cancer has classified it as a group 2B carcinogen based on inhalation studies.