ASTM INTERNATIONAL

Standard Terminology Relating to Nonsieving Methods of Powder Characterization[1]

INTRODUCTION

Particle size distribution, surface area, and other forms of particle analysis have been commonly adopted methods of verifying compliance with desired particle specifications for some time. Greater emphasis is now being placed on inter- and intralaboratory correlation of all particle measurement systems.

To ensure a better understanding of the comparison of testing results from particle measurement systems, terminology relating to the measurements must be clearly defined and documented so that both the recipient and generator of the data are in full agreement as to the meaning of the data. Every effort has been made here to ensure accuracy, precision, and clarity for the terms included in this terminology document. For Committee E29, this is an ongoing process with new terms being developed and defined for future inclusion. Suggestions and comments for additions, corrections, and revisions are welcomed.

1. Scope

1.1 This terminology covers the definitions of terms used in the description and procedures of analysis of particulate materials not ordinarily analyzed using test sieves. The terms relate directly to the equipment used in analysis, the physical forms of the materials to be analyzed, and selected descriptive data reduction and analysis formats.

1.2 Committee E29 on Particle and Spray Characterization believes that it is essential to include terms and definitions explicit to the committee's scope, regardless of whether the terms appear in existing ASTM standards. Terms that are in common usage and appear in common-language dictionaries are generally not included, unless they have specific meanings in the context of particle characterization different from the common-language definitions.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E2578 Practice for Calculation of Mean Sizes/Diameters and Standard Deviations of Particle Size Distributions

3. Significance and Use

3.1 Interpretation and use of data generated by particle characterization methods is highly dependent on the definitions of terms describing that data. It is extremely important that those terms be defined in precisely the same way both when comparing data from different characterization techniques and even when correlating data from the same technique.

3.2 It is likewise important that users of particle characterization methods and the data generated therefrom understand the principles of the methods, so that differences and similarities in the data can be interpreted in relation to those principles. That understanding can help to avoid disagreements when data from different characterization methods are compared.

3.3 The definitions contained in this terminology will aid in the interpretation of particle characterization data with respect to the method(s) used to produce that data.

4. Terminology

area, *A*, *n—in image analysis*, sum of pixels representing a binary object.

aspect ratio, *n—in image analysis*, ratio of the maximum to the minimum dimensions as determined by the technique.

binarization, *n—in image analysis*, process of reducing a digital image to a binary image.

binary object, *n—in image analysis*, set of connected binary pixels representing the two dimensional projection of a particle.