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Standard Guide for Description of Polymer Pellet Defects¹

This standard is issued under the fixed designation D7711; 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 guide is a compilation of terms used to describe defects of polymeric pellets. Terms that are generally understood or defined adequately in readily available sources are not included.

1.2 Not every term is applicable to every type of pellet. Terms which apply to transparent pellets, for example, do not always apply to translucent or opaque pellets.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—There is no known ISO equivalent to this guide.

1.4 *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:*²

D883 Terminology Relating to Plastics

D6290 Test Method for Color Determination of Plastic Pellets

3. Terminology and Definitions

3.1 *Definitions of Terms*—For definitions of terms relating to plastics, see Terminology **D883**. Terms contained in Terminology **D883** are not contained in this guide.

3.2 *Definitions of Terms Specific to This Standard:*

TERMS ASSOCIATED WITH COLOR DEFECTS:

3.2.1 *discoloration, n—of a pellet*, any deviation from the product's normal color.

3.2.1.1 *Discussion*—Discoloration may not always be easily visible. Pellets which differ in color with respect to the appearance of a representative sample population are commonly referred to by their distinguishing visible characteristics.

3.2.2 *opaque center pellet, n—pellet* that is translucent or slightly translucent and has a center that is less clear (more opaque) by comparison to the remainder of the pellet.

3.2.3 *striped pellet, n—pellet* containing a stripe of a different color than the remainder of the pellet.

TERMS ASSOCIATED WITH PELLET CONTAMINATION DEFECTS:

3.2.4 *die pearls, n—non-degraded particles* that build up and break off of the die.

3.2.5 *drools*—see *die pearls*

3.2.6 *finer, n—very small particles, dust, or unattached tails.*

3.2.7 *foreign material contamination, n—of pellets*, any material in, on, or around the pellets that emanates from an external source and has a composition different than that of the pellet; also known as trash if it can be picked up separately.

3.2.8 *oxidized pellet, n—pellet* with a deep yellow, brown, red, or black particle present.

3.2.9 *polymer cross-contamination, n—of a pellet*, unintentional mixture of two or more dissimilar resins or compounds; generally apparent by comparing key properties such as pellet geometry, color, opacity, or hardness.

3.2.10 *speck contamination, n—of a pellet*, small pinpoint particles of discolored matter, internal or external, which can sometimes rub off.

3.2.10.1 *Discussion*—Examples of speck contamination of pellets include, but are not limited to: black, brown, yellow, or white specks.

TERMS ASSOCIATED WITH PELLET SIZE OR SHAPE DEFECTS:

3.2.11 *agglomerates, n—of pellets*, thoroughly fused accumulation of pellets.

3.2.12 *angel hair, n—relating to pellets*, thin, fiber or thread-like strands of polymer.

¹ This guide is under the jurisdiction of ASTM Committee **D20** on Plastics and is the direct responsibility of Subcommittee **D20.92** on Terminology.

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² 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.

*A Summary of Changes section appears at the end of this standard

3.2.13 *clumps*—see *agglomerates*

3.2.14 *clusters, n—of pellets*, three or more pellets fused together.

3.2.14.1 *Discussion*—When there are three distinct pellets they may be referred to as triples.

3.2.15 *daisy chains, n—of pellets*, two or more pellets joined together “chain-like” by strands of polymer; can be separated to form pellets with tails.

3.2.15.1 *Discussion*—Daisy chains can be separated to form pellets with tails.

3.2.16 *doubles*—see *marriages*

3.2.17 *globes*—see *agglomerates*

3.2.18 *finer, n*—very small particles, such as dust, or unattached tails.

3.2.19 *marriages, n—of pellets*, two pellets fused together.

3.2.20 *pellet non-uniformity, n*—pellets that deviate from normal size-range and shape.

3.2.20.1 *Discussion*—Examples of non-uniform pellets are those that are undersized or oversized, overlength, not round, flattened on one or both ends, or smashed.

3.2.21 *pellet tail, n*—a small thin extension attached to a pellet.

3.2.21.1 *Discussion*—Pellet tails usually exceed half the length of a normal pellet.

3.2.22 *shrink void, n—of pellets*, pellet containing void space in its center.

3.2.22.1 *Discussion*—Shrink voids may occur when the process water temperature is either too high or too low, thus freezing the outer surface of the strand and trapping heat in the core.

3.2.23 *snake skins, n*—long, thin, film-like pieces of polymer, or build-up, that look like a shed snake skin when they come free.

3.2.24 *streamers*—see *snake skins*

3.2.25 *triples*—see *clusters*

3.2.26 *twins*—see *marriages*

3.2.27 *walnuts*—see *agglomerates*

4. Significance and Use

4.1 This guide is intended to provide terminology for both suppliers and users of polymer pellets to ensure mutual understanding in discussions concerning pellet defects. It is not an absolute standard but is to be referred to when issues with the quality and/or description of the polymeric materials arise.

4.2 The guide is categorized according to the best fit for the term and its description for ease of finding certain description types.

4.3 Some terms within this guide do not apply to all resin types. It is the user’s responsibility to determine if the term and its subsequent definition are applicable to the material in question.

4.4 Other terminology relating to polymers that are not included in this document can be found in additional standards such as Terminology **D883**.

4.5 Test Method **D6290** can be used for the instrumental measurement of discoloration in plastics, including pellets, and of the degree of yellowness (or change of degree of yellowness) under daylight illumination of homogeneous, nonfluorescent, nearly colorless transparent or nearly-white translucent or opaque plastics.

5. Keywords

5.1 color; contamination; defect; geometry; integrity; pellet; shape; size

APPENDIX

(Nonmandatory Information)

X1. PHOTOGRAPHIC EXAMPLES OF PELLETS AND PELLET DEFECTS

X1.1 See **Figs. X1.1-X1.12**.