Designation: D4391 – 18

Standard Terminology Relating to The Burning Behavior of Textiles[1]

This standard is issued under the fixed designation D4391; 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.

The definitions in this standard have been approved by the Society and are included in D123 "Terminology Relating to Textiles". They are published as a separate collection for the convenience of persons interested in the burning behavior of textiles. A bibliography of related literature is given in Appendix X1.

afterflame, *n*—persistent flaming of a material after the ignition source has been removed. **[D13.92] D4391**

after-flame time, *n*—the length of time for which a material continues to flame after the ignition source has been removed. **[D13.92] D4391**

afterglow, *n*—glow in material after the removal of an external ignition source or after the cessation (natural or induced) of flaming of the material. (See also **flame, glow,** and **smoldering**.)

afterglow time, *n*—the time afterglow continues after the cessation of flaming or after removal of the ignition source. **[D13.92] D4391**

base burn, *n*—the point at which the flame burns the ground (base) fabric of a raised surface textile fabric and provides a self-sustaining flame.

DISCUSSION—Base burn is also known as base fabric ignition or fusing. The base burns used to establish a Class 3 fabric are those burns resulting from surface flash that occur on specimens in places other than the point of impingement when the warp and fill yarns of a raised surface textile fabric undergo combustion. Base burns can be identified by an opacity change, scorching on the reverse side of the fabric, or when a physical hole is evident.

burn time, *n*—the time elapsed from ignition until the stop thread is severed as measured by the timing mechnsim of the test apparatus.

burning behavior, *n*—all the changes that take place when materials or products are exposed to a specified ignition source.

charring, *n*—the formation of carbonaceous residue as the result of pyrolysis or incomplete combustion.

combustible textile, *n*—a textile that will ignite and burn or that will give off vapors that will ignite and burn when subjected to external sources of ignition. (Compare **flammable textile, noncombustible textile**.)

combustion, *n*—a chemical process of oxidation that occurs at a rate fast enough to produce heat and usually light either as glow or flames.

DISCUSSION—Some oxidation such as that of hydrogen emits radiation outside the visible spectrum.

critical sewn seams, *n—in assembly of flame resistant textiles*, those sewn junctions where failure would result in immediate danger or injury.

dangerously flammable textile, *n*— not defined. This term is implied in the Standard for the Flammability of Clothing Textiles (16 CFR Part 1610) under the Flammable Fabrics Act (15 USC 1191, et seq.) from which a meaning can be inferred. (See also **flammable textile.**)

embrittlement, *n*—the formation of a brittle residue as the result of pyrolysis or incomplete combustion.

exposure energy to thermal end point, *n*—the thermal energy transferred through a specimen that is sufficient to cause ignition of contiguous materials. **[D13.92] D7140**

fire, *n—as related to textile flammability*, an uncontrolled conflagration in which materials are destroyed by burning as evidenced by flames of varying size and shape, and a high intensity heat source of 5 kw or greater, such as a burning waste basket, grease-fire on a stove, burning building or forest fire.

flame, *n—as related to textile flammability*, a hot luminous zone of gas or matter in gaseous suspension, or both, that is undergoing combustion, that is relatively constant in size and shape, and that produces a relatively low heat flux. (Compare **fire.**)

DISCUSSION—Examples are a match flame, candle flame, or a Bunsen burner gas flame.

flame application time, *n*—the time for which the ignition flame is applied to a material.

flame resistance, *n*—the property of a material whereby flaming combustion is prevented, terminated, or inhibited

[1] This terminology is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.92 on Terminology.

Current edition approved May 1, 2018. Published May 2018. Originally approved in 1984. Last previous edition approved in 2016 as D4391 – 16ε1. DOI: 10.1520/D4391-18.