



Designation: D8342/D8342M – 21

Standard Test Method for Measuring the Probability of a Full Length Burn on a Cannabis/Hemp Pre-roll¹

This standard is issued under the fixed designation D8342/D8342M; 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 fire-test-response standard provides a standard measure of the probability of a cannabis/hemp pre-roll positioned on a substrate to generate enough heat to continue burning and thus potentially cause ignition of bedding or upholstered furniture.

1.2 This test method shall be applicable to pre-roll units that are intended for personal inhalation by means of combustion and contain dried herbal material from any type of a cannabis plant, that is, cannabis/hemp. For the sake of brevity, the term “cannabis” shall be used henceforth to refer to any type of cannabis plant (cannabis/hemp).

1.3 This test method shall be applicable to pre-rolls that burn along the length of a cannabis pre-roll column.

1.4 This test method shall not be applicable to infused pre-rolls, which are outside the scope of this standard.

1.5 Pre-roll preparation and sampling shall be made using Practice [D8343/D8343M](#).

1.6 *Units*—The values stated in either SI units or United States Customary units (USC units) are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard. Metric units will be stated as standard and USC units will be shown in brackets relative to the metric units.

1.7 *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.*

1.8 *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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:²

[D8245](#) Guide for Disposal of Resin-Containing Cannabis Raw Materials and Downstream Products

[D8343/D8343M](#) Practice for Measuring the Physical Properties of Cannabis/Hemp Pre-rolls

[E177](#) Practice for Use of the Terms Precision and Bias in ASTM Test Methods

[E691](#) Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

[E1352](#) Test Method for Cigarette Ignition Resistance of Mock-Up Upholstered Furniture Assemblies

[E1353](#) Test Methods for Cigarette Ignition Resistance of Components of Upholstered Furniture

2.2 NFPA Standards:³

[NFPA 260](#) Standard Methods of Tests and Classification Systems for Cigarette Ignition Resistance of Components of Upholstered Furniture (2019)

[NFPA 261](#) Standard Method of Test for Determining Resistance of Mock-up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes (2018)

2.3 Other Standards:

[16 CFR 1632](#) Standard for the Flammability of Mattresses and Mattress Pads (FF 4-72, Amended)⁴

[NIST 851-2](#) Test Methods for Quantifying the Propensity of Cigarettes to Ignite Soft Furnishings, Volume 2⁵

[NIST 1436](#) Relative Ignition of Propensity of Test Market Cigarettes⁵

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.

³ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, <http://www.nfpa.org>.

⁴ Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, <http://www.access.gpo.gov>.

⁵ Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.

¹ This test method is under the jurisdiction of ASTM Committee [D37](#) on Cannabis and is the direct responsibility of Subcommittee [D37.04](#) on Processing and Handling.

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3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *crutch filter, n*—a filter composed of thin paper material used in a pre-roll for preventing particles from being inhaled. Also provides stability and allows cannabis herbal material to be fully combusted. (See Fig. 1.)

3.1.2 *crutch pre-roll, n*—a type of pre-roll that contains a crutch filter and uses a single wrapping paper, which can be conical, cylindrical, or other shapes. (See Fig. 1.)

3.1.3 *determination, n*—the act of coming to a decision or of fixing or setting a purpose.

3.1.4 *filter pre-roll, n*—a type of pre-roll that contains filter material and uses a tipping paper.

3.1.5 *full-length burn, n*—the outcome of a determination in which the pre-roll burns to or past the front plane of the crutch filter or, if the pre-roll has no filter, past the tips of the metal pins. (See Fig. 3.)

3.1.6 *infused pre-roll, n*—a type of pre-roll that combines dried cannabis herbal material (flower or leaf) and other cannabinoid containing materials (for example, kief, wax, crumble, etc.) including resins and/or extracts.

3.1.6.1 *Discussion*—Kief, wax, and crumble are common names used in the cannabis industry for malleable texture concentrates that can be sprinkled over top dried cannabis herbal material.

3.1.7 *moisture content, n*—the quantity of water contained in a material. Used in a wide range of scientific and technical areas and expressed as a ratio or percentage, which can range from completely dry to the value of the materials' porosity at saturation.

3.1.8 *moisture content (MC) measuring device, n*—an analog or electronic device with a sensor or detector used to measure the moisture content in materials capable of measuring within $\pm 5\%$ moisture content.

3.1.9 *substrate, n*—a material that provides the surface on which something is deposited.

3.2 Abbreviated Term—Acronyms and Initialisms:

3.2.1 *CFR*—Code of Federal Regulations

3.2.2 *MC*—moisture content.

3.2.3 *NFPA*—National Fire Protection Association

3.2.4 *PMMA*—polymethyl methacrylate

3.2.5 *RH*—relative humidity

3.2.6 *QMS*—quality management system

4. Summary of Test Method

4.1 This test method measures the probability that a pre-roll, placed on a substrate, will generate enough heat to continue burning until it self-extinguishes or completely combusts. Each test determination consists of placing a lit pre-roll on a horizontal surface consisting of a pre-determined set number of layers of laboratory filter paper on a flat surface for support. Testing will begin with two substrates consisting of 15 and 10 layers of filter paper respectively for a full-length burn. If no full-length burn is observed with substrates of 15 and 10 layers of filter paper, then substrates consisting of three layers of filter paper are assembled and used for the duration of the test. Observation is made of whether or not the pre-roll continues to burn to the beginning or to the end of the crutch or filter, or both (see Fig. 1). Thirty determinations (comprising one test) are performed to determine the probability that the pre-roll will continue burning despite heat abstraction by the substrate. The number of determinations can vary on a case-by-case basis dependent on sample size. Sample size should represent a statistical size of production batches when using this test method for analyzing pre-rolls meant for sale.

4.2 This test method also measures the moisture content of the cannabis herbal material in the pre-roll using a moisture content measuring device.

5. Significance and Use

5.1 According to statistics provided by the NFPA, one of the most common initiating events in a fatal fire is the dropping of a smoking material, such as a pre-roll, onto a bed or a piece of upholstered furniture. Test Methods E1352 and E1353 and NFPA 261 and NFPA 260 have been developed to evaluate the susceptibility of upholstered furniture mock-ups and components to ignition by cigarettes (similarly for pre-rolls). Federal Standard 16 CFR 1632 was promulgated to reduce the likelihood that mattresses and mattress pads would ignite from a lighted smoking material. Research of test methods (NIST 851-2) has found that filter paper substrates can be used to replace the fabric/padding assembly with multiple layers of common filter paper showing a systematic progression in measuring ignition strength. Additionally, smoking materials with high percentages of full-length burns on filter paper substrates (NIST 1436) generate enough heat to keep burning and thus are more likely to ignite soft furnishings than smoking materials with lower percentages of full-length burns.

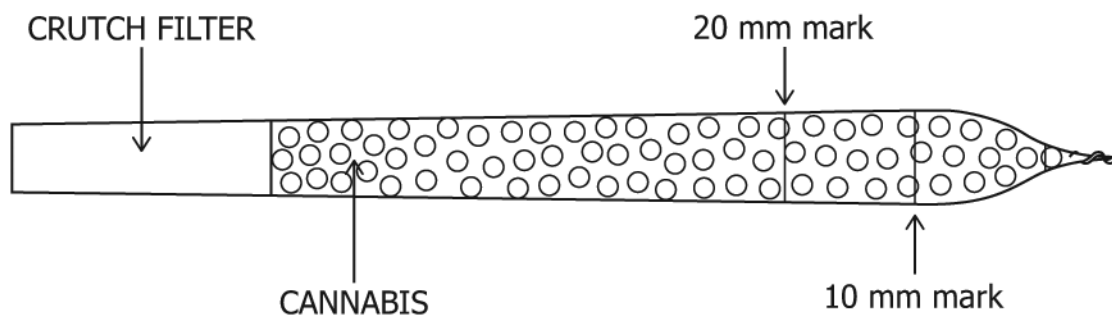


FIG. 1 Crutch Pre-roll