



Designation: D8390 – 21

Standard Classification for Domestic Cannabis/Hemp Plant Indoor Growing Appliances¹

This standard is issued under the fixed designation D8390; 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 standard classifies the types of domestic cannabis/hemp plant indoor growing appliances.

1.2 This classification shall be applicable to growing of cannabis/hemp plants using indoor growing appliances.

1.3 This classification differentiates between the various types of cannabis/hemp plant indoor growing appliances.

1.4 The examples for each type of cannabis/hemp plant indoor growing appliance are not intended to be all-inclusive. Examples shown or described in this classification are included only as an aid in the understanding and comprehension of each type under the classification.

1.5 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.6 *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.*

1.7 *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

D8374 Personal Cannabis/Hemp Plant Growing Appliances

2.2 *UL Standards:*³

UL 8800 ANSI/CAN/UL Standard for Horticultural Lighting Equipment and Systems

¹ This classification is under the jurisdiction of ASTM Committee D37 on Cannabis and is the direct responsibility of Subcommittee D37.08 on Cannabis Devices and Appliances.

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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.

³ Available from Underwriters Laboratories (UL), UL Headquarters, 333 Pfingsten Road, Northbrook, IL, 60062, <http://www.ul.com>.

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *automated, n*—a growing system that is automated and pre-configured but can be user modified or user input programmed. User imputable information can include atmospheric monitoring, grow system and lighting system control, with varying feature levels of automation control for lighting, watering, and nutrient dispense systems that require the interaction by the experienced cannabis grower.

3.1.2 *curing appliance, n*—an appliance used to dehydrate, preserve dry cannabis and develop cannabinoid profiles.

3.1.3 *drying appliance, n*—an appliance used to remove moisture.

3.1.4 *grow tent, n*—a specialized tent enclosure designed for growing cannabis plants, consisting of frame, fabric, and reflective lining.

3.1.4.1 *Discussion*—A grow tent may be portable, stationary or be intended to be permanently fixed in place.

3.1.4.2 *Discussion*—A grow tent is used for growing cannabis, but can also be used for growing herbs and vegetables such as tomatoes all indoors.

3.1.5 *grow box, n*—a specialized box enclosure that is explicitly designed for growing cannabis plants, consisting of a rigid structure made with light reflecting material (such as polished metal) or coated material to reflect light.

3.1.5.1 *Discussion*—A grow box may be stationary or be intended to be permanently fixed in place.

3.1.5.2 *Discussion*—A grow box can also be used for growing herbs and vegetables such as tomatoes all indoors.

3.1.6 *horticultural system, n*—a prefabricated chamber, cabinet, or open frame structure of which identified for the purpose outfitted with electrical infrastructure for the active optimization of plant growth. These systems may incorporate pre-installed materials and equipment which, after installation, may be concealed and may not be accessible for inspection at the final installation site. They may additionally include lighting, shutters, controls, control panels, plumbing components (such as pump motors, solenoid valves, water reservoirs), and cooling and heating components, as part of the plant growth management control horticultural system. A horticultural system may include hydroponic, aeroponic, aquaponic, and other forms of irrigation methods. Passive growing

structures, such as greenhouses or tent like coverings, are not considered horticultural lighting structures in the context of this classification.

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3.1.6.1 *Discussion*—The term *horticultural system* in the cannabis industry is commonly known as “a growing appliance,” “a grow box,” or “grow tent.” In some cases, the growing appliance, grow box or grow tent, depending on characteristics can serve to offer additional functionality such as a curing appliance or drying appliance for cannabis.

3.1.6.2 *Discussion*—A growing appliance may be used with or without programming logic and supporting applications, for growing cannabis through the stages of plant growth or lifecycle. A plant’s lifecycle in simple terms consists of seed germination, vegetation, flowering, and seed cycles.

3.1.6.3 *Discussion*—The growing appliance may be stationary or be intended to be permanently fixed in place.

3.1.7 *manual, n*—a plant growing system explicitly designed to grow cannabis, that is user configured and requires the full manual intervention and monitoring by the novice or experienced cannabis plant grower.

3.1.8 *medium, n*—a means to carry nutrients to help in plant growth.

3.1.9 *semi manual, n*—a plant growing system explicitly designed to grow cannabis, that is partially pre-configured with some level of features such as lighting system, irrigation, or other and requires some manual intervention and interaction by the novice or experienced cannabis plant grower.

3.1.10 *standalone, n*—a proprietary cannabis growing system that is turnkey, fully pre-configured and programmed with factory defined parameters for optimal cannabis plant growth and crop yield.

3.1.10.1 *Discussion*—The term *standalone* is considered analogous to “set it and forget it,” all-in-one, as this type of system has been developed based on a successful cannabis grow recipe using a proven system.

3.1.10.2 *Discussion*—In some cases, if desired, defined parameters can or may be user overridden and modified with user inputs. Full level of automation control for lighting, atmospheric monitoring and sensing, watering, predefined grow medium, nutrient and nutrient dispense grow aids in an all-inclusive system, that requires minimal interaction by the novice or experienced cannabis grower.

4. Significance and Use

4.1 This classification standard creates clear definitions for main types of domestic cannabis/hemp plant indoor growing appliances.

4.2 The purpose of this classification is to standardize the naming of cannabis/hemp plant indoor growing appliance types under the classification.

4.3 This classification helps to achieve a clarity on the type of configuration available for domestic cannabis/hemp plant indoor growing appliance usage.

4.4 This classification standard outlines some individual components and aspects of various types of domestic cannabis/hemp plant indoor growing appliances.

4.5 This classification is not intended to define all terminology, design, mechanical, physical or universal functions and impacts of different technologies attributable to domestic cannabis/hemp plant indoor growing appliances. Such characteristics and category details and nomenclature will be defined in Guide **D8374**.

4.6 This standard provides clarity to industry, government, and the public on types of domestic growing appliances for indoor growing cannabis/hemp plants.

5. Basis of Classification

5.1 The basis for classification of domestic cannabis/hemp plant indoor growing appliances appears in **Table 1**.

5.2 The classification of cannabis/hemp plant indoor growing appliance is formed on the use case, using a main classification attribute and subclassification types for flexible and rigid growing systems.

5.3 For interpretation of the classifications, reference **6.2** that follows with examples. For further clarity of types, reference domestic cannabis/hemp plant indoor growing appliance figures in annexes and appendices.

6. Use of This System

6.1 The order of classification shall be as follows: main class, grow tents and grow boxes as required; followed by subclassifications, Type 1 – flexible grow system and Type 2 – rigid grow system.

6.2 For examples, see below:

TABLE 1 Classification of Domestic Cannabis/Hemp Plant Indoor Growing Appliances

Sub Classification System	Main Classification System	
	A. Grow Tents	B. Grow Boxes
TYPE 1 – Flexible Grow System		
a. Manual	A1a	B1a
b. Semi Manual	A1b	B1b
TYPE 2 – Rigid Grow System		
c. Automated	A2c	B2c
d. Standalone		B2d

- A1a Manual Grow Tents — a grow tent and various components such as lighting, cooling, watering, nutrients, etc., would need to be selected by the grower and assembled by the grower to make a system for growing cannabis/hemp plants.
- A1b Semi Manual Grow Tents — a predefined grow tent package with preprogrammed lighting and cooling included. Various other components such as watering aids, nutrients, etc., are selected and assembled by the grower to make the full cannabis/hemp plant growing system.
- A2c Automated Grow Tents — a grow tent and supporting components such as lighting, cooling fan atmospheric sensors, watering aids, nutrients, etc., are selected and assembled by the grower to make a cannabis/hemp plant growing system. Furthermore, a tent automation package is added. This gives a grower (novice or experienced), the ability monitor and control temperature, humidity, airflow, lights, and, at the extreme, the addition of Wi-Fi enabled camera to watch the plants grow. Automated packages can be ideal for the grower that wants the ability to grow remotely and leave their grow for several days at a time.

- B1a Manual Grow Boxes — a grow box and various components such as lighting, cooling, watering, medium, nutrients, etc., would need to be selected by the grower and assembled by the grower to make a system for growing cannabis/hemp plants.
- B1b Semi Manual Grow Boxes — a predefined grow box package with programmed lighting and cooling controls included. Various other components such as watering aids, nutrients, etc., are selected and assembled by the grower to make a growing system for cannabis/hemp plants.
- B2c Automated Grow Boxes — a predefined grow box package with supporting components such as lighting, ventilation fans, atmospheric sensors, watering aids, nutrients, etc., that come preassembled or is easily assembled by the grower to make a system for growing cannabis/hemp plants. In addition, a grow box automation package is included that gives a grower (novice or experienced), the ability monitor and control temperature, humidity, airflow, lights. Tiered packages may have accessories packages, such as a Wi-Fi enabled camera to watch the plants grow.
- B2d Standalone Grow Boxes — an all in one grow box. A premium grow box that is smart, contains all systems and requires minimal user intervention from start to finish growing of cannabis/hemp plants.

7. Keywords

7.1 cannabis; domestic; grow box; grow tent; growing appliance; hemp; horticultural; indoor; personal

[ASTM D8390-21](https://standards.iteh.ai/catalog/standards/sist/f75fc6c5-306d-4119-ade9-9783a776cb3b/astm-d8390-21)

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ANNEX

(Mandatory Information)

A1. EXAMPLES

A1.1 Using **Table 1** and **6.2**, **Figs. A1.1-A1.5** are some examples of growing appliance classification using the system nomenclature outlined for major classification, type and sub-

classification. The intended examples are included only as an aid in the understanding and comprehension of some of the types of classification.

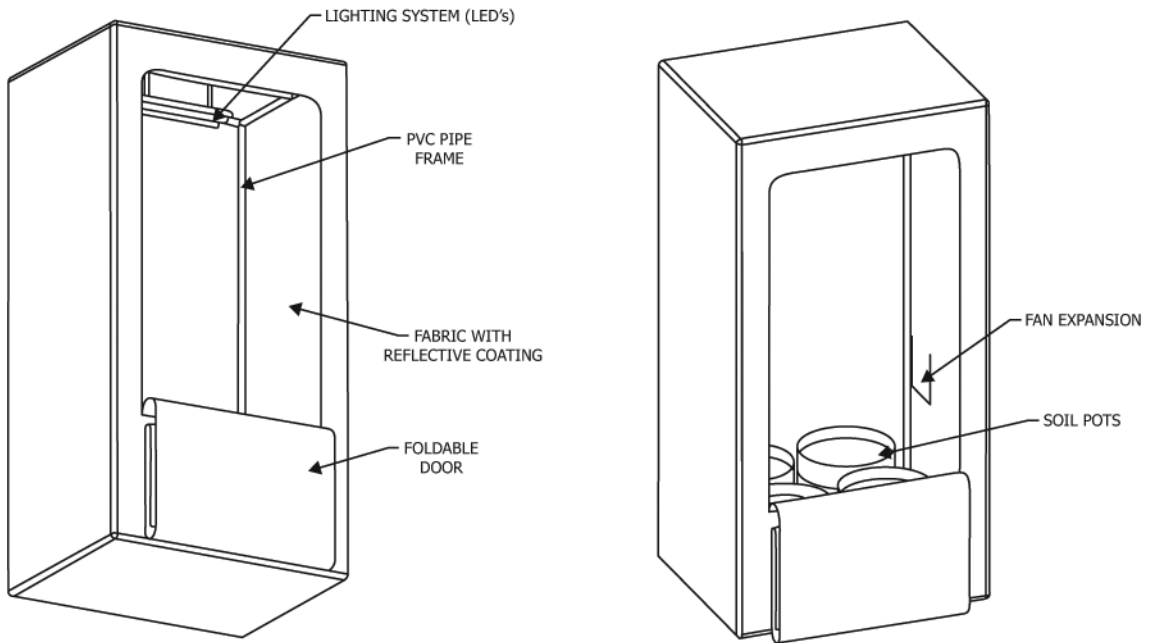


FIG. A1.1 Manual Grow Tent (A1a)

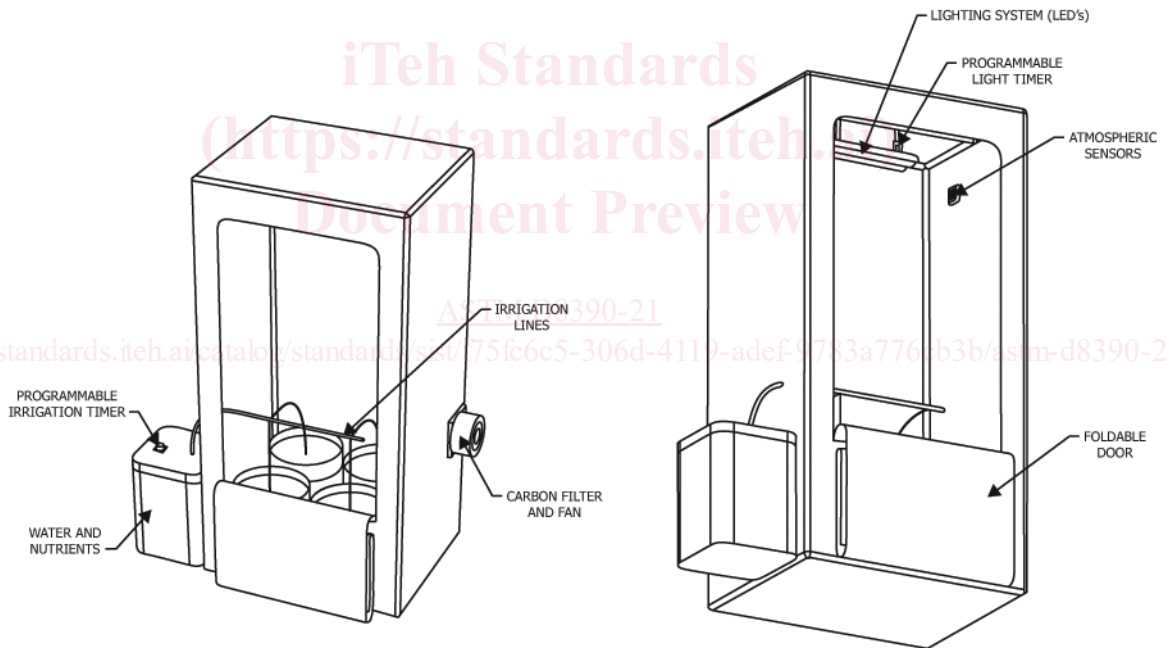


FIG. A1.2 Automated Grow Tent (A2c)