



Designation: D8197 – 22

Standard Specification for Maintaining Acceptable Water Activity (a_w) Range (0.55 to 0.65) for Dry Cannabis Flower Intended for Human/Animal Use¹

This standard is issued under the fixed designation D8197; 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.

INTRODUCTION

The concept of water activity is more than 50 years old. For many years, researchers tried to equate bacterial growth potential with water content. William Jones Scott showed in 1953 that microorganisms have a limiting a_w level for growth (1),² thus being the first to establish that bacterial growth correlated with water activity, not water content of organic materials. It is now generally accepted that a_w is more closely related to the microbial, chemical, and physical properties of foods and other natural products than is total moisture (2). It is firmly established that growth of specific microbes and metabolism of microbe associated toxins are inhibited at or below specific water activity values (3, 4).

Total water content (moisture) measurements do not necessarily reflect water available for microbial growth and thus are an inaccurate means for controlling microbial growth, because the water content sufficient for microbial growth is dependent on the substance being tested. Water activity measurement is more accurate than total water content measurement as it relates directly to the water available (in liquid form) to microbes and is constant relative to the particular microbe, regardless of the substance being tested.

1. Scope

1.1 This specification covers the recommended range of a_w suitable for safe and efficacious storage of cannabis flowers or portions thereof.

1.2 *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.*

1.3 *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.*

¹ This specification 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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² The boldface numbers in parentheses refer to a list of references at the end of this standard.

2. Referenced Documents

2.1 *ASTM Standards:*³

D8196 Practice for Determination of Water Activity (a_w) in Cannabis Flower

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *water activity, a_w , n* —the partial vapor pressure of water in a substance divided by the vapor pressure of pure water at the same temperature which is calculated by dividing the partial vapor pressure of water in the substance (P) by the vapor pressure of pure water at the same temperature (P_o), that is, $a_w = P/(P_o)$. This describes quantitatively the capability of the cannabis flower in a sealed container to affect the humidity of the container's headspace air.

4. Significance and Use

4.1 This specification is designed for use on cannabis flower by cannabis producers, processors, dispensers, testing laboratories, and end users.

³ 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.