



Designation: D8440 – 22

Standard Specification for Food Safety and Quality of Hempseed Products Intended for Human Consumption¹

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INTRODUCTION

The processing of hempseed results in several food products such as toasted hempseed, dehulled hempseed, hemp seed oil, and hempseed protein products. These products in which hempseed is the main or sole ingredient may be consumed with no microbial pathogen reduction step to manage food safety risk. Specifications relating to food safety and shelf-life attributes are defined in this specification to protect buyers and consumers from food safety risk, and where possible, address shelf life as it relates to potential spoilage. Meeting these specifications will assist product consistency and business-to-business (B2B) transactions.

1. Scope

1.1 In this specification, the maximum allowable *e.coli*, *salmonella spp*, yeast and mold, foreign material, and total delta-9 tetrahydrocannabinol (THC) content is established for major hempseed products intended for human consumption. It also establishes acceptable ranges for moisture, peroxide value, and free fatty acid content, which help maintain product shelf life.

1.2 This specification establishes specifications for hempseed protein products to facilitate commerce, but is not a specification for consumer-facing labels, which are determined by authorities having jurisdiction and individual companies. It does not include devitalized hempseed.

1.3 This specification applies to hemp food processors, food companies, wholesalers, regulatory bodies, and analytical laboratories.

1.4 In this specification, the minimum information required in a Certificate of Analysis is described.

1.5 Where aspects of this specification differ from regional regulatory jurisdictional requirements, the jurisdictional authority's directive shall take precedence.

1.6 *Units*—The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this standard.

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

2. Referenced Documents

2.1 *ASTM Standards:*²

D8270 Terminology Relating to Cannabis

2.2 *AOAC International Standards:*³

AOAC 935.29 Moisture in Malt

AOAC 955.04D Protein in Vegetable Protein Products

AOAC 2018.11 Quantitation of Cannabinoids in Cannabis Dried Plant Materials, Concentrates and Oils

2.3 *AOCS Standards:*⁴

AOCS Ca 5a-40 Free Fatty Acids in Crude and Refined Fats and Oils

AOCS Cd 8b-90 Peroxide Value, Acetic Acid, Isooctane Method

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 AOAC International (AOAC), Official Methods of Analysis, 2275 Research Blvd, Ste 300, Rockville, MD 20850, <http://www.aoac.org>.

⁴ Available from American Oil Chemists' Society (AOCS), 2710 S. Boulder, Urbana, IL 61802-6996, <http://www.aocs.org>.

¹ This specification is under the jurisdiction of ASTM Committee D37 on Cannabis and is the direct responsibility of Subcommittee D37.07 on Industrial Hemp.

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2.4 *DGHM Standard (German Society for Hygiene and Microbiology):*

DGF C-V 6a Peroxide Value Method according to Wheeler
2.5 *ISO Standards:*⁵

ISO 6579 Horizontal Methods for the Detection, Enumeration and Serotyping of *Salmonella*

ISO 16649-1 Horizontal method for the enumeration of beta-glucuronidase-positive *Escherichia coli*, Part 1

ISO 16649-2 Horizontal method for the enumeration of beta-glucuronidase-positive *Escherichia coli*, Part 2

ISO 21528-2 Horizontal method for the enumeration of Enterobacteriaceae, Part 2

2.6 *MFHPB Standards:*⁶

MFHPB-20 Methods for the Isolation and Identification of *Salmonella* from Foods and Environmental Samples

MFHPB-22 Enumeration of Yeasts and Moulds in Food

MFHPB-33 Enumeration of Total Aerobic Bacteria in Food Products and Food Ingredients Using 3M™ Petrifilm™ Aerobic Count Plates

MFHPB-34 Enumeration of *Escherichia coli* and Coliforms in Food Products and Food Ingredients Using 3M™ Petrifilm™ *E. coli* Count Plates

2.7 *Ph.Eur. Standard:*⁷

Ph.Eur. 9.0, 2.5.5, Peroxide Value

3. Terminology

3.1 *Definitions*—See Terminology **D8270**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *devitalized hempseed, n*—sterilized intact achene (fruit) produced from a hemp plant that is incapable of germination.

3.2.1.1 *Discussion*—This is whole seed that has been sterilized through high heat or other methods as per requirement by countries that do not allow importation of viable hemp seed. It is not used to grow a plant.

3.2.2 *hempseed protein products, n*—powders derived from hempseed referred to as hempseed protein isolate, refined hempseed protein concentrate, hempseed protein concentrate, hempseed meal, and high fiber hempseed protein.

3.2.2.1 *Discussion*—Defined by protein levels determined by AOAC 955.04D or qualified equivalent method.

3.2.3 *pathogen reduction step, n*—a point in the food manufacturing process where harmful pathogens are eliminated, usually by killing the pathogen or reducing to acceptable levels.

3.2.4 *toasted hempseed, n*—hempseed that has been dry roasted to modify its taste and texture.

3.2.4.1 *Discussion*—This seed is not similar to devitalized hempseed.

4. General Requirements

4.1 Consistent specifications for hempseed products using a combination of attributes representing both the presence and absence of certain characteristics will provide a credible means for buyers and sellers to target product for appropriate use(s).

4.2 Hemp food processors and laboratories can verify minimum food safety and quality aspects for hempseed products intended for human consumption.

4.3 Hempseed products that may be discarded on visual review or in the absence of clearly defined quality metrics can be used by processors or redirected to other uses.

4.4 Hempseed products that are assessed as unacceptable for human use may be repurposed for other byproducts or further processing.

4.5 This specification can be used within buyer-seller transactions or for marketing or quality control purposes.

5. Specification for Food Safety and Quality

5.1 Specifications in **Table 1** indicate: (1) the minimum number of tests/analytes that shall be represented on a certificate of analysis and (2) the groupings of tests that shall determine if a lot/batch of hempseed product is acceptable for human consumption or repurposed.

5.2 Maximum allowable amounts of key microbials and acceptable moisture range levels are identified in **Table 1**. If any one result is out of specification, the lot is no longer a food-grade product unless otherwise treated/remediated.

5.3 Total yeast and mold, peroxide value, and free fatty acid value are related to product shelf life and strong indicators for potential spoilage and rancidity. Any of these test results outside those listed in **Table 1** do not necessarily cause a batch rejection but could result in the product targeted for alternate processing or uses.

5.4 If thresholds in food safety are exceeded in **Table 1**, the identified biological hazard is deemed to be present and may cause illness or death.

5.5 If a lot is noncompliant because of food safety specifications in **Table 1** and the entire lot can be improved by means of an authorized microbiological pathogen reduction step in which subsequent laboratory testing shows microbial levels are reduced to meet the minimum specifications, the lot/batch may qualify for the purposes originally intended. If issues are caused by moisture levels, and a mitigation step can be applied, the lot/batch may be used for its original purpose.

⁵ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.

⁶ MFHPB standards available from Health Canada, Address Locator 0900C2, Ottawa, Ontario K1A 0K9, e-mail: hc.publications-publications.sc@canada.ca.

⁷ Available from European Directorate for the Quality of Medicines and Healthcare (EDQM), 7 allée Kastner, F-67000 Strasbourg, France, <http://www.edqm.eu>.