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Standard Guide for Hemp Straw Intended for Decortication¹

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INTRODUCTION

The purpose of this guide is to assist hemp farmers to produce consistent quality hemp straw that can be processed optimally by decorticating companies or hemp hurd suppliers. It includes target thresholds for moisture levels, weed or non-hemp plant content, stalk size and retting color of stalks.

Quality fiber from hemp can be used in several products but it should arrive at the decorticator with some minimum quality properties to enable its optimum use.

1. Scope

1.1 This guide can be used by hemp farmers, hemp straw companies and hemp decorticators to target aspects of straw management that assist consistent quality.

1.2 This guide provides guidance for on-site management targets to help manage against potential spoilage. This guide will assist targeted use(s) until feasible in-field tests are developed that can reliably assess factors related to hemp straw spoilage.

1.3 Product wastage will be reduced if spoilage is avoided or identified early. Decisions to retarget to other uses may be done earlier and this may also help assess pricing, discounts, and salvageable hemp straw.

1.4 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.

1.5 *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.*

1.6 *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](#)

3. Terminology

3.1 *Definitions*:

3.1.1 For definitions of terms used in this guide, refer to Terminology [D8270](#).

4. General Procedures

4.1 Ensure that standing hemp stalks meet optimum moisture content for the region before harvesting, baling, or both as hemp straw.³

4.2 It is recommended that the following information at minimum is recorded for each hemp field where straw is harvested: hemp variety, seeding rate, seeding and cutting dates, harvest date and equipment used, bale type and wrap, retting completed or not, weed and foreign plant content, average stalk length and diameter, area where grown, and an estimate of stalk consistency (see [Table 1](#) for further description).

4.3 Talk to the buyer before harvesting as they may have specific equipment that works with specific type of straw bales. The buyer may require retted or non-retted straw and may have guidance on bale storage, target delivery dates and other contract specifications.

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 Influence of Field Practices on Hemp Straw, Canadian Hemp Trade Alliance, Fiber Standards Committee, April 2021.

¹ This guide 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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TABLE 1 Recommended Properties for Hemp Straw Intended for Decortication^A

	Hemp Straw Prior to Baling	Baled Hemp Straw
A. Moisture Content^B Percentage by weight	Scenarios (a) If higher than 16 % moisture: consider raking again to assist drying, after cutting stalks at higher levels to reduce weed content which can contribute to higher moisture. Baling at this level results in higher dockage or a possible refusal by the buyer. If moisture cannot be reduced consider other uses. Over-retted straw will not be usable in building materials. (b) If 8 % to 12 % moisture in the field, can proceed with baling or bundling. (c) If drier than 8 %, the bale quality may be affected, so contact the buyer. Bales may end up being too light to be feasibly used.	8 % to 12 %
B. Weed or Other Non-Hemp Plant Content^C Visual estimate	(a) Low levels: 5 % or less. (b) Medium levels: 5 % to 10 %. Consider cutting stalks at higher levels to reduce weed content. (c) High level ^D : greater than 10 %.	<5 %
C. Estimation of Stalk Size^E	Average Stalk Diameter^F Low: <1.25 cm (0.5 in.) Medium: 0.27 cm to 2.5 cm (0.5 in. to 1.0 in.) High: >2.5 cm (1.0 in.)	Length^G Short: <30 cm (<12 in.) Medium: 30 cm to 80 cm (12 in. to 31 in.) Long: >80 cm (>31 in.)
D. Retting of Straw—Color of Hemp Stalks Influenced by time in the field and weather conditions.	Low level ^H : Field retted with some precipitation and very little color change to the stalks. Medium: Some color change with no green color in the stalks. High: Color change from light yellow to majority of stalks as grey or dark grey in color. No green color stalks. Non-retted: Stalks may be green or light tan in color.	Other: Minimal amount of mold visible to human eye.

^A Source: *Commercial Thresholds Accepted by Hemp Decorticators and Fiber Manufacturing Company Specifications*. Fibre Standards Subcommittee, Canadian Hemp Trade Alliance, 2021. Note: Mitigation recommendations may vary by intended use.

^B Estimate moisture content of straw using existing bale moisture probe meters or manual practices recommended for forage bale moisture or hay in the region.

^C This includes weeds, prior crop refuse or volunteer plant seeds or other plant material. Other foreign matter such as rocks, metal or plastic refuse, and other garbage material should be less than 5 %. Note if higher than 5 % may be unable to export hemp fiber to other countries.

^D Most organic production would fall into the high category.

^E Acceptability for this property will be determined by the buyer so categories are identified.

^F Take samples of cut stalks at least 2 ft from the ground or at 1/3 of the stalk height. Measure using a caliper. Record the average across the samples. Note the range of sizes for an estimate of how consistent the stalk size is in each field. Consistency of stalk diameter will be important—discuss with the buyer on intended use(s).

^G Select five to eight representative samples and measure with measuring tape, then average across the number of samples. Note this is an estimate only.

^H Low level of retting, or non-retted, is acceptable if hurd is intended for hempcrete. In addition, be aware that some color loss may be due to weather conditions over time and not entirely due to retting, for example light tan in color.

4.4 Assess straw prior to baling for moisture content to ensure readiness for baling. Use a consistent method for sampling that is as representative as possible in field conditions.

4.5 Estimate weed and non-hemp plant content of the field prior to swathing hemp stalks, and note organic production is less likely to meet this threshold as identified in **Table 1** due to the likelihood of a higher presence of weeds.

4.6 Store baled hemp straw in a manner that manages excess moisture caused by weather conditions. Depending on the region and climate, this may be indoor as per local weather conditions or temporary tarping of bales in outdoor storage. If tarping, slope the tarp so water does not pool.

4.7 In-field storage of bales should be on higher ground and located nearby to roads for easier access to transportation. Round bales placed in a single layer with at least 6 in. spacing may be stored for longer periods, as long as placed in a manner that allows drying to occur as much as possible.

4.8 Check bales at least weekly during storage and monitor for: excess moisture or signs of visual spoilage; pooling of water; white, brown or grey mold; and, heating of the bale.

4.9 Considerations for retting in outdoor broadacre hemp fiber production include mainly field retting done by leaving harvested hemp stalks on the ground for several weeks and relying on the weather to facilitate the process. Length of the retting process depends on availability of moisture and air temperature. Warm weather with intermittent precipitation maintaining moisture within the hemp stalks supports microbial activity and accelerates the process of pectin degradation (retting).

4.10 To assist even retting, the stems should be turned over when they start changing in color from green to pale yellow. Under optimal weather conditions, this stage can be reached two to three weeks after cutting. Turning over or raking the hemp straw is recommended when hemp is meant for textile applications which demand high quality and uniformity of fibres and if the layer of hemp stalks are thick. Without turning stems over, the stems at the bottom, closer to the ground, could be easily over-retted and hence quality of both hurd and bast fibre would be compromised.