



© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office

CP 401 • Ch. de Blandonnet 8

CH-1214 Vernier, Geneva

Phone: +41 22 749 01 11

Fax: +41 22 749 09 47

Email: [copyright@iso.org](mailto:copyright@iso.org)

Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

PRF IWA 37-1

<https://standards.iteh.ai/catalog/standards/sist/7e233286-fc52-3ed23a50de34/prf-iwa-37-1>

Formatted: zzCopyright, Indent: Left: 0 cm, First line: 0 cm, Right: 0 cm, Space Before: 0 pt, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers, Border: Top: (No border), Bottom: (No border), Left: (No border), Right: (No border), Tab stops: Not at 0.91 cm + 16.97 cm

Deleted: PC245 Secretariat

Formatted: Font: Cambria, 11 pt, Not Italic

Formatted: Font: Cambria, 11 pt, Not Italic

Deleted: SAC (Standards Administration of China)¶  
8th Floor, 1st Building No. 25, Yuetan North Street,  
Xicheng District¶  
Beijing, China¶  
Contact name: Ms. Blanca Chen¶

Deleted: 86-10-68391801

Formatted: Font: Cambria, 11 pt, Not Italic, English (United States)

Formatted: Font: Cambria, 11 pt, Not Italic, English (United States)

Formatted: zzCopyright, Indent: Left: 0 cm, First line: 0 cm, Right: 0 cm, Space Before: 0 pt, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers, Border: Top: (No border), Bottom: (No border), Left: (No border), Right: (No border), Tab stops: Not at 0.91 cm + 16.97 cm

Deleted: 86-10-68391805

Formatted: Font: Cambria, 11 pt, Not Italic, French (Switzerland)

Deleted: :blancachen@cciec.com

Formatted: Font: Cambria, 11 pt, Not Italic, French (Switzerland)

Deleted: Internet Site:  
[www.sac.gov.cn/templet/english...](http://www.sac.gov.cn/templet/english...)

Deleted: ¶  
¶  
Reproduction for sales purposes may be subject to  
royalty payments or a licensing agreement.¶  
¶  
¶  
Page Break

## CONTENTS

<b>Foreword</b> .....	<b>v</b>
<b>Introduction</b> .....	<b>vi</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>2</b>
<b>3 Terms and definitions</b> .....	<b>3</b>
<b>4 Buildings</b> .....	<b>9</b>
4.1 General.....	9
4.2 Building design.....	10
4.3 Fire protection systems.....	11
4.4 Means of egress.....	12
4.5 Emergency lighting.....	12
4.6 Notification and signage.....	12
4.7 Safety and hazard assessment.....	13
4.8 Exhaust and ventilation.....	13
4.9 Processing rooms.....	13
4.10 Storage.....	14
4.11 Interior.....	15
<b>5 Devices and equipment</b> .....	<b>15</b>
5.1 General.....	15
5.2 Ventilation control equipment.....	15
5.3 Carbon dioxide use.....	15
5.4 Plant drying and processing equipment.....	16
<b>6 Oil extraction</b> .....	<b>17</b>
6.1 General.....	17
6.2 Building, equipment, and process integration.....	17
6.3 Identification of risks and hazards.....	17
6.4 Hazard mitigation.....	18
6.5 Waste disposal.....	19
6.6 Initial extraction methods and processes.....	20
6.7 Hydrocarbon extraction.....	20
6.8 Hydrocarbon extraction process flow.....	20
6.9 Hydrocarbon extraction methods and techniques.....	22
6.10 Carbon dioxide extraction.....	22
6.11 Carbon dioxide extraction process flow.....	23
6.12 Carbon dioxide extraction supporting and ancillary equipment.....	24
6.13 Carbon dioxide co-solvent extraction.....	24
6.14 Alcohol extraction.....	25
6.15 Alcohol extraction process flow.....	25
6.16 Alcohol extraction ancillary equipment.....	26
6.17 Alcohol extraction solvent recovery.....	27
6.18 Filtration required for alcohol extraction.....	27
6.19 Alternate extraction methods.....	27
<b>7 Post-processing refinement</b> .....	<b>27</b>
7.1 General.....	27
7.2 Defatting: Winterization and filtration.....	29
7.2.1 General.....	29
7.2.2 Process.....	31

<b>Deleted: Foreword</b> v¶
<b>Deleted: Introduction</b> viii¶
1. Scope 1¶
2. Normative references 1¶
3. Terms and definitions 3¶
4. Buildings 7¶
4.1 General 7¶
4.2 Building design 7¶
4.3 Fire protection systems 8¶
4.4 Means of egress 9¶
4.5 Emergency Lighting 9¶
4.6 Notification and signage 9¶
4.7 Safety and hazard assessment 9¶
4.8 Exhaust and ventilation 10¶
4.9 Processing rooms 10¶
4.10 Storage 11¶
4.11 Interior 11¶
5. Devices and equipment 11¶
5.1 General 11¶
5.2 Ventilation control equipment 12¶
5.3 Carbon dioxide use 12¶
5.4 Plant drying and processing equipment 13¶
6. Oil extraction 13¶
6.1 General 13¶
6.2 Building, equipment, and process integration 13¶
6.3 Identification of Risks & Hazards 13¶
6.4 Hazard mitigation 14¶
6.5 Waste Disposal 14¶
6.6 Initial extraction methods and processes 15¶
6.6.1 General 15¶
6.7 Hydrocarbon extraction 15¶
6.8 Hydrocarbon extraction process flow 16¶
6.9 Hydrocarbon extraction methods and techniques 16¶
6.10 Carbon dioxide extraction 17¶
6.11 Carbon dioxide extraction process flow 17¶
6.12 Carbon dioxide extraction supporting and ancillary equipment 18¶
6.13 Carbon dioxide co-solvent extraction 18¶
6.14 Alcohol extraction 18¶
6.15 Alcohol Extraction process flow 19¶
6.16 Alcohol extraction ancillary equipment 19¶
6.17 Alcohol extraction solvent recovery 20¶
6.18 Filtration required for alcohol extraction 20¶
6.19 Alternate extraction methods 20¶
7. Post processing refinement 20¶
7.1 General 20¶
7.2 Defatting: Winterization & filtration 21¶
7.2.1 General 21¶
7.2.2 Process 21¶
7.2.3 Filtration 22¶
7.3 Solvent recovery 22¶
7.3.1 General 22¶
7.3.2 Process 23¶
7.4 Liquid-liquid separations: Polar contaminant removal 23¶
7.4.1 General 23¶
7.4.2 Process 24¶
7.5 Degassing: Devolatilization and decarboxylation 25¶
7.5.1 General 25¶
7.5.2 Process 25¶
7.6 Distillation 26¶
7.6.1 General 26¶

7.2.2	Filtration	31
7.3	Solvent recovery	32
7.3.1	General	32
7.3.2	Process	32
7.4	Liquid-liquid separations: Polar contaminant removal	33
7.4.1	General	33
7.4.2	Process	33
7.5	Degassing: Devolatilization and decarboxylation	34
7.5.1	General	34
7.5.2	Process	34
7.6	Distillation	35
7.6.1	General	35
7.6.2	Process	35
7.6.3	Cold traps	36
7.7	Isolation and separation	36
7.7.1	General	36
7.7.2	Process	36
8	Competence of personnel	37
9	Preventive maintenance	38
Annex A (informative)	Information on hazardous areas	39
Annex B (informative)	Alternate extraction methods	51
Bibliography		53

(standards.iteh.ai)

PRF IWA 37-1

<https://standards.iteh.ai/catalog/standards/sist/7e233286-fc52-4134-9bb4-3ed23a50de34/prf-iwa-37-1>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

International Workshop Agreement IWA 37, was approved at a series of workshops hosted by the Standards Council of Canada (SCC), in association with Underwriters Laboratories of Canada (ULC), held virtually between December 2020 and June 2021.

[A list of all parts in the IWA 37 series can be found on the ISO website.](#)

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

Formatted: English (United States)

Deleted:

Formatted: English (United States)

Deleted:

Formatted: English (United States)

Formatted: English (United States)

Formatted: English (United States)

Formatted: English (United States)

Formatted: Font color: Auto, English (United States)

Formatted: English (United States)

Formatted: English (United States)

Formatted: std\_docNumber, English (United Kingdom)

Deleted: -1 (ISO IWA37-1)

Formatted: English (United Kingdom)

Deleted: developed and

Deleted: workshop

Deleted: partnership

Deleted: UL

Deleted: Inc., conducted

Deleted: from

Deleted: to

Deleted:

Deleted: ¶

Formatted: Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

## Introduction

While cannabis has been fully legalized in Canada and in many states in the US, it is a new and emerging industry that is moving at a very fast pace in many other parts of the world. While legalization is being deliberated by governments and legislative bodies, companies are creating their own infrastructure in anticipation of legal approval. Meanwhile, government regulators and the societies they serve are grappling with the lack of consistent rules and guidance to deliver safety, security and sustainability of cannabis facilities and operations, while growers and producers use their own judgment on how to establish and operate facilities.

It has become very clear that the global cannabis market is opening up very rapidly. The cannabis product and the industry will become more and more ubiquitous as the global barriers start to lower and come down. If the current trend continues, it is predicted that well over one third of the globe will accommodate cannabis by 2024.

What is unique about this new and emerging industry is that it is coming from an illicit status into decriminalization and evolving into a legitimate burgeoning business. Due to its pioneering status, very little exists in terms of research, studies, historical experience, and best practices. Standardization is likewise very slow on the uptake, and the cannabis industry remains severely underserved.

There are therefore distinct challenges for the safety, security and sustainability of cannabis facilities and operations, which the IWA 37 series seeks to address as follows:

— Part 1 (this document): Requirements for the safety of cannabis buildings, equipment and oil extraction operations;

— Part 2: Requirements for the secure handling of cannabis and cannabis products;

— Part 3: Good production practices (GPP).

In addition to the requirements for sites, facilities, buildings, and equipment specified in this document, statutory and regulatory requirements and codes can apply.

NOTE Annex A provides information on international construction codes to consider when working with this document.

Supporting material to accompany the IWA 37 series is available at the following website: IWA 37 — Safety, security and sustainability of cannabis facilities and operations.

A list of workshop participants is available from the Standards Council of Canada (SCC).

**Deleted:** IWA 37 provides principles, guidance and approaches for the safety, security and sustainability of buildings, premises, equipment, and operations utilized for the cultivation, production, processing and sales of cannabis and cannabis products. IWA 37 consists of three parts:¶  
Part 1: Safety of cannabis buildings, equipment, and oil extraction operations¶  
Part 2: Secure handling of cannabis and cannabis products¶  
Part 3: Good production practices (GPP) guide for cannabis¶

**Moved down [1]:** The cannabis product and the industry will become more and more ubiquitous as the global barriers start to lower and come down.

**Moved down [2]:** If the current trend continues, it is predicted that well over one third of the globe will accommodate cannabis by 2024.

**Deleted:**  
**Deleted:** ¶  
Whereas

**Deleted:** ensure the  
**Deleted:** these

**Moved (insertion) [1]**  
**Moved (insertion) [2]**

**Deleted:** we are offered  
**Deleted:** ,  
**Deleted:** in

**Deleted:** ,  
**Deleted:** ,

**Deleted:** All of these provide  
**Deleted:** buildings, premises, equipment,  
**Deleted:** .

**Deleted:** The expectation is that all sites, facilities, buildings, and equipment should be constructed, assembled, built, and installed as required by adopted local and country codes and standards. The local laws, codes, and standards are established to provide the minimum requirements consistent with recognized good practice for providing a reasonable level of life safety and property protection from hazards. ¶

¶  
This document is designed to provide guidance that works in conjunction with these local regulations. In locations that lack or have not adopted local construction laws, codes, or standards, other international building codes and standards should be considered as recommended good practices for the design, construction, and installation of cannabis sites and facilities. ¶

¶  
NOTE See annex for a partial list of international construction codes that can be considered when working with this document.¶

¶  
This document includes both Normative (mandatory) and Informative (non-mandatory) reference publications. Where product and installation standards are identified (...)

# Safety, security and sustainability of cannabis facilities and operations — Part 1: Requirements for the safety of cannabis buildings, equipment and oil extraction operations

## 1 Scope

This document specifies a minimum level of protection and safety for buildings or parts thereof, which are used for the commercial cultivation, specific to processing of cannabis plants and cannabis products, and ancillary activities associated with cannabis plants and cannabis products.

This document specifies a minimum level of safety for the installation of devices, equipment, and systems used for cannabis cultivation, processing, and ancillary activities and addresses the risks of fire, electric shock, injury to persons, and explosion associated with these devices, equipment and systems.

This document includes minimum considerations for training of personnel and equipment maintenance.

This document specifies direction for the safe methods of extracting oil from cannabis plants, including but not limited to, initial extraction and post-processing refinement.

Where buildings or premises combine cultivation and processing of cannabis plants, including ancillary activities along with other operational activities, the requirements of this document are intended to apply to only that portion of the facility.

NOTE. In many cases, a building or facility can be used for both the cultivation of cannabis plants and processing of cannabis products, along with a retail store front, call centre, or office administration space. Where such joint use activities are present in a common building, it is possible that local building or fire codes can require the installation or extension of certain life safety systems, such as fire alarm and fire sprinklers.

This document does not address the following:

- ← general building construction features that are normally a function of applicable codes;
- ← premises used exclusively for operational activities such as office space, call centres, and retail outlets, used for the distribution, marketing, or sale of cannabis;
- ← any use of the cannabis plant or cannabis products;
- ← the physiological or other attributes or effects that can result from the use of this equipment;
- ← the transportation of cannabis or cannabis related products;
- ← occupational health and safety requirements governing cannabis workers and personnel except as specifically identified in this document;
- ← security of the supply chain monitoring system, including cybersecurity and notifications;
- ← outdoor grow area (including cannabis and industrial hemp);

NOTE.1 Shipping and receiving of products from the production facility for further distribution are not considered as a retail outlet.

Formatted: Space Before: 20 pt, After: 38 pt, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers, Tab stops: Not at 6.07 cm

Moved down [3]: product

Deleted: and installation standards, where applicable, this does not automatically constitute acceptance by an overseeing entity responsible for the enforcement of local codes, acts, regulations, or other governing documents that may supersede this publication. ¶

Formatted: Font color: Black, English (United States)

Deleted: ,

Formatted

Deleted:

Formatted: Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

Deleted: establishes...pecifies a minimum level of protection and safety for buildings or parts thereof, which are utilized...sed for the commercial cultivation, specific to processing of cannabis plants and cannabis products, and ancillary activities associated with cannabis plants and cannabis products.

Deleted: establishes...pecifies a minimum level of safety for the installation of devices, equipment, and systems utilized...

Deleted:

Deleted: provides...pecifies direction for the safe methods of extracting oil from cannabis plants, including but not limited to, initial extraction and post ...processing refinement.

Deleted:

Formatted

Deleted: ...In many cases, a building or facility can be

Deleted: ¶

Deleted: General

Formatted

Deleted: ,

Deleted: Premises... premises used exclusively for

Deleted: Any... any use of the cannabis plant or

Deleted: The... the physiological or other attributes of

Deleted: The... the transportation of cannabis or

Deleted: Occupational... occupational health and saf

Deleted: Security... security of the supply chain

Deleted: Outdoor... outdoor grow area (including

Deleted: ...1 Shipping and receiving of products from





- [NFPA 13, Standard for the Installation of Sprinkler Systems](#)
- [NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection](#)
- [NFPA 17, Standard for Dry Chemical Extinguishing Systems](#)
- [NFPA 1620, Standard for Pre-Incident Planning](#)
- [UL 867A, Outline for Commercial/Industrial Indoor Air Quality Systems, Ozone Generating Type](#)

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

#### 3.1 ancillary activity

activity conducted within the premises such as, but not limited to, drying, trimming, extraction, milling, processing and storage

#### 3.2 authority having jurisdiction

**AHJ**  
organization (3.29), office, or individual responsible for enforcing the requirements (3.36) of a code or standard, or for approving equipment, materials, an installation, or a procedure.

Note 1 to entry: Also referred to as "competent authority".

[SOURCE: ISO 7076-5:2014, 3.4, modified – Note 1 to entry has been added.]

#### 3.3 cannabis

genus of flowering plants made up of many different phytocannabinoids and chemical compounds

Note 1 to entry: Research into cannabis by governing bodies and organizations (3.29) is ongoing around the world, and drug classifications are constantly under review. Regulation of cannabis legalization frameworks can vary between jurisdictions, based on the levels of tetrahydrocannabinol (THC) available in the plant.

#### 3.4 cannabis derivative

secondary product (3.34) that can be extracted or obtained from a cannabis (3.3) biomass

Note 1 to entry: Classification of synthetically derived cannabinoids can vary between jurisdictions.

#### 3.5 cannabis product

packaged goods containing cannabis (3.3) or cannabis derivative (3.4), available in multiple formats for commercial and/or retail distribution

#### 3.6

IWA 37-1:2022(E)

Formatted	...
Moved (insertion) [4]	
Formatted	...
Moved (insertion) [5]	
Formatted	...
Moved (insertion) [6]	
Formatted	...
Moved (insertion) [7]	
Formatted	...
Moved (insertion) [8]	
Formatted	...
Deleted: terms and definitions given in ISO/IEC Guide	...
Formatted	...
Deleted:	
Formatted	...
Formatted	...
Deleted:	
Formatted	...
Deleted: <a href="https://www.iso.org/obp">https://www.iso.org/obp</a>	
Formatted	...
Formatted	...
Deleted:	
Formatted	...
Deleted: <a href="https://www.electropedia.org/">https://www.electropedia.org/</a>	
Formatted	...
Deleted: ¶	
Deleted:	
Deleted: ¶	
Deleted: approved ¶	
Formatted	...
Deleted: ,	
Formatted	...
Deleted:	
Deleted: ¶	
Deleted: ¶	
Deleted: 4¶	
Deleted: ¶	
Formatted	...
Deleted: . Cannabis...(3.29) is ongoing around the worl	...
Deleted: 6	
Deleted: ¶	
Deleted: 7	
Formatted	...
Deleted: ,	
Deleted: ¶	

**closed-loop system**

interconnected system of piping and vessels where solvent/process is contained within a closed system, not open to atmosphere while processing material

Note 1 to entry: Closed-loop systems operate at atmospheric pressure, under vacuum or under pressure.

**3.7  
combustible dust**

finely divided solid particles, 500 µm or less in nominal size, which may form explosive mixtures with air at standard atmospheric pressure and temperatures

Note 1 to entry: This includes dust and grit as defined in ISO 4225.

Note 2 to entry: The term 'solid particles' is intended to address particles in the solid phase but does not preclude a hollow particle.

[SOURCE: ISO/IEC 80079-20-2:2016, 3.1]

**3.8  
combustible liquid**

liquid having a flash point at or above 37,8 °C and below 93,3 °C

**3.9  
competence**

ability to apply knowledge and skills to achieve intended results

[SOURCE: ISO 22000:2018, 3.4]

**3.10  
contamination**

introduction or occurrence of a contaminant including a safety hazard (3.39) in a product (3.34) or processing environment

[SOURCE: ISO 22000:2018, 3.6]

**3.11  
crude oil**

oil that has been extracted from a cannabis (3.3) plant biomass that can undergo further refinement

**3.12  
crystallization**

process (3.33) of purifying a chemical substance; or the formation of solid forms or a crystal via organized structures of atoms/molecules

Note 1 to entry: The formation of crystals in a solution is known as precipitation; which can be triggered by changes in temperature and/or pressure resulting in nucleation and ultimately crystal growth.

**3.13  
cultivation**

process (3.33) of growing cannabis (3.3), including drying, trimming, milling, and storing

**3.14  
decarboxylation**

chemical reaction using temperature and time that removes a carboxyl group and releases carbon dioxide

- Deleted:
- Deleted:
- Deleted: 9
- Deleted:
- Deleted: with a particle size of
- Deleted:
- Deleted: can
- Deleted: ¶
- Deleted:
- Formatted: std\_publisher
- Deleted:
- Formatted: std\_docNumber
- Deleted:
- Deleted:
- Deleted:
- Moved (insertion) [9]
- Formatted: French (Switzerland)
- Deleted: , modified – Notes
- Deleted: entry have been added.]
- Deleted: ¶
- Moved (insertion) [10]
- Deleted:
- Formatted: Font: Italic
- Deleted:
- Deleted: ¶
- Moved up [10]: 3.11¶
- Deleted:
- Deleted: ¶
- Deleted:
- Deleted: 12
- Formatted: Font: Italic
- Formatted: Font: Italic
- Deleted: ,
- Deleted: ¶
- 3.13¶
- Moved (insertion) [11]
- Deleted:
- Deleted: utilizing

iTeh STANDARD PREVIEW  
(standards.iteh.ai)  
PRE IWA 37-1  
https://standards.iteh.ai/catalog/standards/sist/7e235286-1c52-4134-9bb4-3ed23a50de34/prf-iwa-37-1

3.15

dewar vessel

glass or metal container designed like a vacuum bottle typically used for storing liquefied gases

3.16

distillation

further refinement of the cannabinoid extract involving the application of heat and vacuum to target different boiling points of compounds so as to remove impurities and increase the active compound potency of the extract

Note 1 to entry: Short path bench top apparatuses or wiped and rolled film evaporators are examples of common distillation equipment

3.17

extraction

process (3.33) where a substance is removed or separated from other compounds, a solution or a mixture

3.18

filtration

process (3.33) of separating suspended solid matter from a liquid via a physical, biological, or chemical filter medium that only allows liquid to pass through

Note 1 to entry: The resulting fluid is called the filtrate, which will contain a reduced concentration of the targeted solid matter trapped behind the filter medium.

3.19

flammable gas

substance that exists in the gaseous state at normal atmospheric temperature and pressure and is capable of being ignited and burned when mixed with the proper proportions of air, oxygen or other oxidizers

3.20

flammable liquid

liquid having a flash point below 37,8 °C and having a vapour pressure not more than 275,8 kPa (absolute) at 37,8 °C

Note 1 to entry: The standard test method for vapour pressure of petroleum products (3.34) is the Reid Method, as determined by ASTM D323.

3.21

flammable solvent

flammable liquid, combustible liquid (3.8) or a flammable gas capable of dissolving another substance to form a uniformly dispersed mixture at the molecular or ionic level

3.22

food

substance (ingredient), whether processed, semi-processed or raw, which is intended for consumption, and includes drink, chewing gum and any substance which has been used in the manufacture, preparation or treatment of "food" but does not include cosmetics or tobacco or substances (ingredients) used only as drugs

[SOURCE: ISO 22000:2018, 3.18, modified — The original Note to entry has been deleted.]

3.23

greenhouse

Formatted: Right

Moved up [11]: 3.14¶

Deleted: dewar¶

Deleted:

Deleted: 15

Deleted:

Deleted: ¶

Deleted:

Deleted:

Deleted: 16

Deleted: ¶

Deleted:

Deleted: 3.17¶

Moved down [12]: process

Deleted: is not entirely self-contained¶

Formatted

Deleted:

Deleted: ¶

Deleted:

Deleted: solvent

Deleted: flammable liquid,

Moved up [9]: combustible liquid

Formatted

Deleted: or a flammable gas capable of dissolving

Formatted

Formatted

Deleted: 22

Formatted

Deleted:

Formatted

Formatted

Deleted:

Formatted

Formatted

Deleted: as determined by ASTM d323 "vapor

Formatted

Formatted

Formatted

Deleted: {

Formatted

Deleted: }

Formatted

Deleted:

**IWA 37-1:2022(E)**

building that can have unlimited size, and with more than 50.% of surface area of roofs and/or walls being transparent and/or translucent for the *cultivation (3.13)* of *cannabis (3.3)* plants and other cultivation activities

Formatted: Font: Italic

Formatted: Font: Italic

**3.24  
grow area**

area of the site where *cannabis (3.3)* plants are cultivated, harvested or propagated

Deleted: ¶

Formatted: Pattern: Clear

Formatted: Font: Italic

**3.25  
lab scale operation**

small scale processing, typically less than commercially viable scale in a given industry

Note 1 to entry: Small quantities of material are processed in these operations, which are often used for research and development and/or proof of concept for pilot, demonstration, or industrial-scale viability. The containers used for reactions, transfers, and other handling of chemicals are typically designed to be easily and safely manipulated by one person.

Deleted: ¶

Deleted:

Deleted: ;

Deleted: utilized

**3.26  
lower flammable limit  
LFL**

concentration of a flammable gas or vapour in air, below which an explosive gas atmosphere does not form

[SOURCE: ISO/IEC 80079:20-1:2017, 3.6.1, modified — The notes to entry have been deleted.]

Formatted: English (United States)

Deleted: ISO80079

Formatted: English (United States)

Formatted: std\_section, English (United States)

Deleted: ]

Formatted: English (United Kingdom)

Formatted: std\_docPartNumber, English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: std\_year, English (United Kingdom)

Formatted: English (United States)

**3.27  
monitoring**

determining the status of a system, a process (3.33) or an activity

Note 1 to entry: To determine the status, there may be a need to check, supervise or critically observe.

Note 2 to entry: In the context of *cannabis (3.3) safety (3.38)*, monitoring is conducting a planned sequence of observations or measurements to assess whether a process is operating as intended.

Note 3 to entry: Distinctions are made in this document between the terms *validation (3.40)*, *monitoring and verification (3.41)*:

— validation is applied prior to an activity and provides information about the capability to deliver intended results;

— monitoring is applied during an activity and provides information for action within a specified time frame;

— verification is applied after an activity and provides information for confirmation of conformity.

[SOURCE: ISO 22000:2018, 3.27, modified — The words “food safety” have been replaced with “cannabis safety” in Note 2 to entry.]

**3.28  
non-polar solvent**

flammable liquid or flammable gas that does not readily mix with water without the use of chemical additives, such as emulsifying agents.

Deleted: non-miscible flammable solvent¶

Formatted: English (United Kingdom)

Deleted:

Formatted: English (United Kingdom)

Deleted:

Deleted:

Deleted:

Deleted: non

Note 1 to entry: Flammability is a concern at all concentrations in both liquid and gaseous phases.

Note 2 to entry: Non-miscible flammable liquids (often referred to as non-polar solvents) are oils (vegetable and petroleum based) and flammable petroleum gases. Petroleum based compounds can include liquids such as naphtha, gasoline etc. as well as gases such as butane, propane (LPG) etc.

3.29

**organization**

person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

Note 1 to entry: The concept of organization includes, but is not limited to sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private.

[SOURCE: ISO 22000:2018, 3.31]

3.30

**personal protective equipment**

**PPE**

device or appliance designed to be worn by an individual for protection against one or more health and safety hazards (3.39)

Note 1 to entry: PPE includes, but is not limited to, gowns, gloves, respirators, safety glasses, helmets, and goggles.

Note 2 to entry: While generally not considered PPE, masks (and face coverings) can provide a level of protection for the user, in addition to their primary purpose as a public health measure to control the spread of transmission and infection.

Note 3 to entry: National regulations can apply with respect to PPE.

[SOURCE: ISO 15384:2018, 3.12, modified — The words “or held” have been removed from the definition, and the Notes to entry have been added.]

3.31

**polar solvent**

flammable liquid that mixes in all proportions with water at standard temperature and pressure without the use of chemical additives, such as emulsifying agents

Note 1 to entry: Water miscible flammable liquids (often referred to as polar solvents) are typically alcohol, acetone or ketone-based liquids.

Note 2 to entry: As an example, beverages containing ethanol such as beer and wine will have an alcohol volume concentration (ABV) of less than 20.% and are not seen as a special fire protection hazard. Spirits will have greater than 20.% ABV and are seen as a special hazard with the risk (3.37) level increasing proportionately with concentration.

3.32

**post-processing**

process (3.33) that occurs after the initial plant oil extraction process, when the concentrate is manufactured into food, vape cartridges, capsules, and different consumer packaged goods

3.33

**process**

set of interrelated or interacting activities which transforms inputs to outputs

[SOURCE: ISO 22000:2018, 3.36]

3.34

**product**

output that is a result of a process (3.33)

Formatted: Right

Deleted: ¶

Deleted: 28

Formatted: Pattern: Clear

Formatted: Pattern: Clear

Formatted: Font: Italic

Deleted: In many countries, PPE is required to conform to national...

Formatted: std\_publisher

Formatted: std\_docNumber

Formatted: std\_year

Formatted: std\_section

Deleted: ]

Formatted: Pattern: Clear

Deleted: 29

Formatted: Pattern: Clear

Deleted: water-miscible flammable solvent)¶

Formatted: English (United Kingdom)

Deleted: water

Deleted:

Deleted: as

Formatted: Font: Italic

Formatted: Pattern: Clear

Deleted: 30

Formatted: Pattern: Clear

Deleted:

Formatted: Pattern: Clear

Deleted: 31

Formatted: Pattern: Clear

Moved (insertion) [12]

Moved (insertion) [3]

## **IWA 37-1:2022(E)**

Note 1 to entry: A product can be a service.

[SOURCE: ISO 22000:2018, 3.37]

### **3.35** **protected area**

protected premises, or an area within, that is provided with means to prevent an unwanted event

Note 1 to entry: Protected areas are imposed in the low security level.

### **3.36** **requirement**

need or expectation that is stated, generally implied or obligatory

Note 1 to entry: "Generally implied" means that it is custom or common practice for the *organization* (3.29) and interested parties that the need or expectation under consideration is implied.

Note 2 to entry: A specified requirement is one that is stated, for example in documented information.

[SOURCE: ISO 22000:2018, 3.38]

### **3.37** **risk** **effect of uncertainty**

Note 1 to entry: An effect is a deviation from the expected – positive or negative.

Note 2 to entry: Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood.

Note 3 to entry: Risk is often characterized by reference to potential "events" (as defined in ISO Guide 73:2009, 3.5.1.3) and "consequences" as defined in ISO Guide 73:2009, 3.6.1.3), or a combination of these.

Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated "likelihood" (as defined in ISO Guide 73:2009, 3.6.1.1) of occurrence.

[SOURCE: ISO 22000:2018, 3.39, modified — The original Note 5 to entry has been deleted.]

### **3.38** **safety**

assurance that the *product* (3.34) will not cause an adverse health effect for the consumer when it is prepared and/or used according to its intended use

Note 1 to entry: Safety is related to the occurrence of *safety hazards* (3.39) in end products and does not include other health aspects.

### **3.39** **safety hazard**

source or situation with the potential to cause an adverse health effect

Note 1 to entry: The term hazard is not to be confused with the term *risk* (3.37) which, in the context of *safety* (3.38), means a function of the probability of an adverse health effect (e.g. becoming diseased) and the severity of that effect (e.g. death, hospitalization) when exposed to a specified hazard.

Note 2 to entry: Safety hazards include allergens and radiological substances.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

https://standards.iteh.ai/catalog/standards/sist/7e233286-fc52-4134-9bb4-

Moved (insertion) [13]  
Formatted: Font: Not Italic, Font color: Auto

Formatted: Right

[SOURCE: ISO 22000:2018, 3.22, modified — The word “food” has been deleted from the term and from Notes 1 and 2 to entry; the words “biological, chemical or physical agent in food” have been replaced with “source or situation” in the definition; the original Notes 3 and 4 to entry have been deleted.]

**3.40 validation**

obtaining evidence that a control measure (or combination of control measures) will be capable of effectively controlling the significant *safety hazard* (3.39)

Note 1 to entry: Validation is performed at the time a control measure combination is designed, or whenever changes are made to the implemented control measures.

Note 2 to entry: Distinctions are made in this document between the terms validation, *monitoring* (3.27) and *verification* (3.41):

- validation is applied prior to an activity and provides information about the capability to deliver intended results;
- monitoring is applied during an activity and provides information for action within a specified time frame;
- verification is applied after an activity and provides information for confirmation of conformity.

[SOURCE: ISO 22000:2018, 3.43, modified — The word “food” has been deleted from the definition.]

**3.41 verification**

confirmation, through the provision of objective evidence, that specified *requirements* (3.36) have been fulfilled

Note 1 to entry: Distinctions are made in this document between the terms *validation* (3.40), *monitoring* (3.27) and *verification*:

- validation is applied prior to an activity and provides information about the capability to deliver intended results;
- monitoring is applied during an activity and provides information for action within a specified time frame;
- verification is applied after an activity and provides information for confirmation of conformity.

[SOURCE: ISO 22000:2018, 3.45]

**3.42 winterization**

fractionation *process* (3.33) that uses a solvent and cold temperatures to separate lipids and other undesired constituents

**4 Buildings**

**4.1 General**

**4.1.1** This *clause* addresses facilities used for the cultivation, production, processing, or combination thereof, of cannabis.

NOTE Additional information can be found in CAN/ULC-S4400 and ANSI/CAN/UL/ULC 1389.

Deleted: Page Break

¶  
4

Deleted: 4.1

Formatted: Heading 2, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers, Tab stops: 0.71 cm, Left

Formatted: Default Paragraph Font

Deleted:

Formatted: Font: Bold

Deleted: .1

Deleted: Clause

Formatted: Font: Bold

Deleted:

Deleted: ¶

Deleted:

Deleted: [1],

Formatted: std\_publisher

Formatted: std\_docNumber

Deleted: [2],

Formatted: std\_publisher

Formatted: std\_docNumber