



Government
of Canada

Gouvernement
du Canada

Canadian General
Standards Board

Office des normes
générales du Canada

CAN/CGSB-32.311-2020
Corrigendum No.1, March 2021

Supersedes CAN/CGSB-32.311-2015
Incorporating Amendment No. 1



Organic production systems

Permitted Substances Lists

Canadian General Standards Board **CGSB**



Standards Council of Canada
Conseil canadien des normes

Canada

Experience and excellence

Expérience et excellence



Canadian General Standards Board statement

The CANADIAN GENERAL STANDARDS BOARD (CGSB), under whose auspices this standard has been developed, is a government directorate within Public Services and Procurement Canada. CGSB is engaged in the production of voluntary standards in a wide range of subject areas through the media of standards committees and the consensus process. The standards committees are composed of representatives of relevant interests including producers, consumers and other users, retailers, governments, educational institutions, technical, professional and trade societies, and research and testing organizations. Any given standard is developed on the consensus of views expressed by such representatives.

CGSB has been accredited by the Standards Council of Canada as a national Standards Development Organization. The standards that CGSB develops and offers as National Standards of Canada conform to the requirements and guidance established for this purpose by the Standards Council of Canada. In addition to standards it publishes as National Standards of Canada, CGSB produces standards to meet particular needs, in response to requests from a variety of sources in both the public and private sectors. Both CGSB standards and CGSB national standards are developed in conformance with the policies described in the CGSB Policy and Procedures Manual for the Development and Maintenance of Standards.

CGSB standards are subject to review and revision to ensure that they keep abreast of technological progress. CGSB will review and publish this standard on a schedule not to exceed five years from the date of publication. Suggestions for their improvement, which are always welcome, should be brought to the notice of the standards committees concerned. Changes to standards are issued either as separate amendment sheets, amended standards or in new editions of standards.

An up-to-date listing of CGSB standards, including details on latest issues and amendments, is found in the CGSB Catalogue at our Web site — <http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html> along with more information about CGSB products and services.

Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

The testing and evaluation of a product or service against this standard may require the use of materials and/or equipment that could be hazardous. This standard does not purport to address all the safety aspects associated with its use. Anyone using this standard has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any applicable regulatory requirements prior to its use. CGSB neither assumes nor accepts any responsibility for any injury or damage that may occur during or as the result of tests, wherever performed.

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. CGSB shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

In this standard, “shall” states a mandatory requirement, “should” expresses a recommendation and “may” is used to express an option or that which is permissible within the limits of this standard. Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material. Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

For enforcement purposes, standards shall be considered published the final day of the month of their publication date.

Contact the Canadian General Standards Board

To obtain information on CGSB, its services and standards or to obtain CGSB publications, please contact:

web	— http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html
e-mail	— ncr.cgsb-ongc@tpsgc-pwgsc.gc.ca
telephone	— 1-800-665-2472
mail	— Canadian General Standards Board Ottawa ON Canada K1A 0S5

Standards Council of Canada statement

A National Standard of Canada is a standard developed by a Standards Council of Canada (SCC) accredited Standards Development Organization, in compliance with requirements and guidance set out by SCC. More information on National Standards of Canada can be found at www.scc.ca.

SCC is a Crown corporation within the portfolio of Innovation, Science and Economic Development (ISED) Canada. With the goal of enhancing Canada's economic competitiveness and social well-being, SCC leads and facilitates the development and use of national and international standards. SCC also coordinates Canadian participation in standards development, and identifies strategies to advance Canadian standardization efforts.

Accreditation services are provided by SCC to various customers, including product certifiers, testing laboratories, and standards development organizations. A list of SCC programs and accredited bodies is publicly available at www.scc.ca.

NATIONAL STANDARD OF CANADA

CAN/CGSB-32.311-2020
Corrigendum No.1, March 2021
Supersedes CAN/CGSB-32.311-2015
Incorporating Amendment No. 1

Organic production systems

Permitted Substances Lists

CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS
FRANÇAISE ET ANGLAISE.

ICS 67.040 / 67.120.30

Published December 2020 by the
Canadian General Standards Board
Ottawa (Ontario) Canada K1A 0S5

© HER MAJESTY THE QUEEN IN RIGHT OF CANADA,
as represented by the Minister of Public Services and Procurement,
the Minister responsible for the Canadian General Standards Board (2021).

No part of this publication may be reproduced in any form without the prior permission of the publisher.

CANADIAN GENERAL STANDARDS BOARD

Committee on Organic Agriculture

(Voting membership at date of approval)

Chair (Voting)

Martin, H. Independent Consultant (General interest)

General interest category

Boudreau, N.	Organic Federation of Canada
Eisen, R.	Independent Consultant
Gibson, J.	Manitoba Organic Alliance
Gravel, F.	Table Filière Biologique du Québec
Hamilton, R.	Organic Alberta
Hammermeister, A.	Organic Agriculture Centre of Canada, Dalhousie University
Jacques, S.	Organic Council of Ontario
Jones, S.	Atlantic Canadian Organic Regional Network
Labelle, F.	Lactanet, The Canadian Network for Dairy Excellence
Squires, A.	SaskOrganics Association Inc.
Street, B.	British Columbia Society for the Prevention of Cruelty to Animals Certification Division
Wallace, J.	Canadian Organic Growers

Producer category

Bennett, N.	Ontario Greenhouse Vegetable Growers
Blackman, S.	Canadian Produce Marketing Association
Champagne, H.	Union des producteurs agricoles
Duval, J.	Club Bio+
Dyck, M.	Canadian Horticultural Council
Edwards, L.	British Columbia Organic Tree Fruit Association
Falck, D.	Small Scale Food Producers Association
Jorgens, A.	Loblaw Companies Limited
Lefebvre, S.	Egg Farmers of Canada
Loftsgard, T.	Canada Organic Trade Association
Murchison, K.	Prince Edward Island Certified Organic Producers Co-Operative
Perreault, G.	Dairy Farmers of Canada
Rundle, T.	Pacific Organic Seafood Association
Scheffel, M.	Canadian Seed Growers' Association
St-Onge, A.	Producteurs et productrices acéricoles du Québec

Regulator category

Hurteau, M.-C.

Canadian Food Inspection Agency

Turgeon, N.

Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec

User category

Hillard, J.

Consumer Interest Alliance

Kehler, C.

Herb, Spice and Specialty Agriculture Association of Saskatchewan

Monaghan, K.

International Organic Inspectors Association

Mussar, K.

Canadian Association of Importers and Exporters

Yasmeen, G.

Food Secure Canada

Committee manager (non-voting)

Schuessler, M.

Canadian General Standards Board

Translation of this National Standard was conducted by the Government of Canada.

Preface

This National Standard of Canada, CAN/CGSB-32.311-2020, supersedes the 2015 edition and 2018 amendment. The following corrigendum has been published and incorporated in the December 2020 edition of this standard in March 2021. The following changes have been made.

Changes since the previous edition

- Merge of Table 4.2 and 4.3
- Additions, deletions or changes in all tables
- Change in the format of Annex A

Corrigendum

- Replace second sentence in Table 8.2

Table 8.2 — Facility pest management substances

Substance name(s)	Origin and usage
Formulants	<p>May only be used with substances listed in Table 8.2.</p> <p>Only formulants classified as List 4A or 4B by the Pest Management Regulatory Agency (PMRA) or derived from biological or mineral sources may be used with substances in Table 8.2.</p> <p>Formulants classified as List 3 by PMRA may be used with passive pheromone dispensers. Formulants classified as List 4A, 4B or 3 by PMRA are not subject to 1.4 or 1.5 of CAN/CGSB-32.310.</p> <p>Formulants classified as List 1 or 2 by PMRA are prohibited.</p>

Contents	Page
Introduction.....	ii
1 Scope	1
2 Normative references	1
3 Requirements for adding or amending substances in the lists	2
4 Permitted substances lists for crop production	2
5 Permitted substances lists for livestock production.....	22
6 Permitted substances lists for preparation	29
7 Permitted substances lists for cleaners, disinfectants and sanitizers	40
8 Facility management substances.....	44
Annex A (<i>informative</i>) Alphabetized list of substances.....	46

Introduction

Organic operations in Canada remain subject to all applicable laws and regulations. Substances that appear in CAN/CGSB-32.311, *Organic production systems — Permitted substances lists*, are subject to the *Pest Control Products Act* (PCPA) or the *Food and Drugs Act* (FDA) when used in Canada as pesticides or disinfectants. Health Canada's Pest Management Regulatory Agency (PMRA) is the federal authority responsible for the regulation of pest control products (including sanitizers) under the PCPA Regulations. Disinfectants are regulated by Health Canada's Therapeutic Products Directorate (TPD) under the FDA Regulations.

Substances that appear in CAN/CGSB-32.311, *Organic production systems — Permitted substances lists*, are subject to the FDA when used in Canada as veterinary drugs destined to food producing animals and to the *Feeds Act* (FA) when used in Canada as livestock feed. Health Canada's Veterinary Drugs Directorate is the federal authority responsible for the regulation of veterinary drugs under the FDA Regulations. Livestock feeds are regulated by the Animal Feed Division of the Canadian Food Inspection Agency under the FA Regulations and the *Health of Animals Act*.

This standard, in conjunction with CAN/CGSB-32.310, is intended for certification and regulation to prevent deceptive practices in the marketplace. The certification process assesses operational compliance. Certification is granted to compliant product.

Annex A provides a list of permitted substances in alphabetical order.

Notes and examples in this standard

In this standard, notes and examples are used for giving additional information intended to assist the understanding or use of the document and are not a normative part of the standard.

Organic production systems

Permitted Substances Lists

1 Scope

1.1 This National Standard of Canada¹ provides additional information to CAN/CGSB-32.310, *Organic production systems — General principles and management standards*, in the form of permitted substances to be used as annotated in accordance with the scope of the table in which they are listed. Use of a listed substance in a manner inconsistent with the scope of the table in which it appears is not permitted, except as specified in a listed substance annotation. Listed substances comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310.

1.2 Units of Measure

Quantities and dimensions in this standard are given in metric units with yard/pound equivalents, mostly obtained through soft conversion, given in parentheses. The metric units shall be regarded as official in the event of dispute or unforeseen difficulty arising from the conversion.

2 Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of this National Standard of Canada. The referenced documents may be obtained from the sources noted below.

NOTE The addresses provided below were valid at the date of publication of this standard.

An undated reference is to the latest edition or revision of the reference or document in question, unless otherwise specified by the authority applying this standard. A dated reference is to the specified revision or edition of the reference or document in question.

2.1 Canadian General Standards Board (CGSB)

CAN/CGSB-32.310 — *Organic production systems – General principles and management standards*.

2.1.1 Source

The above may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa, ON Canada K1A 0S5. Telephone: 819-956-0425 or 1-800-665-2472. Fax: 819-956-5740. E-mail: ncr.cgsb-ongc@tpsgc-pwgsc.gc.ca. Web site: www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html.

2.2 Canadian Council of Ministers of the Environment (CCME)

Guidelines for compost quality.

2.2.1 Source

The above may be obtained from the Canadian Council of Ministers of the Environment, 123 Main Street, Suite 360, Winnipeg, Manitoba R3C 1A3. Telephone: 204-948-2090. Fax: 204-948-2125. E-mail: info@ccme.ca. Web site: www.ccme.ca.

¹ References throughout this document to “this National Standard of Canada” or “this standard” refer to CAN/CGSB-32.311, *Organic Production Systems – Permitted Substances Lists*.

2.3 Bureau de normalisation du Québec (BNQ)

CAN/BNQ-0017-088 — *Specifications for compostable plastics.*

2.3.1 Source

The above may be obtained from the BNQ Web site at: www.bnq.qc.ca.

2.4 Demeter Production Standards

Demeter Production Standards.

2.4.1 Source

The above may be obtained from the Demeter Production Web site at: <https://www.demetercanada.ca/wp-content/uploads/2018/10/DI-production-stds-Demeter-Biodynamic-18-e.pdf>.

2.5 Pest Management Regulatory Agency (PMRA)

PMRA list of formulants.

2.5.1 Source

The above may be obtained from the PMRA Web site (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management.html>), at <https://open.canada.ca/data/en/dataset/ededff77-a021-48d6-89a5-cdbcd75fb4ff>.

2.6 Ministère du développement durable, de l'environnement et de la lutte contre les changements climatiques (MELCC)

Guidelines for the Beneficial Use of Fertilizing Residuals

2.6.1 Source

The above can be obtained from the MELCC Website, at http://www.environnement.gouv.qc.ca/matieres/mat_res/fertilisantes/critere/guide-mrf.pdf (only available in French).

2.7 Organisation for Economic Co-operation and Development (OECD)

OECD Guidelines for the Testing of Chemicals, Section 3: Environmental fate and behaviour

2.7.1 Source

The above may be obtained from the OECD Web site at <https://www.oecd-ilibrary.org/>.

3 Requirements for adding or amending substances in the lists

Clause 10 of CAN/CGSB-32.310 outlines the requirements for adding or amending listed substances.

4 Permitted substances lists for crop production

4.1 Classification

4.1.1 Crop production substances are classified according to the following uses and applications:

- a) Soil amendments and crop nutrition in Table 4.2 (Column 1) are substances applied to the soil to improve fertility and tilth and to correct soil problems. Fertilizers, plant foods and soil amendments are primarily used for their plant nutrient content and may be applied to the soil or to plant foliage.

- b) Crop production aids and materials in Table 4.2 (Column 2) may be directly applied to the crop or soil, or used to control pests (including diseases, weeds and insects). Examples include: adjuvants, insect traps and plastic mulch, vertebrate animal pest management substances, plant disease and insect pest management substances.

4.1.2 Use of a listed substance in a manner inconsistent with the scope of the table in which it appears is not permitted, except as specified in substance annotations.

4.1.3 Substances listed in Table 4.2 shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, microorganisms and gibberellic acid):

- a) if the substance includes the substrates or growth media, the ingredients of the substrates or growth media shall be listed in Table 4.2;
- b) if the substance does not include the substrates or growth media, the substance shall be produced on non-genetically engineered substrates or growth media, if commercially available.

Table 4.2 – Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Acetic acid	Sources other than petrochemicals can be used. As an adjuvant, a pH regulator and for controlling pests (including weeds) and cleaning seeds.		•
Adhesives for sticky traps and barriers			•
Agar	For use in initial mushroom spawn production.	•	
Alfalfa meal and pellets	Shall be organic if commercially available.	•	
Algae	See Table 4.2 Aquatic plants and aquatic plant products.	•	•
Amino acids	Derived from plants, animals or microorganisms, and extracted, hydrolyzed or isolated by non-chemical means, such as physical separation, or by substances listed in Table 4.2 (Column 1 or Column 2) excluding Formulants used in crop production aids.	•	•
Ammonium carbonate	As an attractant in insect traps.		•
Animal manure	See clauses 5 and 6 of CAN/CGSB-32.310. See also Table 4.2 Manure, composted and Manure, non-organic.	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Animal manure, processed	<p>Manure treated by mechanical or physical (including heat) methods are permitted. Additional ingredients shall be listed in Table 4.2 (Column 1).</p> <p>Manure sources shall conform to requirements specified in 5.5.1 of CAN/CGSB-32.310.</p> <p>The operator shall be able to demonstrate that best practices known to eliminate human pathogens during the treatment have been used or that the requirements in 5.5.2.5 of CAN/CGSB-32.310 have been met.</p> <p>See also Table 4.2 Manure, composted and Manure, non-organic.</p>	•	
Aquatic plants and aquatic plant products	<p>Aquatic plant products may be extracted by using the following substances in order of preference:</p> <ul style="list-style-type: none"> a) substances in Table 4.2 Extractants; b) potassium hydroxide; c) sodium hydroxide provided the amount of solvent used does not exceed the amount necessary for extraction. The operator shall provide an affidavit from the manufacturer that proves the need to use sodium hydroxide. <p>Sodium benzoate and potassium sorbate may be used as preservatives for water-extracted aquatic plant products. All other preservatives are prohibited unless listed in Table 4.2 (Column 1 or 2) with the exception that Formulants used in crop production aids are prohibited.</p>	•	•
Ascorbic acid (vitamin C)			•
Ash	<p>Ash shall be from plant and animal sources. Ash from burning manure or from burning minerals, coloured paper, plastics or other non-biological substances is prohibited. Ash containing materials that cannot be verified or containing prohibited substances shall not exceed the limits (category C1) for acceptable levels (mg/kg) of arsenic, cadmium, chromium, lead and mercury, as specified in <i>Guidelines for the Beneficial Use of Fertilising Residuals</i>.</p> <p>Shall not cause a build-up of heavy metals or micronutrients in soil.</p>	•	•
Baits for rodent traps	May contain food or substances listed in Table 8.2.		•
Bentonite	See Table 4.2 Mined minerals, unprocessed and Clay.	•	•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Biochar	Produced through pyrolysis of forestry by-products which have not been treated or combined with prohibited substances. Recycled biochar from contaminated remediation sites is prohibited.	•	
Biodegradable plant containers	Biodegradable planting containers (for example, pots or cell packs) may be left to decompose in the field if all ingredients are listed in Table 4.2 (Column 1).		•
Biodynamic preparations for compost, soil and plants	As described in Appendix 10 of the <i>Demeter Production Standards</i> .	•	•
Biological organisms	Biological organisms (living, dead or as extracts), such as viruses, bacteria, protozoa, phages, fungi, insects and nematodes. Pharmaceuticals derived from or by biological sources, such as natamycin, penicillin and streptomycin, are prohibited even if registered as pesticides. See Table 4.2 Invertebrates; Microorganisms and microbial products.	•	•
Blood meal	Shall be sterilized.	•	
Bone meal	Shall be guaranteed free of Specified Risk Material (SRM).	•	
Borate (boric acid)	Mined sources of sodium tetraborate and octaborate are permitted as wood preservatives. Permitted for structural pest control (example: for ants). Direct contact with organic food or crops is prohibited in the case of products formulated as pesticides.		•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Boron	<p>The following soluble boron products are permitted:</p> <ul style="list-style-type: none"> a) borate (boric acid); b) sodium tetraborate (borax and anhydrous); and c) sodium octaborate. <p>May only be used when soil and plant deficiencies are documented by visual symptoms or by testing of soil or plant tissue, or when the need for a preventative application can be documented</p> <p>See Table 4.2 Micronutrients.</p>	•	
Botanical pesticides	<p>Botanical pesticides shall be used in conjunction with a biorational pest management program. They shall not be the primary method of pest control. The least toxic botanicals shall be used in the least ecologically disruptive way possible. All label restrictions and directions shall be followed, including restrictions concerning crops, livestock, target pests, safety precautions, pre-harvest intervals and worker re-entry.</p>		•
Calcium	<p>Calcium carbonate (calcitic limestone), calcium magnesium carbonate (dolomitic limestone), calcium silicate, and calcium sulphate (gypsum), all from mined sources.</p> <p>Other biological or mineral sources, such as shells from aquatic animals (for example, oyster shell flour), aragonite, eggshell meal and lime from sugar processing. Calcium chloride derived from naturally occurring brines and not chemically treated.</p> <p>Prohibited forms include slaked limestone (calcium hydroxide); quicklime (calcium oxide); calcium sulphate produced using sulphuric acid and calcium products that have been used in controlled atmosphere storage.</p> <p>See Table 4.2 Calcium sulphate (gypsum) for additional restrictions on this substance.</p>	•	
Calcium lignin sulphonate	See Table 4.2 Lignin and lignin sulphonates (lignosulphonates)	•	•
Calcium polysulphide	See Table 4.2 Lime sulphur.		•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Calcium sulphate (gypsum)	Mined sources are allowed; calcium sulphate produced using sulphuric acid is prohibited. To correct calcium and sulphur deficiencies and soil salinity problems.	•	
Cannery wastes	Shall be from organic sources. Non-organic cannery wastes shall be composted. See Table 4.2 Compost feedstocks.	•	
Carbon dioxide (CO ₂)	For soil and greenhouse use, for controlled atmosphere storage, and for storage pest control.		•
Cardboard	Cardboard shall not be waxed or impregnated with fungicide or prohibited substances. For use as mulch, as composting feedstock or as pest trapping material. See Table 4.2 Compost feedstocks.	•	•
Chelates	Chelating agents that are listed in Table 4.2 (Column 2) are permitted. Examples include Acetic acid; Ascorbic acid; Citric acid; Humates; Lignin and lignin sulphonates (lignosulphonates) and Vinegar.	•	•
Cholecalciferol (vitamin D ₃)	Permitted if used outdoors and inside greenhouses for rodent control when methods described in 5.6.1 of CAN/CGSB-32.310 have failed. Prohibited inside on-farm food processing and food storage facilities.		•
Citric acid			•
Clay	Bentonite, perlite and kaolin as soil amendments, as seed pellet additives or for pest control. See Table 4.2 Mined minerals, unprocessed; Bentonite; Kaolin clay.	•	•
Compost	Compost produced on the farm is restricted to compost produced on a certified organic farm. Compost from off-farm sources includes every other source, for example: municipal, residential or industrial sources, or from any organic or non-organic farm. See Table 4.2 Compost from off-farm sources; Compost produced on the farm; Compost tea; and Compost feedstocks. For information on compost starters, see Table 4.2 Microorganisms and microbial products. For information on vermicompost, see Table 4.2 Worm castings.	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Compost feedstocks	<p>Acceptable feedstocks include:</p> <ul style="list-style-type: none"> a) animal manures conforming to criteria specified in 5.5.1 of CAN/CGSB-32.310; b) animals, animal products and by-products (including fishery); c) plants and plant by-products (including forestry and source-separated yard debris, such as grass clippings and leaves), pomaces and cannery wastes; d) soils and minerals that conform to the requirements of this standard and of CAN/CGSB-32.310; and e) paper yard waste bags which contain coloured ink. <p>When evidence indicates that compost feedstocks could contain a substance or substances prohibited by 1.4 or 1.5 of CAN/CGSB-32.310 that is known to be potentially persistent in compost, testing of the compost before use is required or reference to scientific literature which establishes that the specific potential contaminant(s) will degrade during the composting process.</p> <p>The following composting feedstocks are prohibited: sewage sludge; compost starter and feedstocks fortified with substances not included in this standard; leather by-products; glossy paper; waxed cardboard; paper containing coloured ink other than paper yard waste bags; and animals, animal products and animal by-products not guaranteed free of Specified Risk Material (SRM).</p>	•	
Compost from off-farm sources	<p>Compost obtained from off-farm sources shall conform to the criteria specified in Table 4.2 Compost feedstocks. If compost is obtained from another farm, feedstock sources shall be documented. Compost obtained from all other sources shall comply to the following:</p> <ul style="list-style-type: none"> a) shall not exceed the maximum acceptable levels of arsenic, cadmium, chromium, lead and mercury (mg/kg) and foreign matter outlined for unrestricted use compost (Category A), as specified in <i>Guidelines for Compost Quality</i>; b) shall meet criteria for acceptable levels (MPN/g total solids) of human pathogens as specified in <i>Guidelines for Compost Quality</i>; and c) shall not cause heavy metal buildup in soil. 	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Compost produced on the farm	<p>Compost produced on the farm shall conform to the criteria specified in Table 4.2 Compost feedstocks. In addition, if made from animal manures or other likely sources of human pathogens, compost produced on the farm shall:</p> <ul style="list-style-type: none"> a) reach a temperature of 55 °C (130 °F) for a period of four consecutive days or more. The compost piles shall be mixed or managed to ensure that all of the feedstock heats up to the required temperature for the minimum time; or b) meet limits for acceptable levels (Most Probable Number of total solids per gram [MPN/g total solids]) of human pathogens specified in <i>Guidelines for Compost Quality</i>; or c) be considered as aged or raw manure rather than compost, that is, meeting requirements specified in 5.5.2.5 of CAN/CGSB-32.310. 	•	
Compost tea	<p>Compost tea shall be made from composts that conform to criteria specified in Table 4.2 Compost produced on the farm; Compost from off-farm sources; or Worm castings.</p> <p>Additional ingredients shall be listed in Table 4.2 (Column 1).</p> <p>If compost tea is applied directly to the edible parts of plants, the operator shall be able to demonstrate that best practices known to eliminate pathogens during the processing have been used OR that the requirements for raw manure, as specified in 5.5.2.5 of CAN/CGSB-32.310, have been met.</p> <p>See the <i>Compost tea</i> definition in clause 3 of CAN/CGSB-32.310.</p>	•	•
Copper (plant nutrition)	<p>The following copper products may be used to correct documented copper deficiencies: copper sulphate, basic copper sulphate, copper oxide and copper oxysulphate.</p> <p>Copper ammonia base, copper ammonium carbonate, copper nitrate and cuprous chloride are prohibited.</p> <p>Shall be used with caution to prevent excessive copper accumulation in the soil. Copper build-up in soil shall prohibit future use. Visible residue of copper products on harvested crops is prohibited.</p> <p>See Table 4.2 Micronutrients.</p>	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Copper (production aid)	<p>Copper sulphate, copper hydroxide, copper octanoate, Bordeaux mix, copper oxychloride and copper oxide.</p> <p>Permitted for use as a wood preservative, or for controlling pests, including diseases.</p> <p>Shall be used with caution to prevent excessive copper accumulation in the soil. Copper build-up in soil shall prohibit future use.</p> <p>Visible residue of copper products on harvested crops is prohibited.</p>		•
Diatomaceous earth	<p>Non-calcined forms.</p> <p>May contain substances listed in Table 4.2 (Column 2).</p>		•
Digestate, anaerobic	<p>Permitted to be used for soil amendment, provided that the following conditions are met:</p> <p>a) the materials added to the digester shall be listed in Table 4.2 (Column 1). If feedstocks are obtained from off-farm sources, the digestate shall comply with the heavy metal restrictions in Table 4.2 Compost from off-farm sources;</p> <p>b) the criteria for the application of raw manure on land specified in 5.5.2 of CAN/CGSB-32.310 shall be met if the digestate feedstocks include manure;</p> <p>c) it is permitted to use anaerobic digestate as a compost feedstock if it is added to other substances which are then composted. See Table 4.2 Compost feedstocks.</p>	•	
Dormant oils	<p>For use as a dormant spray on woody plants. Shall not be used as a dust suppressant.</p>		•
Dust suppressants	<p>Vegetable oils, organic molasses or substances listed in Table 4.2 (Column 1 or 2) (for example: Lignin and lignin sulphonates (lignosulphonates)) are permitted, excluding Formulants used in crop production aids.</p> <p>Petroleum products are prohibited.</p>	•	•
Enzymes	<p>Derived from plants, animals or microorganisms through the action of microorganisms.</p>	•	•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Extractants	<p>The following may be used as extractants:</p> <ul style="list-style-type: none"> a) water; b) culinary steam, as described in 8.1.2 b) of CAN/CGSB-32.310; c) fats and oils, such as cocoa butter, vegetable oils, lanolin and animal fats, and alcohols other than isopropyl alcohol; d) supercritical CO₂; and e) substances listed in Table 4.2 (Column 1 or 2) except for Formulants used in crop production aids. 	•	•
Feather meal		•	
Ferric phosphate (iron ortho-phosphate, iron phosphate)	<p>Permitted as a molluscicide (for slug and snail control).</p> <p>Shall be used in such a manner that runoff into water bodies is prevented.</p> <p>Contact with crops is prohibited.</p>		•
Fibre row covers	<p>Shall not be incorporated into the soil or left in the field to decompose; shall be removed at the end of the growing season.</p>		•
Fish products	<p>The following fish products are permitted: fish meal; fish powder; fish farm wastes and hydrolysate, emulsions and solubles. Fish farm wastes shall be composted.</p> <p>Only substances listed in Column 1 or 2 of Table 4.2 can be added to fish products with the exception that the addition of Formulants used in crop production aids is prohibited. Chemical treatment is prohibited, with the exception of the following substances which are in preferential order:</p> <ul style="list-style-type: none"> a) vinegar; b) citric acid; c) phosphoric acid; or d) sulphuric acid. <p>The amount of acid used shall not exceed the minimum needed to stabilize the product.</p>	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Formulants used in soil amendments	Formulants used in soil amendments shall be derived from biological or mineral sources unless a substance annotation allows the use of a specified formulant. For example, see Table 4.2 Aquatic plants and plant products; Fish products; Humates, humic acid and fulvic acid.	•	
Formulants used in crop production aids	<p>Formulants used in crop production aids may only be used with substances listed in Column 2 of this table. Only formulants classified as List 4A or 4B by the Pest Management Regulatory Agency (PMRA) or derived from biological or mineral sources may be used with substances in Table 4.2 (Column 2).</p> <p>Formulants classified as List 3 by PMRA may be used with passive pheromone dispensers.</p> <p>Formulants classified as List 4A, 4B or 3 by PMRA are not subject to 1.4 or 1.5 of CAN/CGSB-32.310.</p> <p>Formulants classified as List 1 or 2 by PMRA are prohibited.</p>		•
Guano	<p>Shall be decomposed, dried deposits from wild bats or birds.</p> <p>Domesticated fowl excrement is considered to be Manure, not Guano.</p>	•	
Growth regulators for plants	Plant hormones, such as gibberellic acid, indoleacetic acid and cytokinins, derived from terrestrial or aquatic plants or produced by microorganisms.		•
Homeopathic preparations			•
Hormones	See Table 4.2 Growth regulators for plants.		•
Humates, humic acid and fulvic acid	<p>Permitted if mined; produced through microbial activity; extracted by physical processes; or with:</p> <p>a) Table 4.2 Extractants; or</p> <p>b) potassium hydroxide—potassium hydroxide levels used in the extraction process shall not exceed the amount required for extraction.</p> <p>Levels (mg/kg) of arsenic, cadmium, chromium, lead and mercury shall not exceed the limits (category C1) specified in <i>Guidelines for the Beneficial Use of Fertilising Residuals</i>. Shall not cause a build-up of heavy metals or micronutrients in soil.</p>	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Hydrated lime (calcium hydroxide)	For plant disease control.		•
Hydrogen peroxide			•
Inoculants	See Table 4.2 Microorganisms and microbial products.	•	
Invertebrates	Worms, insects (including sterile insects), nematodes, arthropods and other invertebrates. See Table 4.2 Worm castings; Shells from aquatic animals.	•	•
Iron	The following sources of iron are permitted to correct documented iron deficiencies: ferric oxide, iron citrate, iron sulphate (ferric or ferrous) or iron tartrate. See Table 4.2 Micronutrients.	•	
Kaolin clay	May be calcined. Shall not be processed or fortified with substances unless listed in Table 4.2 (Column 2).		•
Kelp and kelp products	See Table 4.2 Aquatic plants and aquatic plant products.	•	•
Leaf mould		•	
Lignin and lignin sulphonates (ligno-sulphonates)	Permitted as chelating agent(s), as formulant ingredient(s) and as dust suppressant(s). Ammonium lignosulphonate is prohibited. Other lignin forms such as lignosulphonic acid, calcium lignosulphonate, magnesium lignosulphonate, sodium lignin and sodium lignosulphonate are permitted.	•	•
Lime sulphur (calcium polysulphide)	Permitted on plants as: a) a fungicide; b) an insecticide; and c) an acaricide (mite control).		•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Limestone	Mined magnesium and calcium carbonates. See Table 4.2 Calcium.	•	
Magnesium	<p>The following sources are permitted:</p> <ul style="list-style-type: none"> a) mined magnesium rock; b) magnesium chloride derived from natural brines and not chemically treated; c) mined calcium magnesium carbonate (dolomitic limestone) that has not been slaked; d) potassium magnesium sulphate (langbeinite); e) magnesium sulphate (kieserite or Epsom salts) may be used when soil and plant deficiencies are documented by visual symptoms or by testing of soil or plant tissue, or when the need for a preventative application is documented. 	•	
Manganese	<p>Manganous oxide and manganese sulphate are permitted to correct a documented manganese deficiency.</p> <p>See Table 4.2 Micronutrients.</p>	•	
Manure, composted	See Table 4.2 Compost. See also Table 4.2 Animal manure and Animal manure, processed.	•	
Manure, non-organic manure source	See 5.5 of CAN/CGSB-32.310. See also Table 4.2 Animal manure and Animal manure, processed.	•	
Meat meal	Shall be processed by drying or heat sterilization or composted.	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Microorganisms and microbial products	<p>Microorganisms, such as viruses, bacteria, protozoa, phages, and fungi, are permitted living, dead or as extracts. Microbial products may contain substances in Table 4.2 (Column 1 or 2). Examples include the following: rhizobium bacteria; mycorrhizal fungi; azolla; yeast; <i>Bacillus thuringiensis</i>; virus and virus sprays (e.g., granulosis); and spinosad.</p> <p>Microbial fertilizers or microbial soil amendments derived from substances that cannot be verified or derived from materials not listed in Table 4.2 (Column 1 or 2), may be used with the exception of municipal sewage sludge, which is prohibited.</p> <p>When used, microbial fertilizers shall not exceed the limits (category C1) for acceptable levels (mg/kg) of arsenic, cadmium, chromium, lead and mercury, as specified in <i>Guidelines for the Beneficial Use of Fertilising Residuals</i>. Shall not cause a build-up of heavy metals or micronutrients in the soil.</p> <p>Ionizing radiation is permitted for use on a peat moss carrier before the addition of microbial inoculants. Radiation is otherwise prohibited.</p> <p>Pharmaceuticals derived from biological sources, such as natamycin, penicillin and streptomycin, are prohibited even if registered as pesticides.</p>	•	•
Micronutrients	<p>Plant micronutrients (trace elements) are Iron, Manganese, Zinc, Copper, Molybdenum, Boron, Chlorine and Silicon.</p> <p>Micronutrient fertilizers may only be used when soil and plant deficiencies are documented by visual symptoms or by testing of soil or plant tissue, or when the need for a preventative application can be documented.</p> <p>Chelation with substances listed under Table 4.2 Chelates is permitted. EDTA, DTPA, EDDHA, nitrate and ammonium forms of micronutrients are prohibited.</p> <p>See specific annotations for Boron; Silicon; Copper; Iron; Manganese; Molybdenum and Zinc in Table 4.2.</p>	•	
Milk and milk by-products		•	•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Mined minerals, unprocessed	<p>Mined minerals include basalt, pumice, sand, feldspar, mica, granite dust and other unprocessed rock dust. Minerals extracted from seawater are permitted. To be allowed as a mined mineral, the product shall not have undergone any change in its molecular structure through heating, processing, ion exchange or combining with other substances.</p> <p>Sodium nitrate and rock dust that have been mixed with petroleum products, such as those from stone engraving, are prohibited.</p> <p>See annotations for specific minerals in Table 4.2 (Column 1).</p>	•	
Molasses	Shall be organic.	•	
Molybdenum	<p>To correct documented molybdenum deficiencies.</p> <p>See Table 4.2 Micronutrients.</p>	•	
Mulches	<p>Biological materials from organic sources are permitted (e.g., straw, leaves, grass clippings, hay, wool or untreated burlap). If organic materials are not commercially available, non-organic, non-genetically engineered sources may be used provided that prohibited substances have not been used on these materials for at least 60 days before harvest.</p> <p>Prohibited mulch material includes, but is not limited to, sawdust, wood chips, bark and shavings that is treated or processed with Formulants used in crop production aids or with substances, such as herbicides, preservatives and glues, not listed in Table 4.2 (Column 1 or 2).</p> <p>Newspaper and paper mulch are permitted; glossy paper and coloured ink are prohibited.</p> <p>Plastic mulches: Non-biodegradable and semi-biodegradable materials shall not be incorporated into the soil or left in the field to decompose. Use of polyvinyl chloride as plastic mulch or row cover is prohibited.</p> <p>Biodegradable mulches: 100% of biodegradable mulch films shall be derived from bio-based sources. Formulants or ingredients shall be listed in Table 4.2 (Column 1 or 2). Biodegradable polymers and Carbon Black from GE or petroleum sources are not permitted.</p>	•	•
Mushroom compost	See Table 4.2 Compost.	•	
Nitrogen gas	For controlled atmosphere storage.		•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Oilseed meals	Shall be organic if commercially available.	•	
Oxygen	For controlled atmosphere storage.		•
Peat moss		•	
Peracetic (peroxyacetic) acid	Formulations of peracetic acid may include unreacted residual reagents and catalysts, such as hydrogen peroxide, acetic acid and sulphuric acid. Permitted for: a) pest control; and b) disinfecting and cleaning seeds and plant stock. See Table 7.3.		•
Pheromones and other semiochemicals	All sources are permitted. For pest control.		•
Phosphate rock	May be fortified or processed with substances listed in Table 4.2 (Column 1). Cadmium shall not exceed 90 mg/kg P ₂ O ₅ .	•	
Plant by-products and plants	Includes plant preparations of aquatic or terrestrial plants or parts of plants, such as cover crops, green manures, crop wastes, hay, leaves and straw. Parts of plants used as soil amendments and foliar feeds are permitted. Wastes from crops that have been treated or produced with prohibited substances are permitted as compost feedstocks. For processing of plant by-products, see Table 4.2 Extractants. Prohibited substances include sawdust, wood chips, bark and shavings that are treated or processed with Formulants used in crop production aids or with substances, such as herbicides, preservatives and glues, not listed in Table 4.2 (Column 1 or 2).	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Plant extracts, oils and preparations	<p>Permitted extractants include fats and oils (such as cocoa butter, lanolin and animal fats); alcohols; water; or substances listed on Table 4.2 (Column 2) other than Formulants used in crop production aids.</p> <p>Extraction with other solvents is prohibited except with, in order of preference:</p> <ul style="list-style-type: none"> a) potassium hydroxide; or b) sodium hydroxide; provided the amount of solvent used does not exceed the amount necessary for extraction. The operator shall provide an affidavit from the manufacturer that proves the need to use sodium hydroxide. <p>For control of pests (e.g., diseases, weeds and insects).</p> <p>Clove oil is permitted for sprout inhibition in potatoes.</p>		•
Plant protectants	<p>Mineral and biological substances including, but not limited to: calcium carbonate (from chalk, limestone, etc.); diatomaceous earth; kaolin clay; pine oil; pine resin; and yucca. White wash (solution of hydrated limestone) is permitted for use on trees to protect against sunburn and southwest disease.</p> <p>Permitted to protect plants from harsh environmental conditions (such as frost and sunburn), infection, the build-up of dirt on leaf surfaces, or injury by an invertebrate pest or disease.</p>		•
Plastic for row covers and solarization	<p>Non-biodegradable and semi-biodegradable materials shall not be incorporated into the soil or left in the field to decompose.</p> <p>Use of polyvinyl chloride as plastic mulch or row cover is prohibited.</p>		•
Pomaces	<p>Feedstocks shall be from organically grown fruits or vegetables. Non-organic pomaces shall be composted. See Table 4.2 Compost feedstocks.</p>	•	

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Potassium	<p>The following potassium sources are permitted:</p> <ul style="list-style-type: none"> a) mined potassium magnesium sulphate (langbeinite) and mined potassium magnesium chlorides (sylvinite and kainite); b) potassium rock powder—includes basalt, biotite, mica, feldspar, granite, glauconite and greensand; c) potassium chloride—muriate of potash or rock potash. The use of potassium chloride shall not cause salt build-up in soil through repeated application; d) potassium sulphate—shall be produced by evaporating brines from seabed deposits or combining mined minerals using ion exchange. Potassium sulphate made using sulphuric acid as a reactant is prohibited. 	•	
Potassium bicarbonate	For pest and disease control for crops grown in greenhouses and other structures, and for other crops.		•
Pyrethrum	<p>May be combined with Formulants used in crop production aids.</p> <p>See Table 4.2 Botanical pesticides for restrictions.</p>		•
Quicklime (calcium oxide)	Shall not be used as a fertilizer or as a soil amendment.		•
Repellents	Shall be derived from biological sources, such as sterilized blood meal, rotten eggs, hair or predator scents. May contain substances listed in Table 4.2 Column 2.		•
Salt	<p>Sodium chloride, calcium chloride or potassium chloride; shall be mined or derived from sources of natural brine.</p> <p>The effluent from ion exchange water softener regeneration may be used.</p> <p>For pest control.</p>		•
Seaweed and seaweed products	See Table 4.2 Aquatic plants and aquatic plant products.	•	•
Seed treatments	<p>Includes microbial products, kelp, yucca, gypsum, clays and botanicals.</p> <p>May contain substances listed in Table 4.2 (Column 1 or 2) or Table 7.3. See Table 4.2 Peracetic Acid; Treated Seeds and refer to CAN/CGSB-32.310, 5.3.2.</p>		•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Shell from aquatic animals	Includes chitin.	•	•
Silicon, silica and silicates	Silicon products from mined sources such as diatomaceous earth, calcium silicate from wollastonite, or silicon dioxide (quartz). Sodium and potassium silicates are permitted only for Crop protection (Table 4.2 Column 2). See Table 4.2 Diatomaceous earth.	•	•
Soaps	Soaps (including insecticidal soaps) shall consist of fatty acids derived from animal or vegetable oils.		•
Soaps, ammonium	As a large animal repellent. Direct contact with soil or edible portion of crop is prohibited.		•
Sodium bicarbonate	For pest and disease control for crops grown in greenhouses and other structures, and for other crops.		•
Soil	From organic sources. Shall comply with restrictions specified in 5.1.2 of CAN/CGSB-32.310. See definition of <i>Soil</i> in Clause 3 of CAN/CGSB-32.310. For soils used in containers, see Transplant media, potting soil and potting media.	•	
Sphagnum moss	May contain wetting agents listed in Table 4.2 Surfactants.	•	
Stillage and stillage extract	Ammonium stillage is prohibited.	•	
Struvite (magnesium ammonium phosphate)	Allowed if made from biological sources, including plant and plant by-products or livestock manures. Prohibited if made from sewage sludge. All sources of magnesium are permitted in the manufacturing process. Levels (mg/kg) of arsenic, cadmium, chromium, lead and mercury shall not exceed the limits (category C1) specified in <i>Guidelines for the Beneficial Use of Fertilising Residuals</i> . Shall not cause a build-up of heavy metals or micronutrients in soil.	•	
Sugars	Organic sugars (e.g., sucrose, glucose, fructose) are permitted.	•	•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Sulphur smoke bombs	Use of sulphur smoke bombs shall be permitted in conjunction with other methods used for rodent control when a full pest control program is maintained but temporarily overwhelmed.		•
Sulphur, elemental	Both mined and reclaimed sources of elemental sulphur are permitted.	•	•
Summer oils	On foliage, as suffocating or stylet oils.		•
Surfactants	Includes plant-derived saponins, such as <i>Yucca schidigera</i> and <i>Quillaja saponaria</i> , or substances listed in Table 4.2 Formulants used in soil amendments; Formulants used in crop production aids; Soaps.	•	•
Transplant media, potting soil and potting media	Shall be composed entirely of permitted substances listed in Table 4.2 (Column 1 or 2). Soil from the field may be used provided that prohibited substances have not been used on the soil for at least 36 months.	•	
Treated seed	See Table 4.2 Peracetic acid; Seed treatments and refer to CAN/CGSB-32.310, 5.3.2.		•
Tree seals	Plant or milk-based paints are permitted. May only be combined with substances listed in Table 4.2 (Column 1 or 2). See Table 4.2 Plant Protectants. For planting stock: commercial grafting materials are permitted, provided that plants are maintained in accordance with requirements of CAN/CGSB-32.310 for at least 12 months prior to harvest of organic products.		•
Vermicasts	See Table 4.2 Worm castings.	•	
Vermiculite		•	
Vinegar (acetic acid)	See Table 4.2 Acetic acid.		•
Vitamins	Biological and mineral sources of all vitamins are permitted. Non-biological and non-mineral sources of vitamins B ₁ , C (ascorbic acid) and E are permitted.	•	•
Water		•	•

Table 4.2 — Substances for crop production

Substance name(s)	Origin and usage	Column 1 Soil amendments	Column 2 Production aids
Water, recycled	<p>Recycled water shall only contain substances listed in Tables 4.2 (Column 1 or 2), 7.3 and 7.4.</p> <p>Recycled wash water from all organic operations, including dairy operations, may be spread on crop lands. Requirements for land application, as specified in 5.5.2.5 of CAN/CGSB-32.310, shall be met. In all other uses, recycled water shall meet applicable irrigation water regulatory requirements.</p>	•	•
Wetting agents	See Table 4.2 Surfactants.	•	•
Wood ash	See Table 4.2 Ash.	•	•
Worm castings	<p>Worm castings (also called vermicompost, worm compost, vermicasts, worm humus or worm manure) are the end product of the breakdown of organic matter and compounds by some earthworm species.</p> <p>Feedstocks for earthworms shall meet the criteria in Table 4.2 Compost feedstocks.</p> <p>The operator shall be able to demonstrate that:</p> <p>a) worm castings produced either on the farm or obtained from off-farm sources meet the limits for acceptable levels (MPN/g total solids) of human pathogens as specified in <i>Guidelines for Compost Quality</i>; or</p> <p>b) best practices known to eliminate human pathogens during vermicomposting have been used.</p> <p>See Table 4.2 Microorganisms and microbial products for information on compost starters.</p>	•	
Yeast	See Table 4.2 Microorganisms and microbial products.	•	
Zinc	See Table 4.2 Micronutrients.	•	

5 Permitted substances lists for livestock production

5.1 Classification

5.1.1 Livestock production substances are classified according to the following uses and applications:

- a) Feed, feed additives and feed supplements;

- b) Health care products and production aids — Health care products include medications, remedies, parasiticides and other substances used to maintain or restore the well-being of an animal. Production aids include all other substances used on animals and their living areas, such as bedding, teat seals and teat dips.

5.1.2 Substances listed in Tables 5.2 and 5.3 shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, microorganisms and lactic acid):

- a) if the substance includes the substrate or growth media, the substrate or growth media ingredients shall be listed in Table 5.2 or 5.3;
- b) if the substance does not include the substrates or growth media, the substance shall be produced on non-genetically engineered substrates or growth media, if commercially available.

NOTE In Canada, livestock feed must meet the compositional and labelling standards of the *Feeds Regulations*, 1983. Ingredients used in livestock feed must be approved and listed in Schedule IV or V of the *Feeds Regulations*, 1983. Some ingredients and products require registration (such as enzymes and milk replacers).

Table 5.2 — Feed, feed additives and feed supplements

Substance name(s)	Origin and usage
Amino acids	<p>Organic sources, such as fishmeal, insect meal, brewer's yeast, potato protein, corn gluten and distillers' grains, shall be the first preference.</p> <p>When the supplementation with these organic sources does not meet amino acid requirements to produce a balanced feed as per 6.4.1 and 6.4.2 of CAN/CGSB-32.310, then:</p> <p>a) amino acids derived from biological sources by biofermentation and extracted, or isolated, by hydrolysis or by physical or other non-chemical means may be used;</p> <p>b) when such forms of lysine and methionine are not commercially available for use in monogastrics feeding, as an exception to 5.1.2 (CAN/CGSB-32.311) and 1.4 a) of CAN/CGSB-32.310, all sources of lysine and methionine may be used.</p> <p>This annotation will be reviewed at the next revision of the standard. See Table 5.2 Fishmeal.</p>
Antioxidants	Derived from materials produced by living organisms (such as, but not limited to, plants, animals and microorganisms) using substances listed in Table 6.3 Extraction solvents and precipitation aids. Example: tocopherols derived from plants.
Colouring agents	From biological sources.
Diatomaceous earth	<p>As a preventative livestock health care practice for control of internal parasites, and as an anti-caking agent. Shall be food grade (non-calcined).</p> <p>As free choice, or up to 2% of total diet, or as an anti-caking agent in feed ration.</p>

Table 5.2 — Feed, feed additives and feed supplements

Substance name(s)	Origin and usage
Energy feeds and forage concentrates (grains) and roughages (hay, silage, fodder, straw)	<p>Shall be obtained from organic sources. May include silage preservation products.</p> <p>See Table 5.2 Hay or silage preservation products.</p>
Enzymes	<p>Derived from plants, animals or microorganisms. Examples include, but are not limited to, bromelain, bovine liver catalase, ficin, animal lipase, malt, pancreatin, pepsin, trypsin, proteases and carbohydrases.</p> <p>Animal-derived enzymes shall be free of Specified Risk Material (SRM).</p> <p>This annotation will be reviewed at the next revision of the standard.</p> <p>See Table 5.2 Phytase.</p>
Fishmeal	All preservatives and other ingredients shall be listed in Table 5.2.
Flavours	Shall be organic.
Food waste	Organic food for human consumption or by-products from organic food production (excluding abattoir waste).
Hay or silage preservation products	<p>Preference should be given to bacterial or enzymatic additives derived from bacteria, fungi and plants and food by-products (such as molasses and whey).</p> <p>The following acids may be used: lactic, propionic and formic.</p>
Microorganisms and yeasts	If organic sources of yeast are not commercially available, non-organic yeast sources, including yeast autolysate, shall be used.
Milk replacer	<p>Shall be organic if commercially available.</p> <p>Permitted for emergency use. Without antibiotics and animal fats or by-products.</p>
Minerals, trace minerals, elements	<p>Unprocessed rock dusts; ground animal or plant material (other than blood or bone meal); and seawater are preferred sources.</p> <p>Chelated and sulphated forms are permitted.</p> <p>If none of the aforementioned sources are commercially available, other versions are permitted except for forms containing or produced with EDTA or EDDHA.</p>
Molasses	Shall be organic.

Table 5.2 — Feed, feed additives and feed supplements

Substance name(s)	Origin and usage
Phytase	<p>Permitted when feed supplementation with phytase is recommended to reduce the phosphorus level in manure and thereby reduce the potential environmental consequence.</p> <p>As an exception, GE-derived sources of phytase are allowed even though they are not compliant to 5.1.2 of CAN/CGSB-32.311 or 1.4 a) of CAN/CGSB-32.310.</p> <p>This substance and annotation will be reviewed at the next revision of the standard.</p>
Pre-mixes	<p>Concentrated mixture of minerals and vitamins.</p> <p>From organic sources if commercially available.</p> <p>All ingredients in pre-mixes shall be essential for animal nutrition, and listed in Table 5.2. Non-GE fillers, for example rice hulls, may be non-organic.</p>
Probiotics	Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.
Protein feeds	Shall be from organic sources.
Seaweed meal	
Vitamins	<p>Permitted for enrichment or fortification.</p> <p>Vitamin formulants that comply with Canadian regulations are accepted. Vitamins not compliant to 5.1.2 of CAN/CGSB-32.311 are permitted.</p>

Table 5.3 — Health care products and production aids

Substance name(s)	Origin and usage
Acetylsalicylic acid	Aspirin.
Acids	<p>Ascorbic, acetic, propionic, citric, formic and lactic acids and vinegar.</p> <p>Permitted for all uses such as treatment of water and bedding.</p>
Activated charcoal	Shall be of plant origin.
Alcohol, ethyl (ethanol)	Permitted as a disinfectant and sanitizer.
Alcohol, isopropyl	Permitted as a disinfectant.

Table 5.3 — Health care products and production aids

Substance name(s)	Origin and usage
Antibiotics	See 6.6 of CAN/CGSB-32.310, for conditions pertaining to antibiotic use in livestock. See Table 5.3 Antibiotics, oxytetracycline.
Antibiotics, oxytetracycline	For emergency use for bees. The equipment shall be destroyed in accordance with 7.1.15.7 of CAN/CGSB-32.310; treated bees do not need to be destroyed if they are taken out of organic production.
Anti-inflammatories	Non-steroid anti-inflammatories such as ketoprofen. Preference shall be given to alternative products, such as those listed in Table 5.3, Botanical compounds; and Homeopathy and biotherapies. To reduce inflammation. See 6.6.4 c) 2) of CAN/CGSB-32.310.
Biologics	
Botanical compounds	Botanical preparations, such as atropine, butorphanol and other medicines from herbaceous plants shall be used according to label specifications. Substances containing petroleum-derived formulants, such as propylene glycol, shall not be fed to livestock.
Calcium borogluconate	For milk fever. No withdrawal period required.
Chlorhexidine	For surgical procedures conducted by a veterinarian. To be used as a post-milking teat dip when alternative germicidal agents and physical barriers have lost their effectiveness. See Table 5.3 Teat dips and udder wash.
Colostrum whey	Probiotic.
Colostrum	Shall be organic if commercially available.
Copper sulphate	As an essential nutrient (source of copper and sulphur) and for topical use (foot baths).
Diatomaceous earth	For use in control of external parasites and as a preventative practice for control of internal parasites. For internal use, diatomaceous earth shall be food grade (non-calcined).
Electrolytes	Including, but not limited to: CMPK (Calcium, Magnesium, Phosphorus, Potassium), Orally or by injection.
Formic acid	For apicultural use, to control parasitic mites. This substance may be used after the last honey harvest of the season and shall be discontinued 30 days before the addition of honey supers.

Table 5.3 — Health care products and production aids

Substance name(s)	Origin and usage
Formulants (inerts, excipients)	Shall be used in conjunction with substances listed in Table 5.3. Formulants are not subject to 1.4 or 1.5 of CAN/CGSB-32.310 or 5.1.2 of this standard.
Glucose	
Glycerol (glycerine, glycerin)	Shall be from organic sources if commercially available. Shall be from vegetable oil or animal fat. Shall be produced using fermentation or by hydrolysis.
Homeopathy and biotherapies	
Honey	Shall be organic.
Hydrated lime (calcium hydroxide)	Shall not be used to deodorize animal wastes.
Hydrogen peroxide	Pharmaceutical grade hydrogen peroxide is permitted for external use (disinfectant). Food-grade hydrogen peroxide is permitted for internal use (for example, added to livestock drinking water).
Iodine	If used as a topical disinfectant: permitted iodine sources include potassium iodide and elemental iodine. If used as a cleaning agent: non-elemental iodine shall be used; iodine shall not exceed 5% solution by volume (example: iodophors). Use shall be followed by a hot-water rinse.
Iron products	May be supplied by ferric phosphate, ferric pyrophosphate, ferrous lactate, ferrous sulphate, iron carbonate, iron gluconate, iron oxide, iron phosphate, iron sulphate or reduced iron.
Lanolin	For external use only, such as udder balm (ointment).
Local anesthetics	Such as lidocaine. Use of pharmaceutical local anesthetics shall be followed by withdrawal periods of 90 days for livestock intended for slaughter, and seven days for dairy animals. Preference shall be given to alternatives, such as clove oil, listed in Table 5.3 Botanical compounds; Homeopathy and biotherapies.
Magnesium sulphate	Mined sources. A source of magnesium and sulphur.
Mineral oil	For external use.

Table 5.3 — Health care products and production aids

Substance name(s)	Origin and usage
Minerals, trace minerals, elements	<p>Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium chloride and magnesium oxide.</p> <p>Synthetic nutrient minerals may be used if non-synthetic sources are not commercially available.</p> <p>Minerals from any source are permitted for medical use.</p>
Microorganisms and yeasts	If organic sources of yeast are not commercially available, non-organic yeast sources derived from living yeast, including yeast autolysate, shall be used.
Oxalic acid	For mite control in honeybee colonies.
Oxytocin	For post-parturition therapeutic use. Meat from treated animals will not lose its organic status. See 6.6.10 d) of CAN/CGSB-32.310, for criteria pertaining to the mandatory withdrawal period.
Paraffin	Shall be food-grade. For use in hives.
Parasiticides and anti-microbials	Shall respect requirements set out in 6.6 of CAN/CGSB-32.310 with regard to the use of internal parasiticides.
Physical teat seals	<p>All sources are permitted. Shall be free from antibiotics.</p> <p>For post-lactation use. Shall be completely removed prior to nursing or milking.</p> <p>Shall be prescribed and administered under veterinary supervision.</p>
Plant oils	To control external parasites.
Prebiotics	From organic sources if commercially available.
Probiotics	Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.
Propylene glycol	May only be used as an ingredient in foot baths.
Sedatives	Such as xylazine.
Selenium products	<p>Derived from sodium selenate or sodium selenite.</p> <p>May be used to address documented deficiencies in the stock, soils or feed supplies.</p> <p>See Table 5.3 Minerals, trace minerals, elements.</p>
Sodium hydroxide	For use in dehorning paste. See 6.4 of CAN/CGSB-32.310.
Sulphur	For control of external parasites.

Table 5.3 — Health care products and production aids

Substance name(s)	Origin and usage
Teat dips and udder wash	<p>Substances, such as alcohol, iodine, hydrogen peroxide, chlorine dioxide and ozone, can be used as disinfectants for a pre- or post-teat dip or udder wash if they are registered for this use by Canada's <i>Food and Drug Regulations</i>.</p> <p>Chlorhexidine can be used as a post-milking teat dip if alternative germicidal agents and physical barriers have lost their effectiveness.</p> <p>See Table 5.3 Chlorhexidine.</p>
Thymol	<p>See Table 5.3 Botanical compounds for thymol derived from botanical sources.</p> <p>Thymol that is not derived from botanical sources may only be used in foot baths.</p>
Vaccines	<p>Vaccines may be used in prevention of diseases. If vaccines compliant to 5.1.2 of this standard are not commercially available, or are ineffective, vaccines not compliant to 5.1.2 are permitted.</p>
Vitamins	<p>Vitamin formulants that comply with Canadian regulations are accepted. Vitamins not compliant to 5.1.2 of this standard are permitted.</p> <p>Orally, topically or by injection.</p>

6 Permitted substances lists for preparation

6.1 Classification

6.1.1 Processing substances are classified according to the following uses and applications:

- a) Food additives (see definition in clause 3 of CAN/CGSB-32.310);
- b) Other ingredients not considered to be food additives;
- c) Processing aids (see definition in clause 3 of CAN/CGSB-32.310).

6.2 Restrictions

6.2.1 Substances listed in Tables 6.3, 6.4 and 6.5 shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, microorganisms and lactic acid):

- a) if the substance includes the substrates or growth media, the substrates or growth media ingredients shall be listed in Table 6.3, 6.4 or 6.5;
- b) if the substance does not include the substrates or growth media, the substance shall be produced on non-genetically engineered substrates or growth media, if commercially available.

6.2.2 Organic commercial availability requirements specified in the substance listing annotations of Tables 6.3, 6.4 or 6.5 apply to substances used in products composed of 95% or more organic content.

6.2.3 Other commercial availability requirements specified in the substance listing annotations of Tables 6.3, 6.4 or 6.5 apply to substances used in organic products composed of 70% or more organic content.

Table 6.3 — Ingredients classified as food additives

Substance name(s)	Origin and usage
Acids	Including the following sources: a) alginic; b) citric—from fruit and vegetable products or produced by microbial fermentation of carbohydrate substances; and c) lactic.
Activated charcoal	Shall be of plant origin. Prohibited for use in the production of maple syrup.
Agar	See Table 6.3 Extraction solvents and precipitation aids.
Alginates	The following alginates are permitted: a) alginic acid; b) potassium alginate; and c) sodium alginate.
Ammonium bicarbonate	As a leavening agent.
Ammonium carbonate	As a leavening agent.
Argon	
Ascorbic acid (vitamin C)	
Calcium carbonate	Prohibited for use as a colouring agent.
Calcium chloride	Permitted for: a) milk products; b) fat products; c) soybean products; and d) fruits and vegetables.
Calcium citrate	

Table 6.3 — Ingredients classified as food additives

Substance name(s)	Origin and usage
Calcium phosphates (mono-, di-, and tri-basic forms)	
Calcium sulphate (gypsum)	Mined sources; calcium sulphate produced using sulphuric acid is prohibited.
Carbon dioxide (CO ₂)	Carbonation of wine or mead is prohibited.
Carrageenan (Irish moss)	Shall be derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. By exception, isopropyl alcohol may be used to derive carrageenan.
Carriers	Carriers of non-agricultural origin may be used if listed on Tables 6.3, 6.4 or 6.5. Non-organic carriers of agricultural origin (such as wheat starch) may be used if ingredients or processing aids containing organic carriers are not commercially available.
Colouring agents	<p>From biological sources such as spices, annatto, juices made from plant sources, etc. derived using approved methods (see Table 11 B (1) & (2), Origin and mode of production of CAN/CGSB-32.310), and substances in Table 6.3 Extraction solvents and precipitation aids.</p> <p>May contain permitted carriers (see Table 6.3 & 6.4 Carriers).</p>
Enzymes	<p>The following sources of enzymes are permitted:</p> <ul style="list-style-type: none"> a) any preparations of enzymes normally used in food processing derived from edible, non-toxic plants, non-pathogenic fungi or non-pathogenic bacteria; b) derived from animals—shall be organic if commercially available: rennet; catalase from bovine liver; animal lipase; pancreatin; pepsin; and trypsin. Animal-derived enzymes shall be free of Specified Risk Material (SRM); and c) egg white lysozyme.

Table 6.3 — Ingredients classified as food additives

Substance name(s)	Origin and usage
Extraction solvents and precipitation aids	<p>The following may be used to derive (extract) substances listed in Tables 5.2, 6.3, 6.4 and 6.5:</p> <ul style="list-style-type: none"> a) water; b) culinary steam, as described in 8.1.2 b) of CAN/CGSB-32.310; c) fats, oils and alcohols other than isopropyl alcohol; d) supercritical CO₂; and e) substances listed in Tables 6.3, 6.4 or 6.5 of this standard. <p>Precipitation aids derived from biological sources (such as plant proteins, albumin, casein, and gelatin) may also be used. In addition, non-biological precipitation aids, such as bentonite, silicon dioxide, etc., may be used if listed in Tables 6.3, 6.4 or 6.5. If listed in Tables 6.3, 6.4 or 6.5, precipitation aids shall meet any annotation restrictions therein.</p>
Gelatine	<p>Shall be organic if commercially available.</p> <p>Gelatine may be sourced from:</p> <ul style="list-style-type: none"> a) plants; or b) animals. If derived from cattle, gelatine shall be guaranteed free of Specified Risk Material (SRM).
Glucono delta lactone	<p>Production by the oxidation of D-glucose with bromine water is prohibited.</p>
Glycerides (mono- and diglycerides)	<p>From organic sources if commercially available.</p> <p>For use in drum drying of products.</p>
Glycerol (glycerine, glycerin)	<p>Shall be from organic sources if commercially available.</p> <p>Shall be from vegetable oil or animal fat.</p> <p>Shall be produced using fermentation or by hydrolysis.</p>
Gums	<p>The following gums are permitted: arabic gum, carob bean gum (locust bean gum), gellan gum, guar gum, karaya gum, tragacanth gum, and xanthan gum.</p> <p>Shall be derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. By exception, isopropyl alcohol may also be used to derive gums.</p>
Kelp and kelp products	<p>For use as a thickener and dietary supplement.</p>

Table 6.3 — Ingredients classified as food additives

Substance name(s)	Origin and usage
Lecithin	Shall be organic if commercially available. The bleached form is permitted if processed using food-grade hydrogen peroxide.
Magnesium carbonate	As an anti-caking agent in non-standardized dry mixes (e.g., seasonings) used in meat products with 70-95% organic content.
Magnesium chloride	Derived from seawater.
Magnesium stearate	For use as an anti-caking or releasing agent in products whose contents are ≥70% and <95% organic ingredients.
Magnesium sulphate	
Malic acid	
Meat curing agents	Extracts, juice, or cultured powder of celery or chard are permitted. Shall be organic if commercially available.
Ozone	
Pectin	High-methoxyl and low-methoxyl pectin sources are permitted.
Potassium acid tartrate ($KC_4H_5O_6$)	From grapes/wine-making.
Potassium carbonates (mono- and bi-)	
Potassium chloride	From mined sources such as sylvite, carnalite, and potash.
Potassium citrate	
Potassium metabisulphite	See Table 6.3 Sulphur dioxide, anhydrous (SO_2).
Potassium phosphate (mono-, di-, and tribasic forms)	For use in products whose contents are ≥70% and <95% organic ingredients.
Potassium tartrate ($K_2C_4H_4O_6$, INS 336)	
Silicon dioxide (silica)	No restrictions on sources or uses except for maple (see 7.2.12.6 of CAN/CGSB-32.310).

Table 6.3 — Ingredients classified as food additives

Substance name(s)	Origin and usage
Sodium acid pyrophosphate	For use as a leavening agent.
Sodium bicarbonate (baking soda)	
Sodium carbonate (soda ash)	If biological or mined sources are not commercially available, synthetic forms are permitted.
Sodium chloride	
Sodium citrate	
Sodium hydroxide (lye or caustic soda)	
Sodium phosphates	For use in dairy products.
Sulphur dioxide, anhydrous (SO ₂)	<p>Sulphites from SO₂-bottled gas; as liquid SO₂; or liberated from ignition of asbestos-free sulphur wicks are permitted.</p> <p>Sulphurous acid (aqueous sulphur dioxide) and Potassium metabisulphite are also permitted.</p> <p>For use as a preservative in alcoholic beverages; minimal use of SO₂ is recommended.</p> <p>Maximum allowable levels of SO₂ in parts per million (ppm) are:</p> <p>a) in alcoholic beverages containing less than 5% residual sugar, 100 ppm and 30 ppm for total and free sulphites, respectively;</p> <p>b) in alcoholic beverages containing 5%-10% residual sugar, 150 ppm and 35 ppm for total and free sulphites, respectively; and</p> <p>c) in alcoholic beverages containing more than 10% residual sugar, 250 ppm and 45 ppm for total and free sulphites, respectively.</p>
Sulphurous acid	See Table 6.3 Sulphur dioxide, anhydrous (SO ₂).
Tartaric acid (C ₄ H ₆ O ₆ INS 334)	<p>From lees.</p> <p>For beverages.</p>
Tocopherols and mixed natural concentrates	Derived from vegetable oil when rosemary extract is not a suitable alternative.

Table 6.3 — Ingredients classified as food additives

Substance name(s)	Origin and usage
Vegetable oils	<p>Shall be organic if commercially available. Derived using substances listed in Table 6.3 Extraction solvents and precipitation aids.</p> <p>Maple syrup production—vegetable oils shall be organic and without allergenic potential.</p>
Waxes, produce	<p>Organic beeswax and organic carnauba wax may be used to wax produce. See 9.2.1 d) of CAN/CGSB-32.310 if organic wax is commercially unavailable.</p> <p>For other wax uses, see Table 6.5 Waxes.</p>
Yeast	<p>If organic sources of yeast are not commercially available, these alternative sources of yeast may be used:</p> <ul style="list-style-type: none"> a) autolysate; b) bakers' (may contain lecithin, as listed in Table 6.3); c) brewers'; d) nutritional; and e) torula. <p>Growth on petrochemical substrate and sulphite waste liquor is prohibited.</p> <p>Yeast may be smoked or smoke-flavoured. When smoked, the smoke shall come from concentrated, condensed smoke from wood without additional ingredients (unless listed in Tables 6.3, 6.4 or 6.5).</p>
Yeast foods	<p>For use in alcoholic beverages:</p> <ul style="list-style-type: none"> a) potassium chloride—permitted for ale, beer, light beer, malt liquor, porter and stout; and b) dibasic ammonium phosphate (diammonium phosphate, DAP), restricted to 0.3 g/L (0.04 oz/gal)—permitted for cider, mead and wine.

Table 6.4 — Ingredients not classified as food additives

Substance name(s)	Origin and usage
Carriers	Carriers of non-agricultural origin may be used if listed on Tables 6.3, 6.4 or 6.5. Non-organic carriers of agricultural origin (such as wheat starch) may be used if ingredients or processing aids containing organic carriers are not commercially available.
Collagen casings	<p>Collagen shall be derived from animal sources. If derived from cattle, collagen shall be guaranteed free of Specified Risk Material (SRM).</p> <p>Other ingredients (such as, but not limited to: cellulose, calcium coatings, glycerin, etc.) added to collagen casings during their manufacture that remain in the collagen casing when it is used shall respect the requirement provided in 1.4 a) of CAN/CGSB-32.310.</p> <p>Permitted for poultry sausage.</p>
Cultures	See Table 6.4 Microorganisms.
Flavours	<p>Derived from biological sources using approved methods (see Table 11 B (1) & (2) Origin and mode of production of CAN/CGSB-32.310), and substances (see Table 6.3 Extraction solvents and precipitation aids).</p> <p>May contain permitted carriers (see Table 6.3 & 6.4 Carriers).</p>
Microorganisms	<p>Microbial preparations may contain substrates derived from agricultural or biological substances such as milk, lactose, soy, agar, etc. May also contain permitted carriers (see Table 6.3 & 6.4 Carriers).</p> <p>Includes starter and dairy cultures and other preparations of microorganisms normally used in product processing.</p>
Nitrogen	Shall be food-grade quality.
Oxygen	
Potassium iodide	Shall be used when legally required or permitted.
Salt	<p>Substances listed in Tables 6.3 or 6.4 may be added to mined or sea salt.</p> <p>See Table 6.3 Sodium chloride; Potassium chloride.</p> <p>See definition of Salt in clause 3 of CAN/CGSB-32.310.</p>
Smoke flavour	See Table 6.3 Yeast.

Table 6.4 — Ingredients not classified as food additives

Substance name(s)	Origin and usage
Starch	<p>From rice and waxy maize—Shall be derived using substances listed in Table 6.3 Extraction solvents and precipitation aids, where applicable. Starch shall not be modified by chemicals. Starch may be modified using physical or enzymatic methods.</p> <p>Cornstarch—May contain substances that are plant-derived or listed in Tables 6.3, 6.4 or 6.5.</p>
Vitamins and mineral nutrients	<p>Shall be used if legally required (e.g., fluid milk, white flour, infant formula, meal replacement, etc.).</p> <p>The following non-dairy substitute products may be fortified on a voluntary basis, if legally permitted: plant-based beverages, products that resemble cheese, and butter substitutes.</p> <p>Ferrous sulphate—Shall be used if legally required and may be used, on a voluntary basis, if legally permitted.</p>
Yeast	<p>If organic sources of yeast are not commercially available, these alternative sources of yeast may be used:</p> <ul style="list-style-type: none"> a) autolysate; b) bakers' (may contain lecithin, as listed in Table 6.3); c) brewers'; d) nutritional; and e) torula. <p>Growth on petrochemical substrate and sulphite waste liquor is prohibited.</p> <p>Yeast may be smoked or smoke flavoured. When smoked, the smoke shall come from concentrated, condensed smoke from wood without additional ingredients (unless listed in Tables 6.3, 6.4 or 6.5).</p>

Table 6.5 — Processing aids

Substance name(s)	Origin and usage
<i>Acer pennsylvanicum</i>	As an anti-foaming agent in maple syrup production.
Activated charcoal	Shall be of plant origin. Prohibited for use in the production of maple syrup.
Alcohol, ethyl (ethanol)	Shall be organic if commercially available.
Argon	
Ascorbic acid (vitamin C)	For use as an anti-browning agent prior to the extraction or concentration of fruit or vegetable juice.
Bentonite	
Calcium carbonate	
Calcium hydroxide (lime)	
Calcium sulphate (gypsum)	Sulphates produced using sulphuric acid are prohibited. May be used: a) as a carrier for cakes and biscuits; b) for soybean products; and c) for bakers' yeast.
Carbon dioxide (CO ₂)	
Carrageenan (Irish moss)	Derived using substances listed in Table 6.3 Extraction solvents and precipitation aids.
Casein	Shall be from organic sources if commercially available. Non-organic casein shall be derived from the milk of animals not treated with rBGH (recombinant bovine growth hormone).
Citric acid	From fruit and vegetable products or produced by microbial fermentation of carbohydrate substances.
Clay dust	As a filtering agent in maple syrup production.
Cellulose	As a filtering aid (non-chlorine bleached) and for use in inedible regenerative sausage casings. The TCF (Totally Chlorine Free) method of bleaching is permitted.

Table 6.5 — Processing aids

Substance name(s)	Origin and usage
Diatomaceous earth	As a food filtering aid or as a clarifying agent.
Enzymes	<p>The following sources of enzymes are permitted:</p> <ul style="list-style-type: none"> a) any preparations of enzymes normally used in food processing derived from edible, non-toxic plants, non-pathogenic fungi or non-pathogenic bacteria; b) animal-derived—shall be organic if commercially available: rennet; catalase from bovine liver; animal lipase; pancreatin; pepsin; and trypsin. Animal-derived enzymes shall be free of Specified Risk Material (SRM); c) egg white lysozyme.
Gelatine	<p>Shall be from organic sources if commercially available.</p> <p>Permitted sources are:</p> <ul style="list-style-type: none"> a) plants; and b) animals. Animal gelatine may be used in preparations of canned meat or as a gelling agent for gummed candy. If derived from cattle, gelatine shall be guaranteed free of Specified Risk Material (SRM).
Hydrogen peroxide	Food-grade. For use as a bleaching agent for proteins and starches.
Isinglass	As a fining agent (fish-based).
Kaolin	As a clarifying agent.
Lecithin	Shall be organic if commercially available. Bleached form is permitted if processed using food-grade hydrogen peroxide.
Nitrogen	Shall be food-grade quality.
Oxygen	
Ozone	
Perlite	For use as a filtering aid.
Potassium carbonate	
Potassium hydroxide (caustic potash)	For pH adjustment. Prohibited for use in lye peeling of fruits and vegetables.
Silicon dioxide (silica)	No restrictions on sources or uses except for maple (see 7.2.12.6 of CAN/CGSB-32.310)

Table 6.5 — Processing aids

Substance name(s)	Origin and usage
Sodium bicarbonate (baking soda)	
Sodium hydroxide (lye or caustic soda)	Prohibited for use in lye peeling of fruits and vegetables.
Talc	As a filtering agent.
Tannic acid	Shall be from an organic source if commercially available. Shall be derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. Permitted as a filtration aid for wines.
Tartaric acid (C ₄ H ₆ O ₆ INS 334)	From lees. For beverages.
Vegetable oils	From organic sources if commercially available. Derived using substances listed in Table 6.3 Extraction solvents and precipitation aids. Maple syrup production—vegetable oils shall be organic and without allergenic potential.
Waxes	If organic waxes, such as beeswax or carnuaba, are not commercially available, waxes derived from non-organic biological sources may be used. Edible wax cheese coatings that require a knife to cut or peel the wax away shall not contain paraffin, microcrystalline wax, non-listed preservatives, colours, bactericides or fungicides. Non-edible, fully removable (i.e., no knife is needed to cut or peel the wax away from the cheese), non-organic cheese wax may be used and shall be considered packaging per 8.1.6 of CAN/CGSB-32.310. For waxes applied to produce – see Table 6.3 Waxes, produce.

7 Permitted substances lists for cleaners, disinfectants and sanitizers

7.1 Classification

7.1.1 The cleaners, disinfectants and sanitizers listed below are used to remove dirt, filth and foreign matter from organic products and organic product contact surfaces. These substances are also used to control microorganisms that may contaminate products. The use of these substances may require a removal event, as defined in clause 3 of CAN/CGSB-32.310.

7.1.2 They are classified as follows:

- a) food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event;
- b) cleaners, disinfectants and sanitizers permitted on organic product contact surfaces, for which a removal event is mandatory prior to an organic production load or run.

7.1.3 All non-organic ingredients listed on Safety Data Sheets (SDS) and active ingredients listed on the label of formulated cleaners, sanitizers and disinfectants shall be listed in Tables 7.3 or 7.4. Other non-organic ingredients used without a removal event shall be limited to substances listed in Table 7.3; water; compounds used to treat drinking water; and product stabilisers, such as HEDP (1-hydroxyethane 1,1-diphosphonic acid) or dipicolinic acid, whose function is to prevent the chemical degradation of substances listed in Table 7.3. Table 7.4 compliant products may contain non-active ingredients, including, but not limited to, dyes, fragrances, and chemical agents used to prevent physical separation of foams or emulsions.

7.2 Clause 7 does not apply to maple syrup production. The operator shall meet the specific requirements for the different stages of production as described in 7.2 of CAN/CGSB-32.310.

Table 7.3 — Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event

Substance name(s)	Origin and usage
Acetic acid	May be used on organic product contact surfaces. May be used on organic products if produced by microbial fermentation of natural carbohydrate sources (sugars, wood, etc.). Example: apple cider vinegar. May be filtered or unfiltered.
Alcohol, ethyl (ethanol)	May be used on organic product contact surfaces.
Alcohol, isopropyl	May be used on organic product contact surfaces.
Alcohol, organic sources	
Ascorbic acid (vitamin C)	
Carbon dioxide (CO ₂)	
Chlorine compounds	<p>The following chlorine compounds are permitted:</p> <ul style="list-style-type: none"> a) calcium hypochlorite; b) chlorine dioxide; c) hypochlorous acid generated via electrolyzed water; d) sodium hypochlorite. <p>Shall not exceed maximum levels for safe drinking water.</p> <p>Chlorine compounds may be used:</p> <ul style="list-style-type: none"> a) for wash water in direct contact with crops or food; b) in flush water from cleaning irrigation systems, equipment, storage or transport units—application to crops or fields is permitted.
Citric acid	

Table 7.3 — Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event

Substance name(s)	Origin and usage
Glycerol (glycerine, glycerin)	Shall be: a) sourced from vegetable oil or animal fat; b) produced using fermentation or by hydrolysis.
Hydrogen peroxide	
Lactic acid	
Magnesium sulphate	
Microorganisms	Living or dead biological organisms, such as viruses, phages, bacteria, protozoa, fungi, etc.
Ozone	
Peracetic (peroxyacetic) acid	On food and plants: peracetic acid may be used in wash or rinse water. Peracetic acid may also be used on food contact surfaces.
Potassium bicarbonate	On organic product contact surfaces.
Sodium bicarbonate (baking soda)	
Sodium carbonate (soda ash)	Biological or mined sources. See Table 7.4 Sodium carbonate (soda ash), synthetic.
Sodium citrate	
Sodium hydroxide (lye or caustic soda)	
Vinegar	

Table 7.4 — Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory

Substance name(s)	Origin and usage
Chlorine compounds	The following chlorine compounds are permitted up to maximum label rates: a) calcium hypochlorite; b) chlorine dioxide; c) hypochlorous acid generated via electrolyzed water; d) sodium hypochlorite.
Detergents	Detergents shall be readily, ultimately or inherently biodegradable as per the Organisation for Economic Co-operation and Development (OECD) definitions, or readily eliminated during wastewater treatment such that harm to the environment is minimized.
Essential oils	Derived from plant sources using substances in Table 6.3 Extraction solvents and precipitation aids. May contain permitted carriers (see Table 6.3 and 6.4 Carriers).
Iodine	Shall be non-elemental. Shall not exceed 5% solution by volume (example: iodophors).
Lime	All forms of lime, including calcium carbonate, calcium hydroxide and calcium oxide.
Octanoic acid (caprylic acid)	
Peroxyoctanoic acid (POOA)	
Phosphoric acid	On dairy equipment.
Potassium carbonate	Documentation shall demonstrate that effluent discharge was neutralized to minimize negative environmental impact.
Potassium hydroxide (caustic potash)	
Potassium permanganate	Not to exceed 1% solution by volume.
Saponin	Derived from plants such as <i>Yucca schidigera</i> and <i>Quillaja saponaria</i> .
Soap-based algicide (demossers)	
Soaps	Soaps shall consist of fatty acids derived from animal or vegetable oils.
Sodium borate	

Table 7.4 — Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory

Substance name(s)	Origin and usage
Sodium carbonate (soda ash), synthetic	
Sodium percarbonate	
Sodium silicate	In detergents.
Surfactants	Surfactants either stand alone or when formulated with detergents shall be readily, ultimately or inherently biodegradable as per the Organisation for Economic Co-operation and Development (OECD) definitions, or readily eliminated during wastewater treatment such that harm to the environment is minimized.
Wetting agents	Substances listed in Table 4.2 or 7.3, including saponins and microbial wetting agents.

8 Facility management substances

8.1 Classification

8.1.1 Facility management substances are classified according to the following uses and applications:

- Substances listed in Table 8.2 are pesticides (See *Pesticides* definition in clause 3 of CAN/CGSB-32.310) that may be used in and around facilities, as annotated and as specified in 8.3.2 of CAN/CGSB-32.310. These substances may also be used in traps, lures and as repellents, unless indicated otherwise within substance annotations.
- Substances listed in Table 8.3 may be used in facilities as annotated, to accomplish a physiological effect post-harvest.

Table 8.2 — Facility pest management substances

Substance name(s)	Origin and usage
Ammonium carbonate	As an attractant in insect traps.
Baits for bait stations	
Boric acid	May be used for structural pest control (example: for ants). Direct contact with organic products is prohibited.
Carbon dioxide (CO ₂)	For controlled atmosphere storage and for storage pest control.
Cholecalciferol (vitamin D ₃)	Prohibited inside organic food processing and food storage facilities.

Substance name(s)	Origin and usage
Diatomaceous earth	Direct contact with organic products is permitted.
Formulants	<p>May only be used with substances listed in Table 8.2.</p> <p>Only formulants classified as List 4A or 4B by the Pest Management Regulatory Agency (PMRA) or derived from biological or mineral sources may be used with substances in Table 8.2.</p> <p>Formulants classified as List 3 by PMRA may be used with passive pheromone dispensers. Formulants classified as List 4A, 4B or 3 by PMRA are not subject to 1.4 or 1.5 of CAN/CGSB-32.310. Formulants classified as List 1 or 2 by PMRA are prohibited.</p>
Neem oil	
Pheromones and other semiochemicals	For pest control. Use in pheromone traps or passive dispensers.
Pyrethrins	<p>Without piperonyl butoxide.</p> <p>Direct contact with organic products is prohibited.</p>
Repellents	Shall be derived from a biological source, such as sterilized blood meal, rotten eggs, hair or predator scents. May contain other biological compounds and PMRA 4a- or 4b-listed formulants.
Soaps, ammonium	<p>As a large animal repellent.</p> <p>Direct contact with organic products is prohibited.</p>

Table 8.3 — Post-harvest substances

Substance name(s)	Origin and usage
Carbon dioxide (CO ₂)	For controlled atmosphere storage.
Clove oil	As a sprout inhibitor.
Ethylene	For post-harvest ripening of tropical fruit and degreening of citrus and to control sprouting of potatoes post-harvest in holding bins.
Formulants	Formulants may only be used with substances listed in Table 8.3. Only formulants classified as List 4A or 4B by the Pest Management Regulatory Agency (PMRA) or are non-synthetic may be used with substances in Table 8.3. Formulants classified as List 3 by PMRA may be used with passive pheromone dispensers. Formulants classified as List 4A, 4B or 3 by PMRA are not subject to 1.4 or 1.5 of CAN/CGSB-32.310. Formulants classified as List 1 or 2 by PMRA are prohibited.
Nitrogen	For controlled atmosphere storage.
Oxygen	

Annex A (informative)

Alphabetized list of substances

Table A.1 — List of permitted substances in alphabetical order

Substance name(s)	Referenced in table
<i>Acer pennsylvanicum</i>	6.5
Acetic acid	4.2, 7.3
Acetylsalicylic acid	5.3
Acids	5.3, 6.3
Activated charcoal	5.3, 6.3, 6.5
Adhesives for sticky traps and barriers	4.2
Agar	4.2, 6.3
Alcohol, ethyl (ethanol)	5.3, 6.5, 7.3
Alcohol, isopropyl	5.3, 7.3
Alcohol, organic sources	7.3
Alfalfa meal and pellets	4.2
Algae	4.2
Alginates	6.3
Amino acids	4.2, 5.2
Ammonium bicarbonate	6.3
Ammonium carbonate	4.2, 6.3, 8.2
Animal manure	4.2
Animal manure, processed	4.2
Antibiotics	5.3
Antibiotics, oxytetracycline	5.3
Anti-inflammatories	5.3

Substance name(s)	Referenced in table
Antioxidants	5.2
Aquatic plants and aquatic plant products	4.2
Argon	6.3, 6.5
Ascorbic acid (vitamin C)	4.2, 6.3, 6.5, 7.3
Ash	4.2
Baits for rodent traps	4.2, 8.2
Bentonite	4.2, 6.5
Biodegradable plant containers	4.2
Biochar	4.2
Biodynamic preparations for compost, soil and plants	4.2
Biological organisms	4.2
Biologics	5.3
Blood meal	4.2
Bone meal	4.2
Borate (boric acid)	4.2
Boric acid	8.2
Boron	4.2
Botanical compounds	5.3
Botanical pesticides	4.2
Calcium	4.2
Calcium borogluconate	5.3
Calcium carbonate	6.3, 6.5
Calcium chloride	4.2, 6.3
Calcium citrate	6.3
Calcium hydroxide (lime)	6.5

Substance name(s)	Referenced in table
Calcium lignin sulphonate	4.2
Calcium phosphates (mono-, di-, and tri- basic forms)	6.3
Calcium polysulphide	4.2
Calcium sulphate (gypsum)	4.2, 6.3, 6.5
Cannery wastes	4.2
Carbon dioxide (CO ₂)	4.2, 6.3, 6.5, 7.3, 8.2, 8.3
Cardboard	4.2
Carrageenan (Irish moss)	6.3, 6.5
Carriers	6.3, 6.4
Casein	6.5
Cellulose	6.5
Chelates	4.2
Chlorine compounds	7.3, 7.4
Chlorhexidine	5.3
Cholecalciferol (vitamin D ₃)	4.2, 8.2
Citric acid	4.2, 6.5, 7.3
Clay	4.2
Clay dust	6.5
Clove oil	8.3
Collagen casings	6.4
Colostrum whey	5.3
Colostrum	5.3
Colouring agents	5.2, 6.3
Compost	4.2
Compost feedstocks	4.2

Substance name(s)	Referenced in table
Compost from off-farm sources	4.2
Compost produced on the farm	4.2
Compost tea	4.2
Copper (plant nutrition)	4.2
Copper (crop production aid)	4.2
Copper sulphate	5.3
Cultures	6.4
Detergents	7.4
Diatomaceous earth	4.2, 5.2, 5.3, 6.5, 8.2
Digestate, anaerobic	4.2
Dormant oils	4.2
Dust suppressants	4.2
Electrolytes	5.3
Energy feeds and forage concentrates (grains) and roughages (hay, silage, fodder, straw)	5.2
Enzymes	4.2, 5.2, 6.3, 6.5
Essential oils	7.4
Ethylene	8.3
Extractants	4.2
Extraction solvents and precipitation aids	6.3
Feather meal	4.2
Ferric phosphate (iron ortho-phosphate, iron phosphate)	4.2
Fibre row covers	4.2
Fish meal	5.2
Fish products	4.2
Flavours	5.2, 6.4

Substance name(s)	Referenced in table
Food waste	5.2
Formic acid	5.3
Formulants used in soil amendments	4.2
Formulants used in crop production aids	4.2
Formulants (inerts, excipients)	5.3, 8.2, 8.3
Gelatine	6.3, 6.5
Glucono delta lactone	6.3
Glucose	5.3
Glycerides (mono and diglycerides)	6.3
Glycerol (glycerine, glycerin)	5.3, 6.3, 7.3
Growth regulators for plants	4.2
Guano	4.2
Gums	6.3
Hay or silage preservation products	5.2
Homeopathy and biotherapies	5.3
Homeopathic preparations	4.2
Honey	5.3
Hormones	4.2
Humates, humic acid and fulvic acid	4.2
Hydrated lime (calcium hydroxide)	4.2
Hydrogen peroxide	4.2, 5.3, 6.5, 7.3, 7.4
Inoculants	4.2
Invertebrates	4.2
Iodine	5.3, 7.4
Iron	4.2

Substance name(s)	Referenced in table
Iron products	5.3
Isinglass	6.5
Kaolin	6.5
Kaolin clay	4.2
Kelp and kelp products	4.2, 6.3
Lactic acid	7.3
Lanolin	5.3
Leaf mould	4.2
Lecithin	6.3, 6.5
Lignin and lignin sulphonates (lignosulphonates)	4.2
Lime	7.4
Lime sulphur (calcium polysulphide)	4.2
Limestone	4.2
Local anesthetics	5.3
Magnesium	4.2
Magnesium carbonate	6.3
Magnesium chloride	6.3
Magnesium stearate	6.3
Magnesium sulphate	5.3, 6.3, 7.3
Malic acid	6.3
Manganese	4.2
Manure, composted	4.2
Manure, non-organic manure source	4.2
Meat curing agents	6.3
Meat meal	4.2

Substance name(s)	Referenced in table
Micronutrients	4.2
Microorganisms	6.4, 7.3
Microorganisms and microbial products	4.2
Microorganisms and yeasts	5.2, 5.3
Milk and milk by-products	4.2
Milk replacer	5.2
Mined minerals, unprocessed	4.2
Mineral oil	5.3
Minerals, trace minerals, elements	5.2, 5.3
Molasses	4.2, 5.2
Molybdenum	4.2
Mulches	4.2
Mushroom compost	4.2
Neem oil	8.2
Nitrogen	6.4, 6.5, 8.3
Nitrogen gas	4.2
Octanoic acid (caprylic acid)	7.4
Oilseed meals	4.2
Oxalic acid	5.3
Oxygen	4.2, 6.4, 6.5, 8.3
Oxytocin	5.3
Ozone	6.3, 6.5, 7.3
Paraffin	5.3
Parasiticides and anti-microbials	5.3
Peat moss	4.2

Substance name(s)	Referenced in table
Pectin	6.3
Peracetic (peroxyacetic) acid	4.2, 7.3
Perlite	6.5
Peroxyoctanoic acid (POOA)	7.4
Pheromones and other semiochemicals	4.2, 8.2
Phosphate rock	4.2
Phosphoric acid	7.4
Physical teat seals	5.3
Phytase	5.2
Plant by-products and plants	4.2
Plant extracts, oils and preparations	4.2
Plant oils	5.3
Plant protectants	4.2
Plastic for row covers and solarization	4.2
Pomaces	4.2
Potassium	4.2
Potassium acid tartrate ($\text{KC}_4\text{H}_5\text{O}_6$)	6.3
Potassium bicarbonate	4.2, 7.3
Potassium carbonate	6.5, 7.4
Potassium carbonates (mono- and bi-)	6.3
Potassium chloride	6.3
Potassium citrate	6.3
Potassium hydroxide (caustic potash)	6.5, 7.4
Potassium iodide	6.4
Potassium metabisulphite	6.3

Substance name(s)	Referenced in table
Potassium permanganate	7.4
Potassium phosphate (mono-, di-, and tribasic forms)	6.3
Potassium tartrate ($K_2C_4H_4O_6$ INS 336)	6.3
Prebiotics	5.3
Pre-mixes	5.2
Probiotics	5.2, 5.3
Propylene glycol	5.3
Protein feeds	5.2
Pyrethrins	8.2
Pyrethrum	4.2
Quicklime (calcium oxide)	4.2
Repellents	4.2, 8.2
Salt	4.2, 6.4
Saponin	7.4
Seaweed and seaweed products	4.2
Seaweed meal	5.2
Sedatives	5.3
Seed treatments	4.2
Selenium products	5.3
Shell from aquatic animals	4.2
Silicon, silica (silicon dioxide) and silicates	4.2, 6.3, 6.5
Smoke flavour	6.4
Soap-based algicide (demossers)	7.4
Soaps	4.2, 7.4
Soaps, ammonium	4.2, 8.2

Substance name(s)	Referenced in table
Sodium acid pyrophosphate	6.3
Sodium bicarbonate	4.2, 6.3, 6.5, 7.3
Sodium borate	7.4
Sodium carbonate (soda ash)	6.3, 7.3
Sodium carbonate (soda ash), synthetic	7.4
Sodium chloride	6.3
Sodium citrate	6.3, 7.3
Sodium hydroxide (lye or caustic soda)	5.3, 6.3, 6.5, 7.3
Sodium percarbonate	7.4
Sodium phosphates	6.3
Sodium silicate	7.4
Soil	4.2
Sphagnum moss	4.2
Starch	6.4
Stillage and stillage extract	4.2
Struvite (magnesium ammonium phosphate)	4.2
Sugar	4.2
Sulphur	5.3
Sulphur dioxide, anhydrous (SO ₂)	6.3
Sulphurous acid	6.3
Sulphur smoke bombs	4.2
Sulphur, elemental	4.2
Summer oils	4.2
Surfactants	4.2, 7.4
Talc	6.5

Substance name(s)	Referenced in table
Tannic acid	6.5
Tartaric acid (C ₄ H ₆ O ₆ INS 334)	6.3, 6.5
Teat dips and udder wash	5.3
Thymol	5.3
Tocopherols and mixed natural concentrates	6.3
Transplant and potting media	4.2
Treated seed	4.2
Tree seals	4.2
Vaccines	5.3
Vegetable oils	6.3, 6.5
Vermicasts	4.2
Vermiculite	4.2
Vinegar (acetic acid)	4.2, 7.3
Vitamins	4.2, 5.2, 5.3
Vitamins and mineral nutrients	6.4
Water	4.2
Water, recycled	4.2
Waxes	6.5
Waxes, produce	6.3
Wetting agents	4.2, 7.4
Wood ash	4.2
Worm castings	4.2
Yeast	4.2, 6.3, 6.4
Yeast foods	6.3
Zinc	4.2