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National Standard of Canada

Organic production systems Permitted substances lists

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CAN/CGSB-32.311-2015

Supersedes CAN/CGSB-32.311-2006

Organic Production Systems Permitted substances lists

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

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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 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 shall comply with prohibitions in 1.4 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, Gatineau, Canada K1A 1G6. 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 Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques

Guidelines for the beneficial use of fertilising residuals.

2.3.1 Source

The above may be obtained from their Web site at http://www.mddelcc.gouv.qc.ca/matieres/mat_res-en/fertilisantes/critere/guide-mrf.pdf.

2.4 Pest Management Regulatory Agency (PMRA)

PMRA List of Formulants (2010 Aug 31 edition and future editions).

2.4.1 Source

The above may be obtained from the Canadian Health Canada, Address Locator 0900C2, Ottawa, Ontario K1A 0K9. Telephone 613-957-2991 or 1-866-225-0709. Fax 613-941-5366. E-mail info@hc-sc.gc.ca. Web site www.healthcanada.gc.ca/pmra.

2.5 Bureau de normalisation du Québec (BNQ)

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

2.5.1 Source

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

2.6 International Organization for Standardization (ISO)

ISO 17088 — *Specifications for compostable plastics.*

2.6.1 Source

The above may be obtained from IHS Global Canada Ltd., 200-1331 MacLeod Trail SE, Calgary, Alberta T2G 0K3, telephone 613-237-4250 or 1-800-267-8220, fax 613-237-4251, Web site www.global.ihs.com.

3 Requirements for adding or amending substances in the lists

3.1 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** 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** are substances used in conjunction with other substances in Tables 4.2 and 4.3, which may or may not be directly applied to the crop or soil, or substances used to control pests (disease, weed or insect). 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 Tables 4.2 and 4.3 shall comply with prohibitions in 1.4 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, micro-organisms and lactic acid):

- a) if the substance includes the substrates or growth media, the substrates or growth media ingredients shall be listed in Table 4.2 or 4.3;
- 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.

Table 4.2 – Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Agar	For use in initial mushroom spawn production.
Alfalfa meal and pellets	Shall be organic if commercially available.
Algae	See Table 4.2 <i>Aquatic plants and aquatic plant products</i> .
Amino acids	<p>Shall be from non-synthetic sources. Amino acids are considered non-synthetic if they are:</p> <p>a) produced by plants, animals and micro-organisms; and</p> <p>b) extracted or isolated either by hydrolysis or by other non-chemical means (example: physical extraction).</p> <p>May be used as plant growth regulators or as chelating agents.</p>
Animal manure	See clauses 5 and 6 of CAN/CGSB-32.310.
Animal manure, processed	<p>Manures treated by mechanical and/or physical (including heat) methods are permitted. Other substances listed in Table 4.2 may be added to manures.</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>

Table 4.2 – Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Aquatic plants and aquatic plant products	<p>Non-synthetic extracts are permitted. Extraction with synthetic solvents is prohibited except with, in order of preference:</p> <p>a) potassium hydroxide;</p> <p>b) sodium hydroxide;</p> <p>provided the amount of solvent used does not exceed the amount necessary for extraction. The manufacturer shall prove the need to use sodium hydroxide.</p> <p>Shall not contain synthetic preservatives, such as formaldehyde.</p>
Ash	<p>Ash shall be from plant and animal sources. Ash containing materials that cannot be verified and that may contain prohibited substances shall not exceed the limits (category C1) for acceptable levels (mg/kg) of arsenic, cadmium, chromium, copper, lead and mercury, as specified in <i>Guidelines for the Beneficial Use of Fertilising Residuals</i>.</p> <p>Ash from burning minerals, manure, coloured paper, plastics or other synthetic substances is prohibited.</p> <p>Shall not cause heavy metal buildup in soil through repeated application.</p>
Biochar	<p>Produced through pyrolysis of forestry by-products which have not been treated with or combined with prohibited substances.</p> <p>Recycled biochar from contaminated remediation sites is prohibited.</p>
Biodynamic preparations for soil and plants	
Biological organisms, naturally-occurring	<p>Includes worms and their products.</p> <p>See Table 4.2 <i>Worm castings</i>.</p>
Blood meal	<p>Shall be sterilized.</p>
Bone meal	<p>Shall be guaranteed free of specified risk materials including: the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages.</p>
Boron	<p>The following soluble boron products are permitted:</p> <p>a) borate;</p> <p>b) sodium tetraborate (borax and anhydrous); and</p> <p>c) sodium octaborate.</p> <p>Shall be used to correct a documented deficiency specific to the type of crop.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>

Table 4.2 – Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Calcium	<p>The following calcium products are permitted:</p> <p>mined calcium carbonate, limestone, dolomite (not slaked) and other non-synthetic sources, including shells from aquatic animals (such as oyster shell flour), aragonite, eggshell meal and lime from sugar processing. Non-synthetic calcium chloride may be used to address nutrient deficiencies and physiological disorders.</p> <p>Calcium products used in controlled atmosphere storage are prohibited.</p> <p>Shall not cause salt buildup in soil through repeated application.</p> <p>See Table 4.2 <i>Calcium sulphate (gypsum)</i>.</p>
Calcium sulphate (gypsum)	<p>Mined sources; calcium sulphate produced using sulphuric acid is prohibited.</p> <p>To correct calcium and sulphur deficiencies and soil salinity problems, as documented by visual symptoms or by testing of soil or plant tissue.</p>
Cannery wastes	<p>Shall be from organic sources. Non-organic cannery wastes shall be composted.</p> <p>See Table 4.2 <i>Compost feedstocks</i>.</p>
Cardboard	<p>Cardboard shall not be waxed or impregnated with fungicide or prohibited substances.</p> <p>May be used as mulch or as composting feedstock.</p> <p>See Table 4.2 <i>Compost feedstocks</i>.</p>
Chelates	<p>Non-synthetic and listed synthetic chelates are permitted.</p> <p>See Table 4.3 <i>Lignin sulphonates</i>.</p>
Clay	<p>Bentonite, perlite and zeolite; as soil amendments or seed pellet additives.</p> <p>See Table 4.2 <i>Mined minerals, unprocessed</i>.</p>
Compost	<p>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, industrial, or any organic or non-organic farm.</p> <p>See Table 4.2 <i>Compost from off-farm sources</i>; <i>Compost produced on the farm</i>; <i>Compost tea</i>; and <i>Compost feedstocks</i>. For information on compost starters, see Table 4.2 <i>Microbial products</i>. For information on vermicompost, see Table 4.2 <i>Worm castings</i>.</p>

Table 4.2 — Soil amendments and crop nutrition

Substance name(s)	Origin and usage
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 composting feedstocks may contain a substance prohibited by 1.4 of CAN/CGSB-32.310 known to be persistent in compost, documentation or testing of the final product may be required.</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 the risk materials specified in Table 4.2 <i>Bone meal</i>.</p>
Compost from off-farm sources	<p>Compost obtained from off-farm sources shall conform to the criteria specified in Table 4.2 <i>Compost feedstocks</i>. 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 through repeated application.
Compost produced on the farm	<p>Compost produced on the farm shall conform to the criteria specified in Table 4.2 <i>Compost feedstocks</i>. 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 to the required temperature for the minimum time; or b) meet limits for acceptable levels (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.

Table 4.2 – Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Compost tea	<p>Compost tea shall be made from composts that conform to criteria specified in Table 4.2 <i>Compost produced on the farm; Compost from off-farm sources; or Worm castings</i>.</p> <p>Other substances listed in Table 4.2 may be added to compost tea.</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	<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 may prohibit future use. Visible residue of copper products on harvested crops is prohibited.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>
Digestate, anaerobic	<p>Products of anaerobic digestion may 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. If feedstocks are obtained from off-farm sources, the digestate shall comply with the heavy metal restrictions in Table 4.2 <i>Compost from off-farm sources</i>;</p> <p>b) the criteria for raw manure land application specified in 5.5.2.3 of CAN/CGSB-32.310 shall be met;</p> <p>c) anaerobic digestate may be used as a compost feedstock if it is added to other substances which are then composted. See Table 4.2 <i>Composting feedstocks</i>.</p>
Dust suppressants	<p>Non-synthetic substances, or substances listed in Tables 4.2 and 4.3 (for example: <i>Lignin sulphonate, Molasses, Vegetable oils</i>) are permitted.</p> <p>Petroleum products are prohibited.</p>
Enzymes	<p>Shall be derived from non-synthetic substances by the action of micro-organisms. Shall not be fortified with prohibited substances.</p>
Extractants	<p>Permitted extractants include non-synthetic substances, such as cocoa butter, lanolin, animal fats, alcohols and water. Extraction with synthetic solvents is prohibited, except as specified in the annotations of substances listed in Table 4.2.</p>
Feather meal	

Table 4.2 — Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Fish meal, fish powder, fish wastes, hydrolysate, emulsions and solubles	<p>The following fish products are permitted: fish meal; fish powder; and hydrolysate, emulsions and solubles. Fish farm wastes shall be composted.</p> <p>Ethoxyquin or other synthetic preservatives, fertilizers and other chemically synthesized substances not listed in this standard shall not be added to fish products.</p> <p>Chemical treatment is prohibited, except that liquid fish products may be pH adjusted with the following, in preferential order:</p> <ul style="list-style-type: none"> a) vinegar; b) non-synthetic citric acid; c) synthetic citric acid; d) phosphoric acid; or e) sulphuric acid. <p>The amount of acid used for pH adjustment shall not exceed the minimum needed to stabilize the product.</p>
Formulants	<p>Non-synthetic substances shall be used, unless a substance annotation specifies that a synthetic formulant may be used. For example, see Table 4.2 <i>Aquatic plants and plant products; Fish meal, fish powder, fish wastes, hydrolysate, emulsions and solubles; Humates, humic acid and fulvic acid</i>.</p>
Guano	<p>Shall be decomposed, dried deposits from wild bats or birds.</p> <p>Domesticated fowl excrement is considered to be <i>manure</i>, not <i>guano</i>.</p>
Humates, humic acid and fulvic acid	<p>Permitted if extracted by:</p> <ul style="list-style-type: none"> a) non-synthetic substances; b) microbial fermentation; or c) potassium hydroxide—potassium hydroxide levels used in the extraction process shall not exceed the amount required for extraction. <p>Shall not exceed the limits (category C1) for acceptable levels (mg/kg) of arsenic, cadmium, chromium, copper, lead and mercury specified in <i>Guidelines for the Beneficial Use of Fertilising Residuals</i>.</p>
Humus from worms and insects (vermicompost)	<p>See Table 4.2 <i>Worm castings</i>.</p>
Inoculants	<p>See Table 4.2 <i>Microbial products</i>.</p>
Iron	<p>The following sources of iron are permitted, to correct documented iron deficiencies: ferric oxide, ferric sulphate, ferrous sulphate, iron citrate, iron sulphate or iron tartrate.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>

Table 4.2 — Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Kelp and kelp products	See Table 4.2 <i>Aquatic plants and aquatic plant products</i> .
Leaf mould	
Limestone	<p>Magnesium carbonate and calcium carbonate. Shall be from a non-synthetic source. Oyster shell flour, limestone, dolomite (not slaked), aragonite, eggshell meal, lime from sugar processing and mined calcium carbonate are acceptable sources.</p> <p>Calcium products that have been used in controlled atmosphere storage are prohibited.</p> <p>Magnesium carbonate shall be used with caution to prevent magnesium buildup in soil.</p>
Magnesium	<p>From non-synthetic substances, without the addition of chemically synthesized substances or chemical treatment. The following sources of magnesium are permitted:</p> <p>a) magnesium rock—magnesium carbonate, magnesium chloride;</p> <p>b) dolomitic limestone (not slaked);</p> <p>c) magnesium sulphate ($MgSO_4$): Epsom salts (may be synthetic), kieserite. $MgSO_4$ shall be used to correct a documented magnesium deficiency.</p>
Manganese	<p>Manganous oxide and manganese sulphate are permitted, to correct a documented manganese deficiency.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>
Manure, composted	See Table 4.2 <i>Compost</i> .
Manure, non-organic manure source	See 5.5 of CAN/CGSB-32.310.
Meat meal	Shall be processed by drying, heat sterilization and/or composting.
Microbial products	<p>The following microbial products are permitted:</p> <p>a) rhizobium bacteria;</p> <p>b) mycorrhizal fungi;</p> <p>c) azolla; and</p> <p>d) yeast and other micro-organisms.</p> <p>Ionizing radiation is permitted for use on peat moss carrier, before the addition of microbial inoculants. Radiation is otherwise prohibited.</p>

Table 4.2 – Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Micronutrients	<p>Includes micronutrients (trace elements) from non-synthetic or synthetic sources. May be chelated. See Table 4.2 <i>Chelates</i>.</p> <p>To be used when soil and plant deficiencies are documented by visual symptoms or by testing of soil and/or plant tissue, or when the need for a preventative application can be documented.</p> <p>Nitrate and ammonium forms of micronutrients are prohibited.</p> <p>See Table 4.2 <i>Boron; Copper; Iron; Manganese; Molybdenum; and Zinc</i>.</p>
Milk	
Mined minerals, unprocessed	<p>Mined minerals include basalt, pumice, sand, feldspar, mica, granite dust and unprocessed rock dust. Minerals extracted from seawater are permitted. A mined mineral shall not have undergone any change in its molecular structure through heating or combining with other substances and shall not be processed or fortified with synthetic chemicals unless listed in Table 4.2.</p> <p>Sodium nitrate and rock dust that have been mixed with petroleum products, such as those from stone engraving, are prohibited.</p>
Molasses	Shall be organic.
Molybdenum	<p>To correct documented molybdenum deficiencies.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>
Mulches	See Table 4.3 <i>Mulches</i> .
Mushroom compost	See Table 4.2 <i>Compost</i> .
Oilseed meals	Shall be organic if commercially available.
Peat moss	
pH buffers	<p>Shall be non-synthetic, such as citric acid or vinegar.</p> <p>Lye and sulphuric acid are prohibited.</p>
Phosphate rock	<p>Shall not be fortified or processed with synthetic chemicals.</p> <p>Cadmium shall not exceed 90 mg/kg P₂O₅.</p>

Table 4.2 – Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Plants and plant by-products	<p>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 may be used as composting feedstocks.</p> <p>For processing of plant by-products, see Table 4.2 <i>Extractants</i>.</p> <p>Sawdust, wood chips and shavings may be used for mulching if they are obtained or derived from wood that has not been treated with paint or prohibited substances.</p>
Pomaces	Feedstocks shall be from organically grown fruits or vegetables. Non-organic pomaces shall be composted. See Table 4.2 <i>Compost feedstocks</i> .
Potassium	<p>The following potassium sources are permitted:</p> <p>a) langbeinite, mined sulphate of potash magnesia and mined potassium salts (sylvinite and kainite);</p> <p>b) potassium rock powder—includes basalt, biotite, mica, feldspar, granite and greensand;</p> <p>c) potassium chloride (KCl)—muriate of potash and rock potash. KCl shall not cause salt buildup in soil through repeated application;</p> <p>d) potassium sulphate—shall be produced by combining brines from seabed deposits and mined minerals. Potassium sulphate made using reactants (such as sulphuric acid or ammonia) is prohibited. Fortification with synthetic chemicals is prohibited.</p>
Potting soil	Shall not contain synthetic wetting agents or synthetic fertilizers.
Seaweed and seaweed products	See Table 4.2 <i>Aquatic plants and aquatic plant products</i> .
Shell from aquatic animals	Includes chitin.
Soil	From organic sources. Shall comply with restrictions specified in 5.1.2 of CAN/CGSB-32.310.
Sphagnum moss	Shall not contain synthetic wetting agents.
Stillage and stillage extract	Ammonium stillage is prohibited.
Sulphur, elemental	Non-synthetic elemental sulphur may be used as a soil amendment where more buffered sources of sulphur are not appropriate, and as a foliar application. Chemically synthesized substances shall not be added. Chemical treatment is prohibited.

Table 4.2 – Soil amendments and crop nutrition

Substance name(s)	Origin and usage
Surfactants	Non-synthetic substances. See Table 4.2 <i>Formulants, Wetting agents</i> , and Table 4.3 <i>Soaps; Vegetable oils</i> .
Vermicasts	See Table 4.2 <i>Worm castings</i> .
Vermiculite	
Vitamins	Non-synthetic sources of all vitamins and synthetic sources of vitamins B ₁ , C (ascorbic acid) and E are permitted for use in organic crop production.
Wetting agents	Non-synthetic wetting agents, including saponins and microbial wetting agents.
Wood ash	See Table 4.2 <i>Ash</i> .
Worm castings	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. Feedstocks for earthworms shall meet the criteria in Table 4.2 <i>Compost feedstocks</i> . The operator shall be able to demonstrate that: 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 b) that best practices known to eliminate human pathogens during vermicomposting have been used. See Table 4.2 <i>Microbial products</i> for information on compost starters.
Yeast	See Table 4.2 <i>Microbial products</i> .
Zinc	Zinc oxide and zinc sulphate may be used to correct a documented zinc deficiency. See Table 4.2 <i>Micronutrients</i> .

Table 4.3 – Crop production aids and materials

Substance name(s)	Origin and usage
Acetic acid	Non-synthetic sources. As an adjuvant, a pH regulator and for weed control.
Adhesives for sticky traps and barriers	

Table 4.3 — Crop production aids and materials

Substance name(s)	Origin and usage
Amino acids	<p>Shall be from non-synthetic sources. Amino acids are considered non-synthetic if they are:</p> <ul style="list-style-type: none"> a) produced by plants, animals and micro-organisms; and b) extracted or isolated either by hydrolysis or by other non-chemical means (example: physical extraction). <p>May be used as plant growth regulators or as chelating agents.</p>
Ammonium carbonate	As an attractant in insect traps.
Aquatic plants and aquatic plant products	<p>Non-synthetic extracts are permitted. Extraction with synthetic solvents is prohibited except with, in order of preference:</p> <ul style="list-style-type: none"> a) potassium hydroxide; b) sodium hydroxide; <p>provided the amount of solvent used does not exceed the amount necessary for extraction. The manufacturer shall prove the need to use sodium hydroxide.</p> <p>Shall not contain synthetic preservatives, such as formaldehyde.</p>
Arthropod pathogens	See Table 4.3 <i>Biological organisms</i> .
Arthropod predators and parasitoids	See Table 4.3 <i>Biological organisms</i> .
Arthropods	See Table 4.3 <i>Biological organisms</i> .
Ascorbic acid (vitamin C)	<p>Non-synthetic sources may be used to promote growth.</p> <p>Synthetic and non-synthetic sources may be used as a pH regulator.</p>
Baits for rodent traps	Baits shall not contain synthetic substances.
Bentonite	See Table 4.2 <i>Mined minerals, unprocessed</i> .
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.
Biodynamic preparations for compost	

Table 4.3 — Crop production aids and materials

Substance name(s)	Origin and usage
Biological organisms	<p>Biological organisms (living, dead or as extracts), such as viruses, bacteria, protozoa, fungi, insects and nematodes. Some examples are <i>Bacillus thuringiensis</i>, spinosad and granulosis.</p> <p>Used to benefit plant production by reducing pest populations.</p>
Borate	Mined sources of sodium tetraborate and octaborate may be used as wood preservatives.
Boric acid	<p>May be used for structural pest control (example: for ants).</p> <p>Direct contact with organic food or crops is prohibited.</p>
Botanical pesticides	Botanical pesticides shall be used in conjunction with a biorational pest management program. They shall not be a farm plan's 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.
Calcium chloride	<p>Non-synthetic, food-grade sources.</p> <p>To address plant nutrient deficiencies and physiological disorders.</p>
Calcium lignin sulphonate	See Table 4.3 <i>Lignin sulphonates</i> .
Calcium polysulphide	See Table 4.3 <i>Lime sulphur</i> .
Calcium silicate	<p>Non-synthetic sources.</p> <p>To address plant nutrient deficiencies and physiological disorders.</p>
Carbon dioxide	For soil and greenhouse use and for controlled atmosphere storage.
Chelates	<p>Non-synthetic and listed synthetic chelates are permitted.</p> <p>See Table 4.3 <i>Lignin sulphonates</i>.</p>
Cholecalciferol (vitamin D ₃)	<p>May be used outdoors and inside greenhouses for rodent control when methods described in 5.6.1 of CAN/CGSB-32.310 have failed.</p> <p>Prohibited inside on-farm food processing and food storage facilities.</p>
Citric acid	Non-synthetic and synthetic sources may be used as a chelating agent and to adjust pH.

Table 4.3 — Crop production aids and materials

Substance name(s)	Origin and usage
Copper	<p>The following copper products are permitted:</p> <p>a) for use as a wood preservative or for disease control—copper hydroxide;</p> <p>b) for use as a fungicide on fruits and vegetables—copper sulphates, Bordeaux mix, copper oxychloride and copper oxide.</p> <p>Shall be used with caution to prevent excessive copper accumulation in the soil. Copper buildup in soil may prohibit future use.</p> <p>Visible residue of copper products on harvested crops is prohibited.</p>
Diatomaceous earth	<p>Non-heated forms are permitted.</p> <p>Synthetic pesticides and synergists shall not be added.</p>
Dormant oils	For use as a dormant spray on woody plants. Shall not be used as a dust suppressant.
Dust suppressants	<p>Non-synthetic substances, or substances listed in Tables 4.2 and 4.3, such as <i>Lignin sulphonate</i>, <i>Molasses</i> and <i>Vegetable oils</i> are permitted.</p> <p>Petroleum products are prohibited.</p>
Extractants	Permitted extractants include non-synthetic substances such as cocoa butter, lanolin, animal fats, alcohols and water. Extraction with synthetic solvents is prohibited, except as specified in the annotations of substances listed in Table 4.3.
Ferric phosphate (iron ortho-phosphate, iron phosphate)	<p>Permitted as a molluscicide.</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	Shall not be incorporated into the soil or left in the field to decompose; shall be removed at the end of the growing season.
Formulants	<p>Formulants may be used in conjunction with substances listed in Table 4.3 as follows:</p> <p>a) Formulants classified in PMRA List 4A or 4B or non-synthetic may be used with the following substances: adhesives for sticky traps and barriers, ammonium carbonate, baits, borate, boric acid, pesticides, dormant oils, hydrogen peroxide and soaps.</p> <p>b) Formulants classified in PMRA List 3 may be used with passive pheromone dispensers.</p> <p>c) Formulants used with all other substances listed in Table 4.3 shall be non-synthetic unless specified in the annotation as being permitted.</p>
Growth regulators for plants	Non-synthetic plant hormones, such as gibberellic acid, indoleacetic acid and cytokinins, are permitted.

Table 4.3 — Crop production aids and materials

Substance name(s)	Origin and usage
Homeopathic preparations	
Hormones	See Table 4.3 <i>Growth regulators for plants</i> .
Hydrated lime	For plant disease control.
Hydrogen peroxide	Permitted for use as a fungicide.
Kaolin clay	Kaolin clay and calcined kaolin clay. Addition of synthetic chemicals to kaolin clay during calcination is prohibited.
Lignin sulphonates	Lignosulphonic acid, calcium lignosulphate and sodium lignosulphate. Permitted as a chelating agent, as a formulant ingredient and as a dust suppressant. Ammonium lignosulphate is prohibited.
Lime sulphur (calcium polysulphide)	Permitted on plants as: a) a fungicide; b) an insecticide; and c) an acaricide (mite control).
Magnesium chloride	Non-synthetic sources.
Mulches	Organic plant residues may be used for mulching. If organic plant materials are not readily available, non-organic, non-genetically engineered sources of straw, leaves, grass clippings or hay may be used. Prohibited substances shall not have been used on these materials for at least 60 days before harvest. Sawdust, wood chips and shavings may be used for mulching if they are obtained or derived from wood that has not been treated with paint or prohibited substances. Newspaper and paper mulch: glossy paper and coloured ink are prohibited. 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. Biodegradable mulches: 100% of biodegradable mulch films shall be derived from bio-based sources. Formulants or ingredients shall be listed in Tables 4.2 or 4.3. Biodegradable polymers and Carbon Black from GE or petroleum sources are not permitted. As a temporary exemption, biodegradable mulch film used on organic farms in 2014 but which do not meet the petroleum source requirement may be used without removal until January 1, 2017.
Nitrogen	For controlled atmosphere storage.

Table 4.3 — Crop production aids and materials

Substance name(s)	Origin and usage
Oxygen	For controlled atmosphere storage.
Peracetic (peroxyacetic) acid	Permitted for: a) controlling fire blight bacteria; and b) disinfecting seed and asexually propagated planting material. See Table 4.3 <i>Seed treatments; Treated seeds</i> .
pH buffers	Shall be non-synthetic, such as citric acid or vinegar. Lye and sulphuric acid are prohibited.
Pheromones and other semiochemicals	Synthetic and non-synthetic pheromones and semiochemicals are permitted. For pest control. Use in pheromone traps or passive dispensers.
Plant extracts, oils and preparations	Permitted extractants include: cocoa butter, lanolin, animal fats, alcohols and water. Extraction with synthetic solvents is prohibited except with, in order of preference: a) potassium hydroxide; b) or sodium hydroxide; provided the amount of solvent used does not exceed the amount necessary for extraction. The manufacturer shall prove the need to use sodium hydroxide. For pest control (disease, weed and insect). Clove oil is permitted for sprout inhibition in potatoes.
Plant protectants	Non-synthetic substances including, but not limited to: calcium carbonate, diatomaceous earth, kaolin clay, pine oil, pine resin and yucca. White wash is permitted for use on trees to protect against sunburn and southwest disease. Shall be used to protect plants from harsh environmental conditions, such as frost and sunburn, infection, the buildup of dirt on leaf surfaces, or injury by a pest.
Plastic for row covers and solarization	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.
Potassium bicarbonate	Permitted for pest and disease control in greenhouses and other crops.
Pyrethrum	Shall be combined with acceptable formulants listed in Table 4.3. See Table 4.3 <i>Botanical pesticides</i> for restrictions.
Quick lime (calcium oxide)	Shall not be used as a fertilizer or as a soil amendment.

Table 4.3 — Crop production aids and materials

Substance name(s)	Origin and usage
Repellents	Shall be derived from a non-synthetic source, such as sterilized blood meal, rotten eggs, hair or predator scents. Shall not contain synthetic additives.
Salt	Non-synthetic sources of sodium chloride and calcium chloride. For disease control and prevention in mushroom production.
Seaweed and seaweed products	See Table 4.3 <i>Aquatic plants and aquatic plant products</i> .
Seed treatments	Microbial products, kelp, yucca, gypsum, clays and botanicals. See Table 4.3 <i>Peracetic Acid; Treated Seeds</i> .
Shell from aquatic animals	Includes chitin.
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. In greenhouses and for other crops.
Sodium silicate	For tree fruit and fibre processing.
Sterile insects	See Table 4.3 <i>Biological organisms</i> .
Sugar	Organic sugar may be used as an ingredient in a crop production aid.
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	For foliar use.
Summer oils	On foliage, as suffocating or stylet oils.
Surfactants	Non-synthetic substances. See Table 4.3 <i>Soaps; Vegetable oils; Wetting agents</i> .
Transplant and potting media	Shall be composed entirely of permitted substances.

Table 4.3 — Crop production aids and materials

Substance name(s)	Origin and usage
Treated seed	<p>Seed treated with biological management agents is permitted.</p> <p>Seed pelletized with clay, gypsum, biological organisms (such as <i>Rhizobium</i>) or other non-synthetic coatings is permitted. Plastic polymer pelletization of seed is prohibited.</p> <p>See Table 4.3 <i>Peracetic acid</i>; <i>Seed treatments</i>.</p>
Tree seals	<p>Plant or milk-based paints are permitted. Shall not be combined with fungicides or other synthetic chemicals.</p> <p>See Table 4.3 <i>Plant Protectants</i>.</p> <p>For planting stock: synthetic 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.</p>
Vegetable oils	<p>Plant oils shall not contain synthetic pesticides.</p> <p>For use as spreader-stickers, surfactants and carriers.</p>
Vinegar (acetic acid)	<p>Non-synthetic sources.</p> <p>See Table 4.3 <i>Acetic acid</i>.</p>
Virus sprays	
Water	
Water, recycled	<p>Recycled water shall only contain substances listed in Tables 4.2, 4.3, 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	<p>Non-synthetic wetting agents, including saponins and microbial wetting agents, are permitted.</p> <p>See Table 4.3 <i>Soaps</i>.</p>

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 dips.

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

- a) if the substance includes the substrate or growth media, the substrate or growth media ingredients shall be listed in Tables 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 substrate 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>Non-synthetic sources. Amino acids are considered non-synthetic if they are produced by plants, animals and micro-organisms and are extracted, or isolated, by hydrolysis or by physical or other non-chemical means.</p> <p>Exceptions:</p> <p>a) L-lysine extracted using biofermentation and not produced from genetically engineered organisms shall be permitted if the need to supplement hog or poultry feed with lysine can be demonstrated; and</p> <p>b) DL-methionine, DL-methionine—hydroxy analog and DL-methionine—hydroxy analog calcium 15 (CAS#s 59-51-8, 853-91-5, 4857-44-7, and 922-50-9) may be used in organic poultry production.</p> <p>NOTE These exceptions shall be reviewed at the next full revision of the standard.</p>
Antioxidants	<p>Non-synthetic sources.</p> <p>Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i>.</p>
Diatomaceous earth	<p>Approved as an anti-caking agent in feed to a maximum of 2% of the total diet.</p>
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 <i>Hay or silage preservation products</i>.</p>

Table 5.2 — Feed, feed additives and feed supplements

Substance name(s)	Origin and usage
Enzymes	<p>Non-synthetic enzymes are permitted, including bromelain, catalase—bovine liver, ficin, animal lipase, malt, pancreatin, pepsin, trypsin, proteases and carbohydrases.</p> <p>Animal-derived enzymes shall be guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of ruminants aged 30 months or older; and the distal ileum (portion of the small intestine) of ruminants of all ages.</p>
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>
Micro-organisms and yeasts	<p>If organic sources of yeast are not commercially available, non-synthetic yeast sources, including yeast autolysate, shall be used.</p>
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>Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium chloride or magnesium oxide.</p> <p>Synthetic nutrient minerals may be used if non-synthetic sources are not commercially available.</p>
Molasses	<p>Shall be organic.</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	<p>Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.</p>
Protein feeds	<p>Shall be from organic sources.</p>
Seaweed meal	
Vitamins	<p>Permitted for enrichment or fortification.</p>

Table 5.3 – Health care products and production aids

Substance name(s)	Origin and usage
Acetylsalicylic acid	Aspirin.
Acids for water treatments	Non-synthetic acids may be used on farm to neutralize the pH of livestock drinking water.
Activated charcoal	Shall be of plant origin.
Alcohol, ethyl (ethanol)	Permitted as a disinfectant and sanitizer.
Alcohol, isopropyl	Permitted as a disinfectant.
Antibiotics	See 6.6 of CAN/CGSB-32.310, for conditions pertaining to antibiotic use in livestock. See Table 5.3 <i>Antibiotics, oxytetracycline</i> .
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	Such as ketoprofen. Preference shall be given to non-synthetic alternatives. To reduce inflammation.
Biologics, including vaccines	
Botanical compounds	Botanical preparations, such as atropine, butorphanol and other medicines from herbaceous plants shall be used according to label specifications.
Calcium borogluconate	For milk fever. No withdrawal period required.
Chlorohexidine	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.
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.
Electrolytes	Including, but not limited to: CMPK (Calcium, Magnesium, Phosphorus, Potassium), calcium propionate and calcium sulphate. Shall not contain antibiotics. Orally or by injection.

Table 5.3 – Health care products and production aids

Substance name(s)	Origin and usage
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.
Formulants (inerts, excipients)	Shall be used in conjunction with substances listed in Table 5.3.
Glucose	
Glycerol (glycerine, glycerin)	Shall be from organic sources if commercially available. Shall be from vegetable or animal fats and/or oils. Shall be produced using fermentation or by hydrolysis.
Homeopathy and biotherapies	
Honey	Shall be organic.
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.
Lime, hydrated	Shall not be used to deodorize animal wastes.
Local anesthetics	Such as lidocaine. Preference shall be given to non-synthetic alternatives. Use shall be followed by withdrawal periods of 90 days for livestock intended for slaughter, and seven days for dairy animals.
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 choride 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>
Micro-organisms and yeasts	If organic sources of yeast are not commercially available, non-synthetic yeast sources, 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>Synthetic and non-synthetic ingredients 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.
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 <i>Minerals, trace minerals, elements</i>.</p>
Sodium hydroxide	For use in dehorning paste.
Sulphur	For control of external parasites.
Vaccines	See Table 5.3 <i>Biologics, including vaccines</i> .
Vitamins	<p>Vitamin formulants that comply with Canadian regulations are accepted.</p> <p>Orally, topically or by injection.</p>

6 Permitted substances lists for preparation

6.1 Classification

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 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, micro-organisms and lactic acid):

- a) if the substance includes the substrates or growth media, the substrate 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 6.3-6.5 apply to substances used in products composed of 95% or more organic content.

6.2.3 Non-synthetic commercial availability requirements specified in the substance listing annotations of Tables 6.3-6.5 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 <i>Extraction solvents, carriers and precipitation aids</i> .
Alginates	The following alginates are permitted: a) alginic acid; b) potassium alginate; and c) sodium alginate.

Table 6.3 – Ingredients classified as food additives

Substance name(s)	Origin and usage
Ammonium bicarbonate	As a leavening agent.
Ammonium carbonate	As a leavening agent.
Anhydrous sulphur dioxide, sulphurous acid (sulphur dioxide, SO ₂)	<p>Sulphites from SO₂ bottled gas as liquid SO₂ or liberated from ignition of asbestos-free sulphur wicks are 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% or more residual sugar, 250 ppm and 45 ppm for total and free sulphites, respectively.</p>
Argon	
Ascorbic acid (vitamin C)	
Calcium carbonate	Prohibited for use as a colouring agent.
Calcium chloride	<p>Permitted for:</p> <p>a) milk products;</p> <p>b) fat products;</p> <p>c) soybean products; and</p> <p>d) fruits and vegetables.</p>
Calcium citrate	
Calcium phosphates (mono-, di-, and tri-basic forms)	
Calcium sulphate (gypsum)	Mined sources; calcium sulphate produced using sulphuric acid is prohibited.
Carbon dioxide	Carbonation of wine or mead is prohibited.
Carrageenan (Irish moss)	Derived using substances in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .

Table 6.3 – Ingredients classified as food additives

Substance name(s)	Origin and usage
Colouring agents	<p>Obtained from non-synthetic sources.</p> <p>Derived using substances in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i>.</p>
Enzymes	<p>The following sources of enzymes are permitted:</p> <p>a) any preparations of enzymes normally used in food processing derived from edible, non-toxic plants, non-pathogenic fungi or non-pathogenic bacteria.</p> <p>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 guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of ruminants aged 30 months or older; and the distal ileum (portion of the small intestine) of ruminants of all ages;</p> <p>c) egg white lysozyme.</p>
Extraction solvents, carriers and precipitation aids	<p>The following may be used to derive substances listed in Tables 5.2, 6.3, 6.4 and 6.5:</p> <p>a) water;</p> <p>b) culinary steam, as described in 8.1.2 b) of CAN/CGSB-32.310;</p> <p>c) fats, oils and alcohols other than isopropyl alcohol;</p> <p>d) supercritical CO₂; and</p> <p>e) substances listed in Tables 6.3-6.5 of this standard.</p>
Gelatine	<p>Shall be organic if commercially available.</p> <p>Gelatine may be sourced from:</p> <p>a) plants; or</p> <p>b) animals. If derived from cattle, gelatine shall be guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages.</p>
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>

Table 6.3 – Ingredients classified as food additives

Substance name(s)	Origin and usage
Glycerol (glycerine, glycerin)	Shall be from organic sources if commercially available. Shall be from vegetable or animal fats and/or oils. Shall be produced using fermentation or by hydrolysis.
Gums	The following gums are permitted: arabic gum, carob bean gum (locust bean gum), gellan gum, guar gum, karaya gum, tragacanth gum, and xanthan gum. Shall be derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> . By exception, isopropyl alcohol may also be used to derive gums.
Kelp and kelp products	For use as a thickener and dietary supplement.
Lecithin	Shall be organic if commercially available. Bleached form is permitted if processed using food-grade hydrogen peroxide.
Magnesium carbonate	For use in meat products whose contents are ≥70% and <95% organic ingredients, as an anti-caking agent in non-standardized dry mixes (example: seasonings).
Magnesium chloride	Derived from seawater.
Magnesium stearate	If non-synthetic magnesium stearate is not commercially available, synthetic sources of magnesium stearate are permitted. 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 ($KC_4H_5O_6$)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
Potassium carbonates (mono- and bi-)	
Potassium chloride	Non-synthetic sources.
Potassium citrate	

Table 6.3 – Ingredients classified as food additives

Substance name(s)	Origin and usage
Potassium metabisulphite	See <i>Anhydrous sulphur dioxide, sulphurous acid (sulphur dioxide, SO₂)</i> .
Potassium phosphate (mono-, di-, and tribasic forms)	For use in products whose contents are ≥70% and <95% organic ingredients.
Potassium tartrate (K ₂ C ₄ H ₄ O ₆ , INS 336)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
Silicon dioxide	
Sodium acid pyrophosphate	For use as a leavening agent.
Sodium bicarbonate (baking soda)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
Sodium carbonate (soda ash)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
Sodium chloride	
Sodium citrate	Non-synthetic sources.
Sodium hydroxide (lye or caustic soda)	
Sodium phosphates	For use in dairy products.
Tartaric acid (C ₄ H ₆ O ₆ , INS 334)	If the non-synthetic form is not commercially available, the synthetic form is permitted. For beverages.
Tocopherols and mixed natural concentrates	Derived from vegetable oil when rosemary extracts are not a suitable alternative.
Vegetable oils	Shall be organic if commercially available. Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> . Maple syrup production—vegetable oils shall be organic and without allergenic potential.
Waxes	Applied to fresh produce—only organic wax or carnauba wax is permitted. Applications other than fresh produce—If organic waxes, such as beeswax, are not commercially available, non-synthetic waxes, such as carnauba wax, shall be used. See Table 6.5 <i>Waxes</i> .

Table 6.3 – Ingredients classified as food additives

Substance name(s)	Origin and usage
Yeast	<p>If organic sources of yeast are not commercially available, these non-synthetic 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) smoked. <p>Growth on petrochemical substrate and sulphite waste liquor is prohibited.</p> <p>Non-synthetic smoke flavouring process shall be documented.</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
Collagen casings	<p>Collagen shall be derived from animal sources. If derived from cattle, collagen shall be guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages.</p> <p>Other ingredients (such as, but not limited to: cellulose, calcium coatings, glycerin, etc.) added to collagen casings during their manufacture which 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 <i>Micro-organisms</i> .
Flavours	Derived from non-synthetic sources (such as plants, meat, seafood, micro-organisms, etc.) using approved methods (see clause 10 of CAN/CGSB-32.310), and substances (see Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i>).

Table 6.4 — Ingredients not classified as food additives

Substance name(s)	Origin and usage
Micro-organisms	<p>Includes starter and dairy cultures and other preparations of micro-organisms normally used in product processing.</p> <p>Ingredients used for micro-organism preparations: non-synthetic substrates (such as milk, lactose, soy, etc.) are permitted. Other ingredients used in micro-organism preparations (such as carriers, anti-caking agents and fillers, etc.) shall be listed in Tables 6.3 or 6.4.</p> <p>Operators shall obtain documentation from the manufacturer identifying any synthetic substances (such as preservatives, cryo-protectants, etc.) included in micro-organism preparations.</p>
Nitrogen	Shall be food-grade quality.
Oxygen	
Potassium iodide	<p>From non-synthetic sources.</p> <p>Shall be used when legally required. Synthetic potassium iodide is permitted for use in products whose contents are $\geq 70\%$ and $< 95\%$ organic ingredients.</p>
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 <i>Sodium chloride; Potassium chloride</i>.</p> <p>See definition of Salt in clause 3 of CAN/CGSB-32.310.</p>
Smoke flavour	See Table 6.3 <i>Yeast</i> .
Starch	<p>From rice and waxy maize—Shall be derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i>, 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 and/or listed in Tables 6.3-6.5.</p>
Vitamins and mineral nutrients	<p>Shall be used if legally required.</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>

Table 6.4 – Ingredients not classified as food additives

Substance name(s)	Origin and usage
Yeast	<p>If organic sources of yeast are not commercially available, these non-synthetic 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) smoked. <p>Growth on petrochemical substrate and sulphite waste liquor is prohibited.</p> <p>Non-synthetic smoke flavouring process shall be documented.</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)	<p>If the non-synthetic form is not commercially available, the synthetic form is permitted.</p> <p>For use as an anti-browning agent prior to the extraction or concentration of fruit or vegetable juice.</p>
Bentonite	
Calcium carbonate	
Calcium hydroxide (lime)	

Table 6.5 – Processing aids

Substance name(s)	Origin and usage
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	
Carrageenan (Irish moss)	Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .
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).
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.
Diatomaceous earth	As a food filtering aid or as a clarifying agent.
Enzymes	The following sources of enzymes are permitted: 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 guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of ruminants aged 30 months or older; and the distal ileum (portion of the small intestine) of ruminants of all ages; c) egg white lysozyme.
Ethylene	For post-harvest ripening of tropical fruit and degreening of citrus.

Table 6.5 – Processing aids

Substance name(s)	Origin and usage
Gelatine	<p>Shall be from organic sources if commercially available.</p> <p>Permitted sources are:</p> <p>a) plants; and</p> <p>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 materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages.</p>
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.
Silica	As a filtering agent (food-grade powder) in maple syrup production.
Silicon dioxide	
Sodium bicarbonate (baking soda)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
Sodium hydroxide (lye or caustic soda)	Prohibited for use in lye peeling of fruits and vegetables.
Talc	As a filtering agent.
Tannic acid	<p>Shall be from an organic source if commercially available. Shall be derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i>.</p> <p>Permitted as a filtration aid for wines.</p>

Table 6.5 – Processing aids

Substance name(s)	Origin and usage
Tartaric acid (C ₄ H ₆ O ₆ . INS 334)	Shall be from non-synthetic sources. For beverages.
Vegetable oils	From organic sources if commercially available. Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> . Maple syrup production—vegetable oils shall be organic and without allergenic potential.
Waxes	If organic waxes, such as beeswax, are not commercially available, non-synthetic sources of wax, such as carnauba wax, shall be used. By exception, paraffin wax may be used to coat cheese, if other non-synthetic waxes are not commercially available. Use of microcrystalline wax, either alone or in formulations with paraffin wax, is prohibited. Wax cheese coatings, except for organic waxes, must be removable and considered inedible, and shall not include synthetic preservatives, synthetic colors, or any bactericide or fungicide.

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 micro-organisms 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 Substances listed on Safety Data Sheets (SDS) shall be listed in Tables 7.3 or 7.4. To be eligible for use without a removal event, the ingredients of a product used to clean, disinfect or sanitize shall be listed in Table 7.3 if they appear on a SDS and/or a product label. Substances listed in Tables 7.3 and 7.4 shall comply with prohibitions in 1.4 of CAN/CGSB-32.310.

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	<p>Non-synthetic sources are permitted on organic products.</p> <p>Non-synthetic and synthetic sources may be used on organic product contact surfaces.</p>
Alcohol, ethyl (ethanol)	On organic product contact surfaces.
Alcohol, isopropyl	Non-synthetic and synthetic sources are permitted on organic product contact surfaces.
Ascorbic acid (vitamin C)	Non-synthetic sources are permitted on organic product contact surfaces.
Chlorine compounds	<p>The following chlorine compounds are permitted:</p> <ul style="list-style-type: none"> a) calcium hypochlorite; b) chlorine dioxide; c) 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, and storage and/or transport units—application to crops or fields is permitted.
Citric acid	Non-synthetic and synthetic sources are permitted.
Glycerol (glycerine, glycerin)	<p>Shall be:</p> <ul style="list-style-type: none"> a) sourced from vegetable or animal fats and/or oils; b) produced using fermentation or by hydrolysis.
Hydrogen peroxide	
Ozone	
Peracetic (peroxyacetic) acid	<p>On food and plants: peracetic acid may be used in wash or rinse water.</p> <p>Peracetic acid may also be used on food contact surfaces.</p>
Potassium bicarbonate	On organic product contact surfaces.
Sodium bicarbonate (baking soda)	<p>Non-synthetic sources.</p> <p>See Table 7.4 <i>Sodium bicarbonate (baking soda), synthetic</i>.</p>

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

Substance name(s)	Origin and usage
Sodium carbonate (soda ash)	Non-synthetic sources. See Table 7.4 <i>Sodium carbonate (soda ash), synthetic</i> .
Sodium citrate	Non-synthetic sources.
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; and c) sodium hypochlorite.
Detergents	Detergents shall be biodegradable (see <i>Biodegradable</i> definition in clause 3 of CAN/CGSB-32.310).
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.
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.
Soap-based algicide (demossers)	
Soaps	Soaps shall consist of fatty acids derived from animal or vegetable oils.

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 bicarbonate (baking soda), synthetic	
Sodium borate	
Sodium carbonate (soda ash), synthetic	
Sodium citrate	
Sodium percarbonate	
Sodium silicate	In detergents. See Table 7.4 <i>Detergents</i> .
Surfactants	See Table 7.4 <i>Detergents; Soaps</i> .
Wetting agents	Non-synthetic wetting agents, including saponins and microbial wetting agents. See Table 7.4 <i>Detergents; Soaps</i> .

8 Facility management substances

8.1 Classification

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

- a) Substances listed in Table 8.2 are pesticides (See *pesticides* definition in clause 3 of CAN/CGSB-32.310) that shall be used in and around facilities, as annotated and as specified in 8.3.2 of CAN/CGSB-32.310. These substances may be used in traps, lures and as repellents, unless indicated otherwise within substance annotations.
- b) Substances listed in Table 8.3 shall 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.
Boric acid	May be used for structural pest control (example: for ants). Direct contact with organic products is prohibited.
Carbon dioxide	
Cholecalciferol (vitamin D ₃)	Prohibited inside organic food processing and food storage facilities.
Diatomaceous earth	
Neem oil	
Pyrethrins	Without piperonyl butoxide as a carrier. Direct contact with organic products is prohibited.
Soaps, ammonium	As a large animal repellent. Direct contact with organic products is prohibited.

Table 8.3 — Post-harvest substances

Substance name(s)	Origin and usage
Carbon dioxide	For controlled atmosphere storage.
Clove oil	As a sprout inhibitor.
Ethylene	For post-harvest ripening of tropical fruit and degreening of citrus.
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)	Origin and usage	Referenced in table
<i>Acer pennsylvanicum</i>	As an anti-foaming agent in maple syrup production.	6.5
Acetic acid	Non-synthetic sources. As an adjuvant, a pH regulator and for weed control.	4.3
Acetic acid	Non-synthetic sources are permitted on organic products. Non-synthetic and synthetic sources may be used on organic product contact surfaces.	7.3
Acetylsalicylic acid	Aspirin.	5.3
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.	6.3
Acids for water treatments	Non-synthetic acids may be used on farm to neutralize the pH of livestock drinking water.	5.3
Activated charcoal	Shall be of plant origin.	5.3
Activated charcoal	Shall be of plant origin. Prohibited for use in the production of maple syrup.	6.3
Activated charcoal	Shall be of plant origin. Prohibited for use in the production of maple syrup.	6.5
Adhesives for sticky traps and barriers		4.3
Agar	For use in initial mushroom spawn production.	4.2
Agar	See Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .	6.3
Alcohol, ethyl (ethanol)	Shall be organic if commercially available.	6.5

Substance name(s)	Origin and usage	Referenced in table
Alcohol, ethyl (ethanol)	On organic product contact surfaces.	7.3
Alcohol, ethyl (ethanol)	Permitted as a disinfectant and sanitizer.	5.3
Alcohol, isopropyl	Permitted as a disinfectant.	5.3
Alcohol, isopropyl	Non-synthetic and synthetic sources may be used on organic product contact surfaces.	7.3
Alfalfa meal and pellets	Shall be organic if commercially available.	4.2
Algae	See Table 4.2 <i>Aquatic plants and aquatic plant products</i> .	4.2
Alginates	<p>The following alginates are permitted:</p> <ul style="list-style-type: none"> a) alginic acid; b) potassium alginate; and c) sodium alginate. 	6.3
Amino acids	<p>Shall be from non-synthetic sources. Amino acids are considered non-synthetic if they are:</p> <ul style="list-style-type: none"> a) produced by plants, animals and micro-organisms; and b) extracted or isolated either by hydrolysis or by other non-chemical means. (example: physical extraction). <p>May be used as plant growth regulators or chelating agents.</p>	4.2
Amino acids	<p>Shall be from non-synthetic sources. Amino acids are considered non-synthetic if they are:</p> <ul style="list-style-type: none"> a) produced by plants, animals and micro-organisms; and b) extracted or isolated either by hydrolysis or by other non-chemical means. (example: physical extraction). <p>May be used as plant growth regulators or chelating agents.</p>	4.3

Substance name(s)	Origin and usage	Referenced in table
Amino acids	<p>Non-synthetic sources. Amino acids are considered non-synthetic if they are produced by plants, animals and micro-organisms and are extracted, or isolated, by hydrolysis or by physical or other non-chemical means.</p> <p>Exceptions:</p> <p>a) L-lysine extracted using biofermentation and not produced from genetically engineered organisms shall be permitted if the need to supplement hog or poultry feed with lysine can be demonstrated; and</p> <p>b) DL-methionine, DL-methionine—hydroxy analog and DL-methionine—hydroxy analog calcium 15 (CAS#'s 59-51-8, 853-91-5, 4857-44-7, and 922-50-9) may be used in organic poultry production.</p> <p>NOTE These exceptions shall be reviewed at the next full revision of the standard</p>	5.2
Ammonium bicarbonate	For use as a leavening agent.	6.3
Ammonium carbonate	As an attractant in insect traps.	4.3
Ammonium carbonate	For use as a leavening agent.	6.3
Ammonium carbonate	As an attractant in insect traps.	8.2
Anhydrous sulphur dioxide, sulphurous acid (sulphur dioxide, SO ₂)	<p>Sulphites from SO₂ bottled gas as liquid SO₂ or liberated from ignition of asbestos-free sulphur wicks are 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 sulphites 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% or more residual sugar, 250 ppm and 45 ppm for total and free sulphites, respectively.</p>	6.3
Animal manure	See clauses 5 and 6 of CAN/CGSB-32.310.	4.2
Animal manure, processed	<p>Manures treated by mechanical and/or physical (including heat) methods are permitted. Other substances listed in Table 4.2 may be added to manures. Manure sources shall conform to requirements specified in 5.5.1 of CAN/CGSB-32.310. 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>	4.2

Substance name(s)	Origin and usage	Referenced in table
Antibiotics	See 6.6 of CAN/CGSB-32.310, for conditions pertaining to antibiotic use in livestock. See Table 5.3 <i>Antibiotics, oxytetracycline</i> .	5.3
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.	5.3
Anti-inflammatories	Such as ketoprofen. Preference shall be given to non-synthetic alternatives. To reduce inflammation.	5.3
Antioxidants	Non-synthetic sources. Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .	5.2
Aquatic plants and aquatic plant products	Non-synthetic extracts are permitted. Extraction with synthetic solvents is prohibited, except with, in order of preference: a) potassium hydroxide; b) sodium hydroxide; provided the amount of solvent used does not exceed the amount necessary for extraction. The manufacturer shall prove the need to use sodium hydroxide. Shall not contain synthetic preservatives, such as formaldehyde.	4.2
Aquatic plants and aquatic plant products	Non-synthetic extracts are permitted. Extraction with synthetic solvents is prohibited, except with, in order of preference: a) potassium hydroxide; b) sodium hydroxide; provided the amount of solvent used does not exceed the amount necessary for extraction. The manufacturer shall prove the need to use sodium hydroxide. Shall not contain synthetic preservatives, such as formaldehyde.	4.3
Argon		6.3
Argon		6.5
Arthropod pathogens	See Table 4.3 <i>Biological organisms</i> .	4.3
Arthropod predators and parasitoids	See Table 4.3 <i>Biological organisms</i> .	4.3
Arthropods	See Table 4.3 <i>Biological organisms</i> .	4.3

Substance name(s)	Origin and usage	Referenced in table
Ascorbic acid (vitamin C)	Non-synthetic sources may be used to promote natural growth. Synthetic and non-synthetic sources may be used as a pH regulator.	4.3
Ascorbic acid (vitamin C)		6.3
Ascorbic acid (vitamin C)	If the non-synthetic form is not commercially available, the synthetic form is permitted. For use as an anti-browning agent prior to the extraction or concentration of fruit or vegetable juice.	6.5
Ascorbic acid (vitamin C)	Non-synthetic sources are permitted on organic product contact surfaces.	7.3
Ash	Ash shall be from plant and animal sources. Ash containing materials that cannot be verified and that may contain prohibited substances shall not exceed the limits (category C1) for acceptable levels (mg/kg) of arsenic, cadmium, chromium, copper, lead and mercury, as specified in <i>Guidelines for the Beneficial Use of Fertilising Residuals</i> . Ash from burning minerals, manure, coloured paper, plastics or other synthetic substances is prohibited. Shall not cause heavy metal buildup in soil through repeated application.	4.2
Baits for rodent traps	Baits shall not contain synthetic substances.	4.3
Bentonite	See Table 4.3 <i>Mined minerals, unprocessed</i> .	4.3
Bentonite		6.5
Biodegradable plant containers	Biodegradable planting containers (for example pots or cellpaks) may be left to decompose in the field if all ingredients are listed in Table 4.2.	4.3
Biochar	Produced through pyrolysis of forestry by-products which have not been treated with or combined with prohibited substances. Recycled biochar from contaminated remediation sites is prohibited.	4.2
Biodynamic preparations for compost		4.3
Biodynamic preparations for soil and plants		4.2
Biological organisms	Includes worms and their products. See Table 4.2 <i>Worm castings</i> .	4.2

Substance name(s)	Origin and usage	Referenced in table
Biological organisms	Biological organisms (living, dead or as extracts), such as viruses, bacteria, protozoa, fungi, insects and nematodes. Some examples are <i>Bacillus thuringiensis</i> , spinosad and granulosis. Used to benefit plant production by reducing pest populations.	4.3
Biologics, including vaccines		5.3
Blood meal	Shall be sterilized.	4.2
Bone meal	Shall be guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages.	4.2
Borate	Mined sources of sodium tetraborate and octaborate may be used as wood preservatives.	4.3
Boric acid	May be used for structural pest control (example: for ants). Direct contact with organic food or crops is prohibited.	4.3
Boric acid	May be used for structural pest control (example: for ants). Direct contact with organic products is prohibited.	8.2
Boron	The following soluble boron products are permitted: a) borate; b) sodium tetraborate (borax and anhydrous); and c) sodium octaborate. Shall be used to correct a documented deficiency relative to the type of crop. See Table 4.2 <i>Micronutrients</i> .	4.2
Botanical compounds	Botanical preparations, such as atropine, butorphanol and other medicines from herbaceous plants, shall be used according to label specifications.	5.3
Botanical pesticides	Botanical pesticides shall be used in conjunction with a biorational pest management program. They shall not be a farm plan's 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.	4.3

Substance name(s)	Origin and usage	Referenced in table
Calcium	<p>The following calcium products are permitted:</p> <p>mined calcium carbonate, limestone, dolomite (not slaked), and other non-synthetic sources, including shells from aquatic animals (such as oyster shell flour), aragonite, eggshell meal and lime from sugar processing. Non-synthetic calcium chloride may be used to address nutrient deficiencies and physiological disorders.</p> <p>Calcium products used in controlled atmosphere storage are prohibited.</p> <p>Shall not cause salt buildup in soil through repeated application.</p> <p>See Table 4.2 <i>Calcium sulphate (gypsum)</i>.</p>	4.2
Calcium borogluconate	For milk fever. No withdrawal period required.	5.3
Calcium carbonate	Prohibited for use as a colouring agent.	6.3
Calcium carbonate		6.5
Calcium chloride	<p>Non-synthetic, food-grade sources.</p> <p>To address plant nutrient deficiencies and physiological disorders.</p>	4.3
Calcium chloride	<p>Permitted for:</p> <p>a) milk products;</p> <p>b) fat products;</p> <p>c) soybean products; and</p> <p>d) fruits and vegetables.</p>	6.3
Calcium citrate		6.3
Calcium hydroxide (lime)		6.5
Calcium lignin sulphonate	See Table 4.3 <i>Lignin sulphonates</i> .	4.3
Calcium phosphates (mono-, di-, and tri-basic forms)		6.3
Calcium polysulphide	See Table 4.3 <i>Lime sulphur</i> .	4.3
Calcium silicate	<p>Non-synthetic sources.</p> <p>To address plant nutrient deficiencies and physiological disorders.</p>	4.3

Substance name(s)	Origin and usage	Referenced in table
Calcium sulphate (gypsum)	Mined sources; calcium sulphate produced using sulphuric acid is prohibited. To correct calcium and sulphur deficiencies and soil salinity problems, as documented by visual symptoms or by testing of soil or plant tissue.	4.2
Calcium sulphate (gypsum)	Mined sources; calcium sulphate produced using sulphuric acid is prohibited.	6.3
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.	6.5
Cannery wastes	Shall be from organic sources. Non-organic cannery wastes shall be composted. See Table 4.2 <i>Compost feedstocks</i> .	4.2
Carbon dioxide	For soil and greenhouse use and for controlled atmosphere storage.	4.3
Carbon dioxide	Carbonation of wine or mead is prohibited.	6.3
Carbon dioxide		6.5
Carbon dioxide		8.2
Carbon dioxide	For controlled atmosphere storage.	8.3
Cardboard	Cardboard not be waxed or impregnated with fungicide or prohibited substances. May be used as mulch or compost feedstock. See Table 4.2 <i>Compost feedstocks</i> .	4.2
Carrageenan (Irish moss)	Derived using substances in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .	6.3
Carrageenan (Irish moss)	Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .	6.5
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).	6.5

Substance name(s)	Origin and usage	Referenced in table
Cellulose	As a filtering aid (non-chlorine bleached) and for use in inedible regenerative sausage casings.	6.5
Chelates	Non-synthetic and listed synthetic chelates are permitted. See Table 4.3 <i>Lignin sulphonates</i> .	4.2
Chelates	Non-synthetic and listed synthetic chelates are permitted. See Table 4.3 <i>Lignin sulphonates</i> .	4.3
Chlorine compounds	The following chlorine compounds are permitted: a) calcium hypochlorite; b) chlorine dioxide; c) sodium hypochlorite. Shall not exceed maximum levels for safe drinking water. Chlorine compounds may be used: a) for wash water in direct contact with crops or food; b) in flush water from cleaning irrigation systems, equipment, and storage and/or transport units—application to crops or fields is permitted.	7.3
Chlorine compounds	The following chlorine compounds are permitted up to maximum label rates: a) calcium hypochlorite; b) chlorine dioxide; and c) sodium hypochlorite.	7.4
Chlorohexidine	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.	5.3
Cholecalciferol (vitamin D ₃)	May be 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.	4.3
Cholecalciferol (vitamin D ₃)	Prohibited inside organic food processing and food storage facilities.	8.2
Citric acid	Non-synthetic and synthetic sources may be used as a chelating agent and to adjust pH.	4.3
Citric acid	Non-synthetic and synthetic sources are permitted.	7.3

Substance name(s)	Origin and usage	Referenced in table
Clay	Bentonite, perlite and zeolite; as soil amendments or seed pellet additives. See Table 4.2 <i>Mined minerals, unprocessed</i> .	4.2
Clay dust	As a filtering agent in maple syrup production.	6.5
Clove oil	As a sprout inhibitor.	8.3
Collagen casings	Collagen shall be derived from animal sources. If derived from cattle, collagen shall be guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages. Other ingredients (such as, but not limited to: cellulose, calcium coatings, glycerin, etc.) added to collagen casings during their manufacture which remain in the collagen casing when it is used shall respect the requirement provided in 1.4 a) of CAN/CGSB-32.310. Permitted for poultry sausage.	6.4
Colostrum whey	Probiotic.	5.3
Colostrum	Shall be organic if commercially available.	5.3
Colouring agents	Obtained from non-synthetic sources. Derived using substances in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .	6.3
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, industrial, or any organic or non organic farm. See Table 4.2 <i>Compost from off-farm sources; Compost produced on the farm; Compost tea; and Compost feedstocks</i> . For information on compost starters, see Table 4.2. For information on vermicompost, see Table 4.2 <i>Worm castings</i> .	4.2

Substance name(s)	Origin and usage	Referenced in table
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 composting feedstocks may contain a substance prohibited by 1.4 of CAN/CGSB-32.310 known to be persistent in compost, documentation or testing of the final product may be required.</p> <p>The following composting feedstocks are prohibited:</p> <p>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 the risk materials specified in Table 4.2 <i>Bone meal</i>.</p>	4.2
Compost from off-farm sources	<p>Compost obtained from off-farm sources shall conform to the criteria specified in Table 4.2 <i>Compost feedstocks</i>. 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 through repeated application. 	4.2

Substance name(s)	Origin and usage	Referenced in table
Compost produced on the farm	<p>Compost produced on the farm shall conform to the criteria specified in Table 4.2 <i>Compost feedstocks</i>. In addition, if made from animal manures or other likely sources of human pathogens, compost produced on the farm shall:</p> <p>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 to the required temperature for the minimum time; or</p> <p>b) meet limits for acceptable levels (MPN/g total solids) of human pathogens specified in <i>Guidelines for Compost Quality</i>; or</p> <p>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.</p>	4.2
Compost tea	<p>Compost tea shall be made from composts that conform to criteria specified in Table 4.2 <i>Compost produced on the farm, Compost from off-farm sources or Worm castings</i>.</p> <p>Other substances listed in Table 4.2 may be added to compost tea.</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>	4.2
Copper	<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. Build up of copper in soil may prohibit future use. Visible residue of copper products on harvested crops is prohibited.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>	4.2

Substance name(s)	Origin and usage	Referenced in table
Copper	<p>The following copper products are permitted:</p> <p>a) for use as a wood preservative or for disease control—copper hydroxide;</p> <p>b) for use as a fungicide on fruits and vegetables—copper sulphates, Bordeaux mix, copper oxychloride and copper oxide.</p> <p>Shall be used with caution to prevent excessive copper accumulation in the soil. Copper buildup in soil may prohibit future use.</p> <p>Visible residue of copper products on harvested crops is prohibited.</p>	4.3
Copper sulphate	As an essential nutrient (source of copper and sulphur) and for topical use (foot baths).	5.3
Cultures	See Table 6.4 <i>Micro-organisms</i> .	6.4
Detergents	Detergents shall be biodegradable (see <i>Biodegradable</i> definition in clause 3 of CAN/CGSB-32.310).	7.4
Diatomaceous earth	<p>Non-heated forms are permitted.</p> <p>Synthetic pesticides and synergists shall not be added.</p>	4.3
Diatomaceous earth	Approved as an anti-caking agent in feed to a maximum of 2% of the total diet.	5.2
Diatomaceous earth	For use in control of external parasites.	5.3
Diatomaceous earth	As a food filtering aid or as a clarifying agent.	6.5
Diatomaceous earth		8.2
Digestate, anaerobic	<p>Products of anaerobic digestion may 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. If feedstocks are obtained from off-farm sources, the digestate shall comply with the heavy metal restrictions in Table 4.2 <i>Compost from off-farm sources</i>;</p> <p>b) the criteria for raw manure land application specified in 5.5.2.3 of CAN/CGSB-32.310 shall be met;</p> <p>c) anaerobic digestate may be used as a compost feedstock if it is added to other substrates which are then composted. See Table 4.2 <i>Compost feedstocks</i>.</p>	4.2
Dormant oils	For use as a dormant spray on woody plants. Shall not be used as a dust suppressant.	4.3

Substance name(s)	Origin and usage	Referenced in table
Dust suppressants	<p>Non-synthetic substances, or substances listed in Tables 4.2 and 4.3 (examples: <i>Lignin sulphonate</i>; <i>Molasses</i>; and <i>Vegetable oils</i>) are permitted.</p> <p>Petroleum products are prohibited.</p>	4.2
Dust suppressants	<p>Non-synthetic substances, or substances listed in Tables 4.2 and 4.3, (examples: <i>Lignin sulphonate</i>; <i>Molasses</i>; and <i>Vegetable oils</i>) are permitted.</p> <p>Petroleum products are prohibited.</p>	4.3
Electrolytes	<p>Including, but not limited to: CMPK (Calcium, Magnesium, Phosphorus, Potassium), calcium propionate and calcium sulphate. Shall not contain antibiotics.</p> <p>Orally or by injection.</p>	5.3
Energy feeds and forage concentrates (grains) and roughages (hay, silage, fodder, straw)	<p>Shall be obtained from organic sources. May include silage preservation products. See Table 5.2 <i>Hay or silage preservation products</i>.</p>	5.2
Enzymes	<p>Shall be derived from non-synthetic substances by the action of micro-organisms. Shall not be fortified with prohibited substances</p>	4.2
Enzymes	<p>Non-synthetic enzymes are permitted, including bromelain, catalase—bovine liver, ficin, animal lipase, malt, pancreatin, pepsin, trypsin, proteases and carbohydrases.</p> <p>Animal-derived enzymes shall be guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of ruminants aged 30 months or older; and the distal ileum (portion of the small intestine) of ruminants of all ages.</p>	5.2
Enzymes	<p>The following sources of enzymes are permitted:</p> <p>a) any preparations of enzymes normally used in food processing derived from edible, non-toxic plants, non-pathogenic fungi or non-pathogenic bacteria;</p> <p>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 guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of ruminants aged 30 months or older; and the distal ileum (portion of the small intestine) of ruminants of all ages;</p> <p>c) egg white lysozyme.</p>	6.3

Substance name(s)	Origin and usage	Referenced in table
Enzymes	<p>The following sources of enzymes are permitted:</p> <p>a) any preparations of enzymes normally used in food processing derived from edible, non-toxic plants, non-pathogenic fungi or non-pathogenic bacteria;</p> <p>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 guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of ruminants aged 30 months or older; and the distal ileum (portion of the small intestine) of ruminants of all ages;</p> <p>c) egg white lysozyme.</p>	6.5
Ethylene	For post-harvest ripening of tropical fruit and degreening of citrus.	6.5
Ethylene	For post-harvest ripening of tropical fruit and degreening of citrus.	8.3
Extractants	Permitted extractants include non-synthetic substances, such as cocoa butter, lanolin, animal fats, alcohols and water. Extraction with synthetic solvents is prohibited, except as specified in the annotations of substances listed in Table 4.2.	4.2
Extractants	Permitted extractants include non-synthetic substances, such as cocoa butter, lanolin, animal fats, alcohols and water. Extraction with synthetic solvents is prohibited, except as specified in the annotations of substances listed in Table 4.3.	4.3
Extraction solvents, carriers and precipitation aids	<p>The following may be used to derive substances listed in Tables 5.2, 6.3, 6.4 and 6.5:</p> <p>a) water;</p> <p>b) culinary steam, as described in 8.1.2 b) of CAN/CGSB-32.310;</p> <p>c) fats and oils and alcohols other than isopropyl alcohol;</p> <p>d) supercritical CO₂; and</p> <p>e) substances listed in Tables 6.3-6.5 of this standard.</p>	6.3
Feather meal		4.2
Ferric phosphate (iron ortho-phosphate, iron phosphate)	<p>Permitted as a molluscicide.</p> <p>Shall be used in such a manner that runoff into water bodies is prevented.</p> <p>Contact with crops is prohibited.</p>	4.3

Substance name(s)	Origin and usage	Referenced in table
Fibre row covers	Shall not be incorporated into the soil or left in the field to decompose; shall be removed at the end of the growing season.	4.3
Fish meal, fish powder, fish wastes, hydrolysate, emulsions and solubles	<p>The following fish products are permitted: fish meal; fish powder; and hydrolysate, emulsions and solubles. Fish farm wastes shall be composted.</p> <p>Ethoxyquin or other synthetic preservatives, fertilizers and other chemically synthesized substances not listed in this standard shall not be added to fish products.</p> <p>Chemical treatment is prohibited, except that liquid fish products may be pH adjusted with the following, in preferential order:</p> <ul style="list-style-type: none"> a) vinegar; b) non-synthetic citric acid; c) synthetic citric acid; d) phosphoric acid; and e) sulphuric acid. <p>The amount of acid used shall not exceed the minimum needed to stabilize the product.</p>	4.2
Flavours	Derived from non-synthetic sources (such as plants, meat, seafood, micro-organisms, etc.) using approved methods (see clause 10 of CAN/CGSB-32.310), and substances (see Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i>).	6.4
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.	5.3
Formulants	Non-synthetic substances shall be used, unless a substance annotation specifies that a synthetic formulant may be used. For example, see Table 4.2 <i>Aquatic plants and plant products; Fish meal, fish powder, hydrolysate, emulsions and solubles; Humates, humic acid and fulvic acid</i> .	4.2

Substance name(s)	Origin and usage	Referenced in table
Formulants	<p>Formulants may be used in conjunction with substances listed in Table 4.3 as follows:</p> <p>a) Formulants classified in PMRA List 4A or 4B or non-synthetic may be used with the following substances: adhesives for sticky traps and barriers, ammonium carbonate, baits, borate, boric acid, pesticides, dormant oils, hydrogen peroxide and soaps.</p> <p>b) Formulants classified in PMRA List 3 may be used with passive pheromone dispensers.</p> <p>c) Formulants used with all other substances listed in Table 4.3 shall be non-synthetic unless specified in the annotation as being permitted.</p>	4.3
Formulants (inerts, excipients)	Shall be used in conjunction with substances listed in Table 5.3.	5.3
Gelatine	<p>Shall be organic if commercially available.</p> <p>Gelatine may be sourced from:</p> <p>a) plants; or</p> <p>b) animals. If derived from cattle, gelatine shall be guaranteed free of specified risk materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages.</p>	6.3
Gelatine	<p>Shall be from organic sources if commercially available.</p> <p>Permitted sources are:</p> <p>a) plants; and</p> <p>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 materials including the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and the distal ileum (portion of the small intestine) of cattle of all ages.</p>	6.5
Glucono delta lactone	Production by the oxidation of D-glucose with bromine water is prohibited.	6.3
Glucose		5.3
Glycerides (mono and diglycerides)	<p>From organic sources if commercially available.</p> <p>For use in drum drying of products.</p>	6.3

Substance name(s)	Origin and usage	Referenced in table
Glycerol (glycerine, glycerin)	<p>Shall be from organic sources if commercially available.</p> <p>Shall be from vegetable or animal fats and/or oils.</p> <p>Shall be produced using fermentation or by hydrolysis.</p>	5.3
Glycerol (glycerine, glycerin)	<p>Shall be from organic sources if commercially available.</p> <p>Shall be from vegetable or animal fats and/or oils.</p> <p>Shall be produced using fermentation or by hydrolysis.</p>	6.3
Glycerol (glycerine, glycerin)	<p>Shall be:</p> <p>a) sourced from vegetable or animal fats and/or oils;</p> <p>b) produced using fermentation or by hydrolysis.</p>	7.3
Growth regulators for plants	Non-synthetic plant hormones, such as gibberellic acid, indoleacetic acid and cytokinins, are permitted.	4.3
Guano	<p>Shall be decomposed, dried deposits from wild bats or birds.</p> <p>Domesticated fowl excrement is considered to be <i>manure</i>, not <i>guano</i>.</p>	4.2
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 <i>Extraction solvents, carriers and precipitation aids</i>. By exception, isopropyl alcohol may also be used to derive gums.</p>	6.3
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>	5.2
Homeopathy and biotherapies		5.3
Homeopathic preparations		4.3
Honey	Shall be organic.	5.3
Hormones	See Table 4.3 <i>Growth regulators for plants</i> .	4.3

Substance name(s)	Origin and usage	Referenced in table
Humates, humic acid and fulvic acid	Permitted if extracted by: a) non-synthetic substances; b) microbial fermentation; or c) potassium hydroxide—potassium hydroxide levels used in the extraction process shall not exceed the amount required for extraction. Shall not exceed the limits (category C1) for acceptable levels (mg/kg) of arsenic, cadmium, chromium, copper, lead and mercury specified in <i>Guidelines for the Beneficial Use of Fertilising Residuals</i> .	4.2
Humus from worms and insects (vermicompost)	See Table 4.2 <i>Worm castings</i> .	4.2
Hydrated lime	For plant disease control.	4.3
Hydrogen peroxide	Permitted for use as a fungicide.	4.3
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).	5.3
Hydrogen peroxide		7.3
Inoculants	See Table 4.2 <i>Microbial products</i> .	4.2
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.	5.3
Iodine	Shall be non-elemental. Shall not exceed 5% solution by volume (example: iodophors).	7.4
Iron	The following sources of iron are permitted, to correct documented iron deficiencies: ferric oxide, ferric sulphate, ferrous sulphate, iron citrate, iron sulphate or iron tartrate. See Table 4.2 <i>Micronutrients</i> .	4.2
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.	5.3
Isinglass	As a fining agent (fish-based).	6.5
Kaolin	As a clarifying agent.	6.5

Substance name(s)	Origin and usage	Referenced in table
Kaolin clay	Kaolin clay and calcined kaolin clay. Addition of synthetic chemicals to kaolin clay during calcination is prohibited.	4.3
Kelp and kelp products	See Table 4.2 <i>Aquatic plants and aquatic plant products</i> .	4.2
Kelp and kelp products	For use as a thickener and dietary supplement.	6.3
Leaf mould		4.2
Lecithin	Shall be organic if commercially available. Bleached form is permitted if processed using food-grade hydrogen peroxide.	6.3
Lecithin	Shall be organic if commercially available. Bleached form is permitted if processed using food-grade hydrogen peroxide.	6.5
Lignin sulphonates	Lignosulphonic acid, calcium lignosulphate and sodium lignosulphate. Permitted as a chelating agent, as a formulant ingredient and as a dust suppressant. Ammonium lignosulphate is prohibited.	4.3
Lime	All forms of lime, including calcium carbonate, calcium hydroxide and calcium oxide.	7.4
Lime, hydrated	Shall not be used to deodorize animal wastes.	5.3
Lime sulphur (calcium polysulphide)	Permitted on plants as: a) a fungicide; b) an insecticide; and c) an acaricide (mite control).	4.3
Limestone	Magnesium carbonate and calcium carbonate. Shall be from a non-synthetic source. Oyster shell flour, limestone, dolomite (not slaked), aragonite, eggshell meal, lime from sugar processing and mined calcium carbonate are acceptable sources. Calcium products that have been used in controlled atmosphere storage are prohibited. Magnesium carbonate shall be used with caution to prevent magnesium buildup in soil.	4.2
Local anesthetics	Such as lidocaine. Preference shall be given to non-synthetic alternatives. Use shall be followed by withdrawal periods of 90 days for livestock intended for slaughter, and seven days for dairy animals.	5.3

Substance name(s)	Origin and usage	Referenced in table
Magnesium	<p>From non-synthetic substances, without the addition of chemically synthesized substances or chemical treatment. The following sources of magnesium are permitted:</p> <p>a) magnesium rock—magnesium carbonate, magnesium chloride;</p> <p>b) dolomitic limestone (not slaked);</p> <p>c) magnesium sulphate (MgSO₄): Epsom salts (may be synthetic), kieserite. MgSO₄ shall be used to correct a documented magnesium deficiency.</p>	4.2
Magnesium carbonate	For use in meat products whose contents are ≥70% and <95% organic ingredients, as an anti-caking agent in non-standardized dry mixes (example: seasonings).	6.3
Magnesium chloride	Non-synthetic sources.	4.3
Magnesium chloride	Derived from seawater.	6.3
Magnesium stearate	<p>If non-synthetic magnesium stearate is not commercially available, synthetic sources of magnesium stearate are permitted.</p> <p>For use as an anti-caking or releasing agent in products whose contents are ≥70% and <95% organic ingredients.</p>	6.3
Magnesium sulphate	Mined sources. A source of magnesium and sulphur.	5.3
Magnesium sulphate		6.3
Malic acid		6.3
Manganese	<p>Manganous oxide and manganese sulphate are permitted, to correct a documented manganese deficiency.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>	4.2
Manure, composted	See Table 4.2 <i>Compost</i> .	4.2
Manure, non-organic manure source	See 5.5 of CAN/CGSB-32.310.	4.2
Meat curing agents	<p>Extracts, juice or cultured powder of celery or chard are permitted.</p> <p>Shall be organic if commercially available.</p>	6.3
Meat meal	Shall be processed by drying, heat sterilization and/or composting.	4.2

Substance name(s)	Origin and usage	Referenced in table
Microbial products	<p>The following microbial products are permitted:</p> <ul style="list-style-type: none"> a) rhizobium bacteria; b) mycorrhizal fungi; c) azolla; and d) yeast and other micro-organisms. <p>Ionizing radiation is permitted for use on peat moss carrier, before the addition of microbial inoculants. Radiation is otherwise prohibited.</p>	4.2
Micronutrients	<p>Includes micronutrients (trace elements) from non-synthetic or synthetic sources. May be chelated. See Table 4.2 <i>Chelates</i>.</p> <p>To be used when soil and plant deficiencies are documented by visual symptoms or by testing of soil and/or plant tissue, or when the need for a preventative application can be documented.</p> <p>Nitrate and ammonium forms of micronutrients are prohibited.</p> <p>See Table 4.2 <i>Boron; Copper; Iron; Manganese; Molybdenum; and Zinc</i>.</p>	4.2
Micro-organisms	<p>Includes starter and dairy cultures and other preparations of micro-organisms normally used in product processing.</p> <p>Ingredients used for micro-organism preparations: non-synthetic substrates (such as milk, lactose, soy, etc.) are permitted. Other ingredients used in micro-organism preparations (such as carriers, anti-caking agents and fillers, etc.) shall be listed in Tables 6.3 or 6.4.</p> <p>Operators shall obtain documentation from the manufacturer identifying any synthetic substances (such as preservatives, cryo-protectants, etc.) included in micro-organism preparations.</p>	6.4
Micro-organisms and yeasts	<p>If organic sources of yeast are not commercially available, non-synthetic yeast sources, including yeast autolysate, shall be used.</p>	5.2
Micro-organisms and yeasts	<p>If organic sources of yeast are not commercially available, non-synthetic yeast sources, including yeast autolysate, shall be used.</p>	5.3
Milk		4.2
Milk replacer	<p>Shall be organic if commercially available.</p> <p>Permitted for emergency use. Without antibiotics and animal fats or by-products.</p>	5.2

Substance name(s)	Origin and usage	Referenced in table
Mined minerals, unprocessed	<p>Mined minerals include basalt, pumice, sand, feldspar, mica, granite dust and unprocessed rock dust. Minerals extracted from seawater are permitted. A mined mineral shall not have undergone any change in its molecular structure through heating or combining with other substances and shall not be processed or fortified with synthetic chemicals unless listed in Table 4.2.</p> <p>Sodium nitrate and rock dust that have been mixed with petroleum products, such as those from stone engraving, are prohibited.</p>	4.2
Mineral oil	For external use.	5.3
Minerals, trace minerals, elements	<p>Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium choride and magnesium oxide.</p> <p>Synthetic nutrient minerals may be used if non-synthetic sources are not commercially available.</p>	5.2
Minerals, trace minerals, elements	<p>Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium choride 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>	5.3
Molasses	Shall be organic.	4.2
Molasses	Shall be organic.	5.2
Molybdenum	<p>To correct documented molybdenum deficiencies.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>	4.2
Mulches	See Table 4.3 <i>Mulches</i> .	4.2

Substance name(s)	Origin and usage	Referenced in table
Mulches	<p>Organic plant residues may be used for mulching. If organic plant materials are not readily available, non-organic, non-genetically engineered sources of straw, leaves, grass clippings or hay may be used. Prohibited substances shall not have been used on these materials for at least 60 days before harvest.</p> <p>Sawdust, wood chips and shavings may be used for mulching if they are obtained or derived from wood that has not been treated with paint or prohibited substances.</p> <p>Newspaper and paper mulch: 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 Tables 4.2 or 4.3. Biodegradable polymers and Carbon Black from GE or petroleum sources are not permitted. As a temporary exemption, biodegradable mulch film used on organic farms in 2014 but which do not meet the petroleum source requirement may be used without removal until January 1, 2017.</p>	4.3
Mushroom compost	See Table 4.2 <i>Compost</i> .	4.2
Neem oil		8.2
Nitrogen	For controlled atmosphere storage.	4.3
Nitrogen	Shall be food-grade quality.	6.4
Nitrogen	Shall be food-grade quality.	6.5
Nitrogen	For controlled atmosphere storage.	8.3
Oilseed meals	Shall be organic if commercially available.	4.2
Oxalic acid	For mite control in honeybee colonies.	5.3
Oxygen	For controlled atmosphere storage.	4.3
Oxygen		6.4
Oxygen		6.5
Oxygen		8.3

Substance name(s)	Origin and usage	Referenced in table
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.	5.3
Ozone		6.3
Ozone		6.5
Ozone		7.3
Paraffin	Shall be food-grade. For use in hives.	5.3
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.	5.3
Peat moss		4.2
Pectin	High-methoxyl and low-methoxyl pectin sources are permitted.	6.3
Peracetic (peroxyacetic) acid	Permitted for: a) controlling fire blight bacteria; and b) disinfecting seed and asexually propagated planting material. See Table 4.3 <i>Seed treatments; Treated seeds</i>	4.3
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.	7.3
Perlite	For use as a filtering aid.	6.5
pH buffers	Shall be non-synthetic, such as citric acid or vinegar. Lye and sulphuric acid are prohibited.	4.2
pH buffers	Shall be non-synthetic, such as citric acid or vinegar. Lye and sulphuric acid are prohibited.	4.3
Pheromones and other semiochemicals	Synthetic and non-synthetic pheromones and semiochemicals are permitted. For pest control. Use in pheromone traps or passive dispensers.	4.3
Phosphate rock	Shall not be fortified or processed with synthetic chemicals. Cadmium shall not exceed 90 mg/kg P ₂ O ₅ .	4.2
Phosphoric acid	On dairy equipment.	7.4

Substance name(s)	Origin and usage	Referenced in table
Physical teat seals	<p>Synthetic and non-synthetic ingredients 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>	5.3
Plant extracts, oils and preparations	<p>Permitted extractants include: cocoa butter, lanolin, animal fats, alcohols and water. Extraction with synthetic solvents is prohibited except with, in order of preference:</p> <p>a) potassium hydroxide;</p> <p>b) or sodium hydroxide;</p> <p>provided the amount of solvent used does not exceed the amount necessary for extraction. The manufacturer shall prove the need to use sodium hydroxide.</p> <p>For pest control (disease, weed and insect).</p> <p>Clove oil is permitted for sprout inhibition in potatoes.</p>	4.3
Plant oils	To control external parasites.	5.3
Plant protectants	<p>Non-synthetic substances including, but not limited to: calcium carbonate, diatomaceous earth, kaolin clay, pine oil, pine resin and yucca. White wash is permitted for use on trees to protect against sunburn and southwest disease.</p> <p>Shall be used to protect plants from harsh environmental conditions, such as frost and sunburn, infection, the buildup of dirt on leaf surfaces, or injury by a pest.</p>	4.3
Plants and plant by-products	<p>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 with or produced with prohibited substances may be used as composting feedstocks.</p> <p>For processing of plant by-products, see Table 4.2 <i>Extractants</i>.</p> <p>Sawdust, wood chips and shavings may be used for mulching if they are obtained or derived from wood that has not been treated with paint or prohibited substances.</p>	4.2
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>	4.3

Substance name(s)	Origin and usage	Referenced in table
Pomaces	Feedstocks shall be from organically grown fruits or vegetables. Non-organic pomaces shall be composted. See Table 4.2 <i>Compost feedstocks</i> .	4.2
Potassium	<p>The following sources of potassium are permitted:</p> <p>a) langbeinite, mined sulphate of potash magnesia and mined potassium salts (sylvinite and kainite);</p> <p>b) potassium rock powder—includes basalt, biotite, mica, feldspar, granite and greensand;</p> <p>c) potassium chloride (KCl)—muriate of potash and rock potash. KCl shall not cause salt buildup in soil through repeated application;</p> <p>d) potassium sulphate—shall be produced by combining brines from seabed deposits and mined minerals. Potassium sulphate made using reactants (such as sulphuric acid or ammonia) is prohibited. Fortification with synthetic chemicals is prohibited.</p>	4.2
Potassium acid tartrate (KC ₄ H ₅ O ₆)	If the non-synthetic form is not commercially available, the synthetic form is permitted.	6.3
Potassium bicarbonate	Permitted for pest and disease control in greenhouses and other crops.	4.3
Potassium bicarbonate	On organic product contact surfaces.	7.3
Potassium carbonate		6.5
Potassium carbonate	Documentation shall demonstrate that effluent discharge was neutralized to minimize negative environmental impact.	7.4
Potassium carbonates (mono- and bi-)		6.3
Potassium chloride	Non-synthetic sources.	6.3
Potassium citrate		6.3
Potassium hydroxide (caustic potash)	For pH adjustment. Prohibited for use in lye peeling of fruits and vegetables.	6.5
Potassium hydroxide (caustic potash)		7.4
Potassium iodide	<p>From non-synthetic sources.</p> <p>Shall be used when legally required. Synthetic potassium iodide is permitted for use in products whose contents are ≥70% and <95% organic ingredients.</p>	6.4

Substance name(s)	Origin and usage	Referenced in table
Potassium metabisulphite	See <i>Anhydrous sulphur dioxide, sulphurous acid (sulphur dioxide, SO₂)</i> .	6.3
Potassium permanganate	Not to exceed 1% solution by volume.	7.4
Potassium phosphate (mono-, di-, and tribasic forms)	For use in products whose contents are ≥70% and <95% organic ingredients.	6.3
Potassium tartrate (K ₂ C ₄ H ₄ O ₆ , INS 336)	If the non-synthetic form is not commercially available, the synthetic form is permitted.	6.3
Potting soil	Shall not contain synthetic wetting agents or synthetic fertilizers.	4.2
Prebiotics	From organic sources if commercially available.	5.3
Pre-mixes	Concentrated mixture of minerals and vitamins. From organic sources if commercially available. 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.	5.2
Probiotics	Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.	5.2
Probiotics	Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.	5.3
Protein feeds	Shall be from organic sources.	5.2
Pyrethrins	Without piperonyl butoxide as a carrier. Direct contact with organic products is prohibited.	8.2
Pyrethrum	Shall be combined with acceptable formulants listed in Table 4.3. See Table 4.3 <i>Botanical pesticides</i> for restrictions.	4.3
Quick lime (calcium oxide)	Shall not be used as a fertilizer or as a soil amendment.	4.3
Repellents	Shall be derived from a non-synthetic source, such as sterilized blood meal, rotten eggs, hair or predator scents. Shall not contain synthetic additives.	4.3

Substance name(s)	Origin and usage	Referenced in table
Salt	Non-synthetic sources of sodium chloride and calcium chloride. For disease control and prevention in mushroom production.	4.3
Salt	Substances listed in Tables 6.3 or 6.4 may be added to mined or sea salt. See Table 6.3 <i>Sodium chloride and Potassium chloride</i> . See Salt definition in clause 3 of CAN/CGSB-32.310.	6.4
Seaweed and seaweed products	See Table 4.2 <i>Aquatic plants and aquatic plant products</i> .	4.2
Seaweed and seaweed products	See Table 4.2 <i>Aquatic plants and aquatic plant products</i> .	4.3
Seaweed meal		5.2
Sedatives	Such as xylazine.	5.3
Seed treatments	Microbial products, kelp, yucca, gypsum, clays and botanicals. See Table 4.3 <i>Peracetic Acid; Treated Seeds</i> .	4.3
Selenium products	Derived from sodium selenate or sodium selenite. May be used to address documented deficiencies in the stock, soils or feed supplies. See Table 5.3 <i>Minerals, trace minerals, elements</i> .	5.3
Shell from aquatic animals	Includes chitin.	4.2
Shell from aquatic animals	Includes chitin.	4.3
Silica	As a filtering agent (food-grade powder) in maple syrup production.	6.5
Silicon dioxide		6.3
Silicon dioxide		6.5
Smoke flavour	See Table 6.3 <i>Yeast</i> .	6.4
Soap-based algicide (demossers)		7.4
Soaps	Soaps (including insecticidal soaps) shall consist of fatty acids derived from animal or vegetable oils.	4.3

Substance name(s)	Origin and usage	Referenced in table
Soaps	Soaps shall consist of fatty acids derived from animal or vegetable oils.	7.4
Soaps, ammonium	As a large animal repellent. Direct contact with soil or edible portion of crop is prohibited.	4.3
Soaps, ammonium	As a large animal repellent. Direct contact with organic products is prohibited.	8.2
Sodium acid pyrophosphate	For use as a leavening agent.	6.3
Sodium bicarbonate	For pest and disease control. In greenhouses and for other crops.	4.3
Sodium bicarbonate (baking soda)	If the non-synthetic form is not commercially available, the synthetic form is permitted.	6.3
Sodium bicarbonate (baking soda)	If the non-synthetic form is not commercially available, the available synthetic form is permitted.	6.5
Sodium bicarbonate (baking soda)	Non-synthetic sources. See Table 7.4 <i>Sodium bicarbonate (baking soda), synthetic</i> .	7.3
Sodium bicarbonate (baking soda), synthetic		7.4
Sodium borate		7.4
Sodium carbonate (soda ash)	If the non-synthetic form is not commercially available, the synthetic form is permitted.	6.3
Sodium carbonate (soda ash)	Non-synthetic sources. See Table 7.4 <i>Sodium carbonate (soda ash), synthetic</i> .	7.3
Sodium carbonate (soda ash), synthetic		7.4
Sodium chloride		6.3
Sodium citrate	Non-synthetic sources.	6.3
Sodium citrate	Non-synthetic sources.	7.3
Sodium citrate		7.4
Sodium hydroxide	For use in dehorning paste.	5.3

Substance name(s)	Origin and usage	Referenced in table
Sodium hydroxide (lye or caustic soda)		6.3
Sodium hydroxide (lye or caustic soda)	Prohibited for use in lye peeling of fruits and vegetables.	6.5
Sodium hydroxide (lye or caustic soda)		7.3
Sodium percarbonate		7.4
Sodium phosphates	For use in dairy products.	6.3
Sodium silicate	For tree fruit and fibre processing.	4.3
Sodium silicate	In detergents. See Table 7.4 <i>Detergents</i> .	7.4
Soil	From organic sources. Shall comply with restrictions specified in 5.1.2 of CAN/CGSB-32.310.	4.2
Sphagnum moss	Shall not contain synthetic wetting agents.	4.2
Starch	From rice and waxy maize—Shall be derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> , where applicable. Starch shall not be modified by chemicals. Starch may be modified using physical or enzymatic methods. Cornstarch—May contain substances that are plant-derived and/or listed in Tables 6.3-6.5.	6.4
Sterile insects	See Table 4.3 <i>Biological organisms</i> .	4.3
Stillage and stillage extract	Ammonium stillage is prohibited.	4.2
Sugar	Organic sugar may be used as an ingredient in a crop production aid.	4.3
Sulphur	For control of external parasites.	5.3
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.	4.3
Sulphur, elemental	Non-synthetic elemental sulphur may be used as a soil amendment where more buffered sources of sulphur are not appropriate, and as a foliar application. Chemically synthesized substances shall not be added. Chemical treatment is prohibited.	4.2

Substance name(s)	Origin and usage	Referenced in table
Sulphur, elemental	For foliar use.	4.3
Summer oils	On foliage, as suffocating or stylet oils.	4.3
Surfactants	Non-synthetic substances. See Table 4.2 <i>Formulants; Wetting agents</i> ; and Table 4.3 <i>Soaps; Vegetable oils</i> .	4.2
Surfactants	Non-synthetic substances. See Table 4.3 <i>Soaps; Vegetable oils; Wetting agents</i> .	4.3
Surfactants	See Table 7.4 <i>Detergents; Soaps</i> .	7.4
Talc	As a filtering agent.	6.5
Tannic acid	Shall be from an organic source if commercially available. Shall be derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> . Permitted as a filtration aid for wines.	6.5
Tartaric acid (C ₄ H ₆ O ₆ . INS 334)	If the non-synthetic form is not commercially available, the available synthetic form is permitted. For beverages.	6.3
Tartaric acid (C ₄ H ₆ O ₆ . INS 334)	Shall be from non-synthetic sources. For beverages.	6.5
Tocopherols and mixed natural concentrates	Derived from vegetable oil when rosemary extracts are not a suitable alternative.	6.3
Transplant and potting media	Shall be composed entirely of permitted substances.	4.3
Treated seed	Seed treated with biological management agents is permitted. Seed pelletized with clay, gypsum, biological organisms (such as <i>Rhizobium</i>) or other non-synthetic coatings is permitted. Plastic polymer pelletization of seed is prohibited. See Table 4.3 <i>Peracetic acid; Seed treatments</i> .	4.3

Substance name(s)	Origin and usage	Referenced in table
Tree seals	<p>Plant or milk-based paints are permitted. Shall not be combined with fungicides or other synthetic chemicals.</p> <p>See Table 2 <i>Plant Protectants</i>.</p> <p>For planting stock: synthetic grafting materials are permitted, provided that plants are maintained in accordance with requirements in CAN/CGSB-32.310 for at least 12 months prior to harvest of organic products.</p>	4.3
Vaccines	See Table 5.3 <i>Biologics, including vaccines</i> .	5.3
Vegetable oils	<p>Shall be organic if commercially available. Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i>.</p> <p>Maple syrup production—vegetable oils shall be organic and without allergenic potential.</p>	6.3
Vegetable oils	<p>From organic sources if commercially available. Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i>.</p> <p>Maple syrup production—vegetable oils shall be organic and without allergenic potential.</p>	6.5
Vegetable oils	<p>Plant oils shall not contain synthetic pesticides.</p> <p>For use as spreader-stickers, surfactants and carriers.</p>	4.3
Vermicasts	See Table 4.2 <i>Worm castings</i> .	4.2
Vermiculite		4.2
Vinegar (acetic acid)	<p>Non-synthetic sources.</p> <p>See Table 4.3 <i>Acetic acid</i>.</p>	4.3
Vinegar		7.3
Virus sprays		4.3
Vitamins	Non-synthetic sources of all vitamins and synthetic sources of vitamins B ₁ , C (ascorbic acid) and E are permitted for use in organic crop production.	4.2
Vitamins	Permitted for enrichment or fortification.	5.2
Vitamins	<p>Vitamin formulants that comply with Canadian regulations are accepted.</p> <p>Orally, topically or by injection.</p>	5.3

Substance name(s)	Origin and usage	Referenced in table
Vitamins and mineral nutrients	<p>Shall be used if legally required.</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>	6.4
Water		4.3
Water, recycled	<p>Recycled water shall only contain substances listed in Tables 4.2, 4.3, 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>	4.3
Waxes	<p>Applied to fresh produce—only organic wax or carnauba wax is permitted.</p> <p>Applications other than fresh produce—If organic waxes, such as beeswax, are not commercially available, non-synthetic waxes, such as carnauba wax, shall be used.</p> <p>See Table 6.5 <i>Waxes</i>.</p>	6.3
Waxes	<p>If organic waxes, such as beeswax, are not commercially available, non-synthetic sources of wax, such as carnauba wax shall be used.</p> <p>By exception, paraffin wax may be used to coat cheese, if other non-synthetic waxes are not commercially available. Use of microcrystalline wax, either alone or in formulations with paraffin wax, is prohibited. Wax cheese coatings, except for organic waxes, must be removable and considered inedible, and shall not include synthetic preservatives, synthetic colors, or any bactericide or fungicide.</p>	6.5
Wetting agents	Non-synthetic wetting agents, including saponins and microbial wetting agents.	4.2
Wetting agents	<p>Non-synthetic wetting agents, including saponins and microbial wetting agents, are permitted.</p> <p>See Table 4.3 <i>Soaps</i>.</p>	4.3
Wetting agents	<p>Non-synthetic wetting agents, including saponins and microbial wetting agents.</p> <p>See Table 7.4 <i>Detergents; Soaps</i>.</p>	7.4
Wood ash	See Table 4.2 <i>Ash</i> .	4.2

Substance name(s)	Origin and usage	Referenced in table
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 <i>Compost feedstocks</i>.</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) that best practices known to eliminate human pathogens during vermicomposting have been used.</p> <p>See Table 4.2 <i>Microbial products</i> for information on compost starters.</p>	4.2
Yeast	See Table 4.2 <i>Microbial products</i> .	4.2
Yeast	<p>If organic sources of yeast are not commercially available, these non-synthetic sources of yeast may be used:</p> <p>a) autolysate;</p> <p>b) bakers' (may contain lecithin, as listed in Table 6.3);</p> <p>c) brewers';</p> <p>d) nutritional; and</p> <p>e) smoked.</p> <p>Growth on petrochemical substrate and sulphite waste liquor is prohibited.</p> <p>Non-synthetic smoke flavouring process shall be documented.</p>	6.3
Yeast	<p>If organic sources of yeast are not commercially available, these non-synthetic sources of yeast may be used:</p> <p>a. autolysate;</p> <p>b. bakers' (may contain lecithin, as listed in Table 6.3);</p> <p>c. brewers';</p> <p>d. nutritional; and</p> <p>e) smoked.</p> <p>Growth on petrochemical substrate and sulphite waste liquor is prohibited.</p> <p>Non-synthetic smoke flavouring process shall be documented.</p>	6.4

Substance name(s)	Origin and usage	Referenced in table
Yeast foods	<p>For use in alcoholic beverages:</p> <p>a) potassium chloride—permitted for ale, beer, light beer, malt liquor, porter and stout; and</p> <p>b) dibasic ammonium phosphate (diammonium phosphate, DAP), restricted to 0.3 g/L (0.04 oz./gal.)—permitted for cider, mead and wine.</p>	6.3
Zinc	<p>Zinc oxide and zinc sulphate may be used to correct a documented zinc deficiency.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>	4.2