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**CAN/CGSB-32.311-2015**

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# Organic Production Systems Permitted Substances Lists

ICS 75.160.20

**DRAFT National Standard of Canada**

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NATIONAL STANDARD OF CANADA

Draft CAN/CGSB-32.311-2015

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## Organic Production Systems Permitted Substances Lists

CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS  
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**Introduction (informative)**

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.

# Organic Production Systems Permitted Substances Lists

## 1 Scope

This National Standard of Canada<sup>1</sup> 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 appears is not permitted, except as specified in a listed substance annotation. The prohibitions set out in *Subsection 1.4* of CAN/CGSB 32.310 apply to all substances.

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.

The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This standard does not purport to address all the safety aspects associated with its use. Appropriate authorities shall be consulted, and appropriate health and safety practices shall be established, in conjunction with any applicable regulatory requirements, prior to the use of this standard.

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<sup>1</sup> 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 Normative references**

The following normative documents contain provisions that, through their reference within this text, constitute provisions of this standard. 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 method. A dated reference is to the specified revision or edition of the reference or document in question.

### **2.1 Canadian General Standards Board**

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 819-956-5644. E-mail ncr.cgsb-ongc@tpsgc-pwgsc.gc.ca. Web site: [www.tpsgc-pwgsc.gc.ca/ongc-cgsb](http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb).

### **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](http://www.ccme.ca)

### **2.3 Ministère du Développement durable, l'Environnement, et Lutte contre les changements climatiques.**

*Guidelines for the Beneficial Use of Fertilising Residuals*

#### **2.3.1 Source**

The above may be obtained from the website: [http://www.mddelcc.gouv.qc.ca/matieres/mat\\_res-en/fertilisantes/critere/guide-mrf.pdf](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](http://www.healthcanada.gc.ca/pmra)

**2.5 Bureau de Normalisation du Québec**

*CAN/BNQ 0017-988* Specifications for compostable plastics

**2.5.1 Source**

The above may be obtained from the website [www.bnq.qc.ca](http://www.bnq.qc.ca)

**2.6 International Organization for Standardization**

*ISO 17088* Specifications for compostable plastics

**2.6.1 Source**

The above may be obtained from the website [www.iso.org](http://www.iso.org)

**3 Requirements for adding or amending substances in the lists**

**3.1** *Section 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** The prohibitions set out in *Subsection 1.4* of *CAN/CGSB 32.310* apply to all substances in Tables **4.2** and **4.3**.

**4.1.4** In addition, the following restrictions apply to substances listed in Tables **4.2** and **4.3** that may be derived through the use of biofermentation or substrates:

a) If a substrate is a component of the substance that is to be used, neither the substance nor the substrate ingredients may be produced from genetic engineering. In this case, substrate ingredients shall be listed in this standard.

b) A substance supplied without the substrate on which it was grown may not be genetically engineered. In this case, the substrate used to grow the substance may be produced from genetic engineering only if an analogous product grown on a non-genetically engineered substrate is not commercially available.

**4.2 Soil amendments and crop nutrition table**

<b>4.2 Soil amendments and crop nutrition</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Agar	For use in initial mushroom spawn production.
Alfalfa meal and pellets	Shall be organic if commercially available.
Algae	See Table <b>4.2</b> <i>Aquatic plants and aquatic plant products</i> .
Amino acids	Shall be from non-synthetic sources.

<b>4.2 Soil amendments and crop nutrition</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
	<p>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 <i>Sections 5 and 6 of CAN/CGSB-32.310</i> .
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 <i>Subsection 5.5.1 of CAN/CGSB-32.310</i>.</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 of <i>Subsection 5.5.2.5 of CAN/CGSB-32.310</i> have been met.</p>
Aquatic plants and aquatic plant products	<p>Non-synthetic extracts are permitted.</p> <p>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 obtained from off-farm sources 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 Fertilizing Residuals</i>.</p> <p>Shall not cause heavy metal buildup in soil through repeated application.</p>

<b>4.2 Soil amendments and crop nutrition</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
	Ash from burning minerals, manure, coloured paper, plastics or other synthetic substances is prohibited.
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.
Biodynamic preparations for soil and plants	
Blood meal	Shall be sterilized.
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.
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 specific to the type of crop. See Table <b>4.2 Micronutrients</b> .
Calcium	The following calcium products are permitted: 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.  Shall not cause salt buildup in soil through repeated application. See Table <b>4.2 Gypsum</b> .

4.2 Soil amendments and crop nutrition	
Substance Name(s)	Origin and Usage
	Calcium products used in controlled atmosphere storage are prohibited.
Calcium sulphate (gypsum)	See Table 4.2 <i>Gypsum (calcium sulphate)</i> .
Cannery wastes	Shall be from organic sources. Non-organic cannery wastes shall be composted. See also Table 4.2 <i>Composting feedstocks</i> .
Cardboard	Cardboard shall not be waxed or impregnated with fungicide or prohibited substances.  May be used as mulch or as composting feedstock. See Table 4.2 <i>Composting feedstocks</i> .
Chelates	Non-synthetic and listed synthetic chelates are permitted. See Table 4.3 <i>Lignin sulphonates</i> .
Clay	Bentonite, perlite and zeolite; as soil amendments or seed pellet additives. See Table 4.2 <i>Mined minerals, unprocessed</i> .
Compost	See Table 4.2 <i>Compost obtained from off-farm sources; Compost produced on the farm; Compost tea; and Composting feedstocks</i> .
Compost obtained from off-farm sources	Compost obtained from off-farm sources shall conform to the criteria specified in Table 4.2 <i>Composting feedstocks</i> . In addition, compost obtained from off-farm sources: 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 not cause heavy metal buildup in soil through repeated application; and c) shall meet criteria for acceptable levels (MPN/g total solids) of human pathogens as specified in <i>Guidelines for Compost Quality</i> . See Table 4.2 <i>Worm castings</i> for information on vermicompost. See Table 4.2 <i>Microbial products</i> for information on compost starters.
Compost produced on	Compost produced on the farm shall conform to the criteria specified in

<b>4.2 Soil amendments and crop nutrition</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
the farm	<p>Table 4.2 <i>Composting feedstocks</i>.</p> <p>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"> <li>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</li> <li>b) meet limits for acceptable levels (MPN/g total solids) of human pathogens specified in <i>Guidelines for Compost Quality</i>; or</li> <li>c) be considered as aged or raw manure rather than compost (that is, it meets requirements specified in <i>Section 5.5.2.5 of CAN/CGSB-32.310</i>).</li> </ul> <p>See Table 4.2 <i>Worm castings</i> for information on vermicompost.</p> <p>See Table 4.2 <i>Microbial products</i> for information on compost starters.</p>
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 obtained 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 <i>Section 5.5.2.5 of CAN/CGSB-32.310</i> have been met.</p> <p>See <i>Compost Tea</i> definition in <i>Section 3 of CAN/CGSB-32.310</i>.</p>
Composting feedstocks	<p>Acceptable feedstocks include:</p> <ul style="list-style-type: none"> <li>a) animal manures conforming to criteria specified in <i>Section 5.5.1 of CAN/CGSB-32.310</i>;</li> <li>b) animals, animal products and by-products (including fishery);</li> <li>c) plants and plant by-products (including forestry and source-separated yard debris, such as grass clippings and leaves), pomaces and cannery wastes;</li> </ul>

<b>4.2 Soil amendments and crop nutrition</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
	<p><b>4.2.1</b> d) soils and minerals that conform to the requirements of this standard and of <i>CAN/CGSB-32.310</i>; and e) paper yard waste bags which contain coloured ink.</p> <p>When evidence indicates that composting feedstocks may contain a substance prohibited by <i>Subsection 1.4 of CAN/CGSB 32.310</i> known to be persistent in compost, documentation or testing of the final product shall be required. This requirement to document or test the final product does not apply to animal manures used as composting feedstocks.</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> <p>See Table 4.2 <i>Microbial products</i> for information on compost starters.</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>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>Copper ammonia base, copper ammonium carbonate, copper nitrate and cuprous chloride are 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 must be listed in Table 4.2. If feedstocks are obtained from off-farm sources, the digestate must comply with the heavy metal restrictions in Table 4.2 <i>Compost obtained from off-</i></p>



<b>4.2 Soil amendments and crop nutrition</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
	<p><i>farm sources;</i></p> <p>b) the criteria for raw manure land application specified in <i>Section 5.5.2.3</i> of <i>CAN/CGSB 32.310</i> shall be met;</p> <p>c) the digestate may be considered compost if it meets the criteria specified in <i>Table 4.2 Compost produced on the farm.</i></p> <p>Anaerobic digestate may also be used as a compost feedstock if it is added to other substances which are then composted. See <i>Table 4.2 Composting feedstocks.</i></p>
Dust suppressants	<p>Non-synthetic substances, such lactic acid and/or as listed in <i>Tables 4.2</i> and <i>4.3</i> (for example: <i>Lignin sulphonate, Molasses, Vegetable oils</i>) are permitted.</p> <p>Petroleum products are prohibited.</p>
Enzymes	<p>Shall be derived microbiologically from natural non-synthetic substances. Shall not be fortified with synthetic plant nutrients.</p>
Extractants	<p>Permitted extractants include non-synthetic substances, such as cocoa butter, lanolin, animal fats, alcohols and water.</p> <p>Extraction with synthetic solvents is prohibited, except as specified in the annotations of substances listed in <i>Table 4.2.</i></p>
Feather meal	
Fish farm wastes	<p>Shall be composted.</p>
Fish meal, fish powder, hydrolysate, emulsions and solubles	<p>The following fish products are permitted:</p> <p>a) fish meal;</p> <p>b) fish powder; and</p> <p>c) hydrolysate, emulsions and solubles—non-synthetic substances or those derived from non-synthetic substances.</p> <p>Addition to fish products of ethoxyquin or other synthetic preservatives, fertilizers and other chemically synthesized substances not listed in this standard is prohibited. Chemical treatment is prohibited, except that liquid fish products may be pH adjusted with the following, in preferential order:</p> <p>a) vinegar;</p>

4.2 Soil amendments and crop nutrition	
Substance Name(s)	Origin and Usage
	<p>b) non-synthetic citric acid;  c) synthetic citric acid;  d) phosphoric acid; and  e) sulphuric acid.</p> <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>Fish meal, fish powder, hydrolysate, emulsions and solubles; Aquatic plants and plant products; 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 <i>manure</i>, not <i>guano</i>.</p>
Gypsum (calcium sulphate)	<p>Mined sources; to correct calcium and sulphur deficiencies and soil salinity problems, as documented by visual symptoms or by testing of soil or plant tissue.</p> <p>Sulphates produced using sulphuric acid are prohibited.</p>
Humates, humic acid and fulvic acid	<p>Permitted if extracted by:</p> <p>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> <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 Fertilizing 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>

4.2 Soil amendments and crop nutrition	
Substance Name(s)	Origin and Usage
	See Table 4.2 <i>Micronutrients</i> .
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.</p> <p>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>Shall be used with caution to prevent magnesium buildup in soil.</p> <p>Calcium products that have been used in controlled atmosphere storage are prohibited.</p>
Magnesium	<p>Non-synthetic substances or those derived from natural substances, without the addition of chemically synthesized substances or chemical treatments.</p> <p>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<sub>4</sub>): Epsom Salts (may be synthetic), kieserite. MgSO<sub>4</sub> 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 <i>Subsection 5.5 of CAN/CGSB-32.310</i> .
Meat Meal	Shall be processed by, for example: drying, heat sterilization and/or composting.
Microbial products	All microbials including yeast, fungi, azolla and bacteria are permitted unless exposed to ionizing radiation. Ionizing radiation is permitted for use on peat

4.2 Soil amendments and crop nutrition	
Substance Name(s)	Origin and Usage
	moss carrier before the addition of the micro-organism.
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. See Table 4.2 <i>Boron; Copper; Iron; Manganese; Molybdenum; and Zinc</i>.</p>
Milk	
Mined minerals, unprocessed	<p>Sources include: basalt, pumice, sand, feldspar, mica, granite dust and unprocessed rock dust. Minerals extracted from seawater are permitted.</p> <p>A mined mineral shall not have undergone any change in its molecular structure through heating or combining with other substances. Shall not be processed or fortified with synthetic chemicals.</p> <p>Mined minerals are regarded as supplements to a balanced, organic soil-building program. Some of the minerals that are mined can also be made synthetically or are by-products of industry; investigate the source of any new substance.</p> <p>Sodium nitrate is prohibited. Sources that are mixed with petroleum products, such as those from stone engraving, are prohibited.</p>
Molasses	Shall be organic.
Molybdenum	To correct documented molybdenum deficiencies. See Table 4.2 <i>Micronutrients</i> .
Mulches	Organic plant residues may be used for mulching. If organic 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

<b>4.2 Soil amendments and crop nutrition</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
	<p>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 mulch: glossy paper and coloured ink are prohibited.</p> <p>Paper: glossy paper and coloured ink are prohibited.</p>
Mushroom compost	See Table <b>4.2 Compost</b> .
Naturally occurring biological organisms	Includes worms and their products. See Table <b>4.2 Worm castings</b> .
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 P<sub>2</sub>O<sub>5</sub>.</p>
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: shall be obtained or derived from wood that has not been treated with paint or fortified or processed with synthetic</p>

4.2 Soil amendments and crop nutrition	
Substance Name(s)	Origin and Usage
	chemicals.
Pomaces	Feedstocks shall be from organically grown fruits or vegetables. Non-organic pomaces shall be composted. See Table 4.2 <i>Composted feedstocks</i> .
Potassium	The following potassium sources are permitted: a) langbeinite, mined sulphate of potash magnesia and mined potassium salts (sylvinite and kainite); b) potassium rock powder—includes basalt, biotite, mica, feldspar, granite and greensand; c) potassium chloride (KCl)—muriate of potash and rock potash. KCl shall not cause salt buildup in soils through repeated application; d) potassium sulphate—shall be produced by combining naturally occurring brines or mined minerals. Fortification with synthetic chemicals is prohibited. Potassium sulphate made using reactants (such as sulphuric acid or ammonia) is prohibited.
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 <i>Subsection 5.1.2 of CAN/CGSB-32.310</i> .
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.
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> .

<b>4.2 Soil amendments and crop nutrition</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Vermiculite	
Vitamins	Non-synthetic sources of all vitamins and synthetic sources of vitamins B <sub>1</sub> , 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 <b>4.2 Ash</b> .
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 <b>4.2 Composting feedstocks</b>.</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 <b>4.2 Microbial products</b> for information on compost starters.</p>
Yeast	See Table <b>4.2 Microbial products</b> .
Zinc	<p>Zinc oxide and zinc sulphate may be used to correct a documented zinc deficiency.</p> <p>See Table <b>4.2 Micronutrients</b>.</p>

## 4.3 Crop production aids and materials

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	
Amino acids	<p>Shall be from non-synthetic sources.</p> <p>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>
Ammonium carbonate	As an attractant in insect traps.
Aquatic plants and aquatic plant products	<p>Non-synthetic extracts are permitted. Shall not contain synthetic preservatives, such as formaldehyde.</p> <p>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>
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 natural 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> .



4.3 Crop production aids and materials	
Substance Name(s)	Origin and Usage
Biodynamic preparations for compost	
Biological organisms	Biological organisms (living, dead or as extracts), such as 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.
Borate	Mined sources of sodium tetraborate and octaborate may be used as wood preservatives.
Boric acid	May be used for structural pest control (example: for ants). Direct contact with organic food or crops is prohibited.
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	Non-synthetic, food-grade sources. Calcium chloride shall be used to address nutrient deficiencies and physiological disorders.
Calcium silicate	Non-synthetic sources. Calcium silicate shall be used to address nutrient deficiencies and physiological disorders.
Calcium lignin sulphonate	See Table 4.3 <i>Lignin sulphonates</i> .
Calcium polysulphide	See Table 4.3 <i>Lime sulphur</i> .
Carbon dioxide	For soil and greenhouse use and for controlled atmosphere storage.
Chelates	Non-synthetic and listed synthetic chelates are permitted. See Table 4.3 <i>Lignin sulphonates</i> .

<b>4.3 Crop production aids and materials</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Cholecalciferol (vitamin D <sub>3</sub> )	<p>May be used outdoors and inside greenhouses for rodent control when methods described in <i>Subsection 5.6.1</i> of <i>CAN/CGSB-32.310</i>, have failed.</p> <p>Prohibited inside on-farm food processing and food storage facilities.</p>
Citric acid	Non-synthetic and listed synthetic sources may be used as a chelating agent and to adjust pH.
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	<p>For use as a dormant spray on woody plants.</p> <p>Shall not be used as a dust suppressant.</p>
Dust suppressants	<p>Non-synthetic substances are permitted, such as lactic acid and/or as listed in Tables 4.2 and 4.3, such as <i>Lignin sulphonate</i>, <i>Molasses</i> and <i>Vegetable oils</i>.</p> <p>Petroleum products are prohibited.</p>
Extractants	<p>Permitted extractants include non-synthetic substances such as: cocoa butter, lanolin, animal fats, alcohols and water.</p> <p>Extraction with synthetic solvents is prohibited, except as specified in the annotation of substances listed in Table 4.3.</p>

<b>4.3 Crop production aids and materials</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Ferric phosphate (iron ortho-phosphate, iron phosphate)	<p>Permitted as a molluscicide.</p> <p>Shall be used in a manner such 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 shall be used in conjunction with substances listed in Table 4.3, as follows:</p> <p>a) for applications on crops, formulants shall be classified in <i>PMRA List 4A or 4B</i> or non-synthetic.</p> <p>b) formulants classified in <i>PMRA List 3</i> may be used with passive pheromone dispensers.</p> <p>Formulants classified as <i>PMRA List 1 or List 2</i> are prohibited.</p>
Growth regulators for plants	Non-synthetic plant hormones, such as gibberellic acid, indoleacetic acid and cytokinins, are permitted.
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	<p>Lignosulphonic acid, calcium lignosulphate and sodium lignosulphate.</p> <p>Permitted as a chelating agent, as a formulant ingredient and as a dust suppressant.</p> <p>Ammonium lignosulphate is prohibited.</p>

<b>4.3 Crop production aids and materials</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
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	<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>Bioplastic films may be left to decompose in the field if they do not contain substances prohibited by <i>Subsection 1.4</i> of <i>CAN/CGSB 32.310</i> and if requirements for bioplastics in <i>CAN/BNQ 0017-988 (ISO 17088 or its equivalent)</i> are met.</p>
Nitrogen	For controlled atmosphere storage.
Oxygen	For controlled atmosphere storage.

<b>4.3 Crop production aids and materials</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
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 if used in pheromone traps or passive dispensers. For pest control.
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.

4.3 Crop production aids and materials	
Substance Name(s)	Origin and Usage
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	Also known as calcium oxide. Shall not be used as a fertilizer or as a soil amendment.
Repellents	Shall be derived from a non-synthetic source, such as sterilized blood meal, rotten eggs, hair or predator scents. Shall contain no 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.

<b>4.3 Crop production aids and materials</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
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 <b>4.3 Soaps; Vegetable oils; Wetting agents,</b> .
Transplant and potting media	Shall be composed entirely of permitted substances.
Treated seed	Seed treated with naturally-occurring biological management agents is permitted.  Seed pelletized with clay, gypsum, biological organisms (such as rhizobium) or other non-synthetic coatings is permitted.  Plastic polymer pelletization of seed is prohibited.  See also Table <b>4.3 Peracetic acid; Seed treatments.</b>
Tree seals	Plant or milk-based paints are permitted. Shall not be combined with fungicides or other synthetic chemicals. See Table <b>4.3 Plant Protectants.</b>  For planting stock: synthetic grafting materials are permitted, provided that plants are maintained in accordance with requirements of <i>CAN/CGSB-32.310</i> for at least 12 months prior to harvest of organic products.
Vegetable oils	Plant oils shall not contain synthetic pesticides.  For use as spreader-stickers, surfactants and carriers.
Vinegar (acetic acid)	Non-synthetic sources. See Table <b>4.3 Acetic acid.</b>
Virus sprays	
Water	

<b>4.3 Crop production aids and materials</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Water, recycled	<p>Recycled wash water from all organic operations, including dairy operations, may be spread on crop lands. Requirements for land application, as specified in <i>Subsection 5.5.2.5 of CAN/CGSB 32.310</i>, shall be met.</p> <p>In all other uses, recycled water must meet applicable irrigation water regulatory requirements and only contain substances listed in Tables 4.2, 4.3, 7.3 and 7.4.</p>
Wetting agents	<p>Non-synthetic wetting agents, including saponins and microbial wetting agents, are permitted.</p> <p>See Table <b>4.3 Soaps</b>.</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** The prohibitions set out in *Subsection 1.4* of CAN/CGSB 32.310 apply to all substances listed in Tables **5.2** and **5.3**.
- 5.1.3** In addition, the following restrictions apply to substances listed in Tables 5.2 and 5.3 that may derived through the use of biofermentation or substrates:
- a) If a substrate is a component of the substance that is to be used, neither the substance nor the substrate ingredients may be produced from genetic engineering. In this case, substrate ingredients shall be listed in this standard.
  - b) A substance supplied without the substrate on which it was grown may not be genetically engineered. In this case, the substrate used to grow the substance may be produced from genetic engineering, but only if an analogous product grown on a non-genetically engineered substrate is not 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 (e.g. enzymes and milk replacers).

## 5.2 Feed, feed additives and feed supplements 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><i>These exceptions shall be reviewed at the next full revision of the standard.</i></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	Approved as an anti-caking agent in feed to a maximum of 2% of the total diet.
Energy feeds and forage concentrates (grains) and roughages (hay, silage, fodder, straw)	Shall be obtained from organic sources. May include silage preservation products (see Table 5.2 <i>Hay or silage preservation products</i> ).
Enzymes	<p>Naturally-occurring substances 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>

<b>5.2 Feed, feed additives and feed supplements</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Hay or silage preservation products	Preference should be given to bacterial or enzymatic additives derived from bacteria, fungi and plants and food by-products (such as molasses and whey). The following acids may be used: lactic, propionic and formic.
Micro-organisms and yeasts	If organic sources of yeast are not commercially available, non-synthetic yeast sources, including yeast autolysate, shall be used.
Milk replacer	Shall be organic if commercially available. Without antibiotics and animal fats or by-products.  Permitted for emergency use.
Minerals, trace minerals, elements	Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium choride or magnesium oxide. Synthetic nutrient minerals may be used if non-synthetic sources are not commercially available.
Molasses	Shall be organic.
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 0.
Probiotics	
Protein feeds	Shall be from organic sources.
Seaweed meal	
Vitamins	Permitted for enrichment or fortification.

**5.3 Health care products and production aids**

<b>5.3 Health care products and production aids table</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Acetylsalicylic acid	Aspirin.

5.3 Health care products and production aids table	
Substance Name(s)	Origin and Usage
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 <i>Subsection 6.7</i> of <i>CAN/CGSB-32.310</i> , for conditions pertaining to antibiotic use in livestock. See Table 5.3 <i>Antibiotics, oxytetracycline</i> .
Antibiotics, oxytetracycline	For emergency use for bees. Treated equipment shall be destroyed, in accordance with <i>Subsection 7.1.14.7</i> of <i>CAN/CGSB-32.310</i> . If treated bees are taken out of organic production, they do not need not be destroyed.
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.

5.3 Health care products and production aids table	
Substance Name(s)	Origin and Usage
Electrolytes	Including, but not limited to: CMPK (Calcium, Magnesium, Phosphorus, Potassium), calcium propionate and calcium sulphate.  Orally or by injection. Shall not contain antibiotics.
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: a) organic if commercially available; b) obtained from vegetable or animal fats and/or oils; and c) 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	Non-elemental only; not to exceed 5% solution by volume (example: iodophors).  For use as a topical disinfectant. Sources include potassium iodide and elemental iodine. As a cleaning agent, iodine 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

5.3 Health care products and production aids table	
Substance Name(s)	Origin and Usage
	intended for slaughter, and 7 days for dairy animals.
Magnesium sulphate	Mined sources. A source of magnesium and sulphur.
Mineral oil	For external use.
Minerals, trace minerals, elements	Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium chloride and magnesium oxide. Synthetic nutrient minerals may be used if non-synthetic sources are not commercially available. Minerals from any source are permitted for medical use.
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 <i>Subsection 6.7.6 d)</i> of <i>CAN/CGSB 32.310</i> , 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 <i>Subsection 6.7</i> of <i>CAN/CGSB-32.310</i> with regard to the use of internal parasiticides.
Physical teat seals	Synthetic and non-synthetic ingredients are permitted. Shall be free from antibiotics. For post-lactation use. Shall be completely removed prior to nursing or milking. Products that create a barrier within the teat canal should be prescribed and administered under veterinary supervision.
Plant oils	To control external parasites.
Prebiotics	From organic sources if commercially available.
Probiotics	
Sodium Hydroxide	For use in dehorning paste.
Sedatives	Such as xylazine.
Selenium products	Derived from sodium selenate or sodium selenite. See <b>Table 5.3 Minerals, trace minerals, elements</b> . May be used to address documented deficiencies

5.3 Health care products and production aids table	
Substance Name(s)	Origin and Usage
	in the stock, soils or feed supplies.
Sulphur	For control of external parasites.
Vaccines	See <i>Biologics, including vaccines</i> .
Vitamins	Vitamin formulants that comply with Canadian regulations are accepted. Orally, topically or by injection.

## 6 Permitted substances lists for processing

### 6.1 Classification

- 6.1.1** Processing substances are classified according to the following uses and applications:
- a) **Food additives** (see definition in *Section 3* of *CAN/CGSB-32.310*) that are non-organic ingredients (NOIs) of agricultural or non-agricultural origin.
  - b) **Other NOIs not considered to be food additives.**
  - c) **Processing aids** (see definition in *Section 3* of *CAN/CGSB-32.310*).

### 6.2 Restrictions

- 6.2.1** The prohibitions set out in *Subsection 1.4* of *CAN/CGSB 32.310* apply to all substances listed in Tables **6.3**, **6.4**, and **6.5**.

- 6.2.2** In addition, the following restrictions apply to substances listed in Tables **6.3-6.5** which may derived through the use of biofermentation or substrates:
- a) If a substrate is a component of the substance that is to be used, neither the substance nor the substrate ingredients may be produced from genetic engineering. In this case, substrate ingredients shall be listed in this standard.
  - b) A substance supplied without the substrate on which it was grown may not be genetically engineered. In this case, the substrate used to grow the substance may be produced from genetic engineering only if an analogous product grown on a non-genetically engineered substrate is not commercially available.

- 6.2.3** The requirements in *Subsection 9.2* of *CAN/CGSB 32.310* apply to all substances listed in Tables 6.3-6.5.



6.3 Non-organic ingredients classified as food additives

6.3 Non-organic ingredients classified as food additives	
Substance Name(s)	Origin and Usage
Acids	Including: a) alginic; b) citric—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.
Ammonium bicarbonate	As a leavening agent.
Ammonium carbonate	As a leavening agent.
Anhydrous sulphur dioxide, sulphurous acid (sulphur dioxide, SO <sub>2</sub> )	For use as a preservative only in alcoholic beverages; minimal use of SO <sub>2</sub> is recommended. The use of sulphites from SO <sub>2</sub> bottled gas as liquid SO <sub>2</sub> or liberated from ignition of asbestos-free sulphur wicks is permitted.  Minimal use of SO <sub>2</sub> is recommended.  Maximum allowable levels of SO <sub>2</sub> in parts per million (ppm) are: a) in alcoholic beverages containing less than 5% residual sugar, 100 ppm and 30 ppm for total sulphites and free sulphites, respectively; b) in alcoholic beverages containing from 5%-10% residual sugar, 150 ppm and 35 ppm for total and free sulphites, respectively; and c) in alcoholic beverages containing more than 10% or more residual sugar, 250 ppm and 45 ppm for total and free sulphites, respectively.
Argon	

6.3 Non-organic ingredients classified as food additives	
Substance Name(s)	Origin and Usage
Ascorbic acid (vitamin C)	Shall be non-synthetic if commercially available.  For use as an anti-browning agent used prior to the extraction or concentration of fruit or vegetable juice.
Calcium carbonate	Prohibited for use as a colouring agent.
Calcium chloride	Permitted for: a) milk products; b) fat products; c) soybean products; and d) fruits and vegetables.
Calcium citrate	
Calcium phosphates (mono-, di-, and tri- basic forms)	
Calcium sulphate (gypsum)	From mined sources.  Sulphates produced using sulphuric acid are 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> .
Citric acid	From fruit and vegetable products.
Colouring agents	Obtained from naturally-occurring, non-synthetic sources.  Derived using substances in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .

<b>6.3 Non-organic ingredients classified as food additives</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Enzymes	<p>Shall be organic if commercially available.</p> <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: 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 and <b>6.3-6.5</b>, where applicable:</p> <p>a) water;</p> <p>b) culinary steam, as described in <i>Subsection 8.1.2 b)</i> of <i>CAN/CGSB 32.310</i>;</p> <p>c) organic alcohols, fats and oils, if commercially available; and</p> <p>d) substances listed in Tables <b>6.3-6.5</b> of this standard.</p>
Ferrous sulphate	<p>For iron enrichment or fortification of products when recommended or required by regulation. Sulphates produced using sulphuric acid are prohibited.</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>

6.3 Non-organic ingredients classified as food additives	
Substance Name(s)	Origin and Usage
Glycerides (mono- and diglycerides)	From organic sources if commercially available. For use in drum drying of products.
Glycerol (glycerine, glycerin)	Shall be from organic sources if commercially available. Shall be produced using fermentation or by hydrolysis of natural (vegetable or animal) fats and oils.
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 substances listed in <b>Tables 6.3-6.5</b> .
Magnesium carbonate	For use in meat products whose contents are $\geq 70\%$ 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 $\geq 70\%$ and $< 95\%$ organic ingredients.
Magnesium sulphate	
Malic acid	
Meat curing agents	Extract, juice or cultured powder of organic celery or organic chard, if commercially available.

<b>6.3 Non-organic ingredients classified as food additives</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Ozone	
Pectin	High-methoxyl and low-methoxyl pectin sources are permitted.
Potassium acid tartrate (KC <sub>4</sub> H <sub>5</sub> O <sub>6</sub> )	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	
Potassium metabisulphite	See <i>Anhydrous sulphur dioxide, sulphurous acid (sulphur dioxide, SO<sub>2</sub>)</i> .
Potassium tartrate (K <sub>2</sub> C <sub>4</sub> H <sub>4</sub> O <sub>6</sub> . INS 336)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
Potassium phosphate (mono-, di-, and tribasic forms)	For use in products whose contents are ≥70% and <95% organic ingredients.
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	Non-synthetic sources.
Sodium citrate	Non-synthetic sources.
Sodium hydroxide (lye or caustic soda)	
Sodium phosphates	For use in dairy products.

6.3 Non-organic ingredients classified as food additives	
Substance Name(s)	Origin and Usage
Tartaric acid (C <sub>4</sub> H <sub>6</sub> O <sub>6</sub> . 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> .
Waxes	If organic waxes, such as beeswax, are not commercially available, non-synthetic sources, such as carnauba wax, shall be used.  Organic waxes or carnauba wax may be applied to fresh produce.  See Table 6.5 <i>Waxes</i> .
Yeast	If organic sources of yeast are not commercially available, these non-synthetic sources of yeast may be used: a) autolysate b) bakers' (may contain lecithin, as listed in Table 6.3); c) brewers'; d) nutritional; and e) smoked.  Growth on petrochemical substrate and sulphite waste liquor is prohibited.  Non-synthetic smoke flavouring process shall be documented.
Yeast foods	For use in alcoholic beverages: a) potassium chloride—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)—for cider, mead and wine.

6.4 Non-organic ingredients not classified as food additives

6.4 Non-organic ingredients not classified as food additives	
Substance Name(s)	Origin and Usage
Cornstarch	Shall not contain chemosynthetic substances.
Cultures	See Table 6.4 <i>Micro-organisms</i> .
Flavours	Shall be from organic sources if commercially available. Derived from non-synthetic sources (such as, plants, meat, seafood, micro-organisms, etc.) using approved methods (See Section 10 of CAN/CGSB-32.310), and substances (See Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> ).
Micro-organisms	<p>Includes starter and dairy cultures and other preparations of micro-organisms normally used in product processing.</p> <p>Ancillary ingredients used for micro-organism preparations: If micro-organisms prepared on organic substrates are not commercially available, non-synthetic substrates (such as milk, lactose, soy, etc.) are permitted.</p> <p>Other ancillary ingredients used in micro-organism preparations (such as carriers and fillers etc.) shall be organic, if such a product (the combination of ancillary ingredients used in conjunction with microorganisms) is commercially available. Substances used as anti-caking agents 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.</p> <p>Synthetic potassium iodide is permitted for use only in products whose contents are <math>\geq 70\%</math> and <math>&lt; 95\%</math> organic ingredients.</p>

6.4 Non-organic ingredients not classified as food additives	
Substance Name(s)	Origin and Usage
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</i> and <i>Potassium chloride</i> .  See definition of <i>Salt</i> in Section 3 of CAN/CGSB-32.310.
Smoke flavour	See Table 6.3 <i>Yeast</i> .
Starch	From rice and waxy maize. 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.
Vitamins and mineral nutrients	Shall be used when legally required. From non-synthetic sources if commercially available.

#### 6.5 Processing aids

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)	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.
Bentonite	
Calcium carbonate	



<b>6.5 Processing aids</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Calcium hydroxide (lime)	
Calcium sulphate, (gypsum)	<p>May be used:</p> <ul style="list-style-type: none"> <li>a) as a carrier for cakes and biscuits,</li> <li>b) for soybean products; and</li> <li>c) for bakers' yeast.</li> </ul> <p>Sulphates produced using sulphuric acid are prohibited.</p>
Carbon dioxide	
Carrageenan (Irish moss)	Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .
Casein	<p>Shall be from organic sources if commercially available.</p> <p>Non-organic casein shall be derived from the milk of animals not treated with rBGH (recombinant bovine growth hormone).</p>
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.

6.5 Processing aids	
Substance Name(s)	Origin and Usage
Enzymes	<p>Shall be from an organic source if commercially available.</p> <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) animal-derived. 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>
Ethylene	For post-harvest ripening of tropical fruit and degreening of citrus.
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	<p>Shall be organic if commercially available.</p> <p>Bleached form is permitted if processed using substances listed in <b>Tables 6.3-6.5.</b></p>
Nitrogen	Shall be food-grade quality.

6.5 Processing aids	
Substance Name(s)	Origin and Usage
Oxygen	
Ozone	
Perlite	For use as a filter 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.</p> <p>Shall be derived using substances listed in <b>Table 6.3</b> <i>Extraction solvents, carriers and precipitation aids</i>.</p> <p>Permitted as a filtration aid for wines.</p>
Tartaric acid (C <sub>4</sub> H <sub>6</sub> O <sub>6</sub> . INS 334)	<p>Shall be from non-synthetic sources.</p> <p>For beverages.</p>
Vegetable oils	From organic sources if commercially available. Derived using substances listed in <b>Table 6.3</b> <i>Extraction solvents, carriers and precipitation aids</i> .

<b>6.5 Processing aids</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
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>

**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 *Section 3* of *CAN/CGSB-32.310*.

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.

**7.1.2** Substances listed on Safety Data Sheets (SDS) shall be listed on the PSL. Incidental additives not included on SDS, used in conjunction with substances listed on Tables **7.3** and **7.4**, do not need to be listed on the PSL.

**7.1.3** The prohibitions set out in *Subsection 1.4* of *CAN/CGSB 32.310* apply to all substances listed in Tables **7.3** and **7.4**.

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

**7.3 Food-grade cleaners, disinfectants and sanitizers that are permitted without a mandatory removal event**

<b>7.3 Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Acetic acid	Non-synthetic sources may be used on food and plants. Non-synthetic and synthetic sources may be used on equipment.
Alcohol, ethyl (ethanol)	If organic sources are not commercially available, non-synthetic sources may be used.  On equipment.

<b>7.3 Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Alcohol, isopropyl	Non-synthetic and synthetic sources may be used.  On equipment.
Ascorbic acid (vitamin C)	Non-synthetic sources shall be used.  On equipment.
Chlorine compounds	The following chlorine compounds are permitted: a) calcium hypochlorite; b) chlorine dioxide; c) sodium hypochlorite.  Chlorine compounds may be used: a) for wash water in direct contact with crops or food. b) in flush water applied to crops or fields, such as from cleaning irrigation systems, equipment, and storage and transport units.  Shall not exceed maximum levels for safe drinking water.
Citric acid	Non-synthetic and synthetic sources are permitted.
Glycerol (glycerine, glycerin)	Shall be: a) from organic sources if commercially available; b) from vegetable or animal fats and/or oils; c) produced using fermentation or by hydrolysis.
Hydrogen peroxide	
Ozone	
Peracetic (peroxyacetic) acid	On food and plants: peracetic acid may be used in wash or rinse water.  Peracetic acid may also be used on food contact surfaces.
Potassium bicarbonate	On equipment.
Sodium bicarbonate (baking soda)	Non-synthetic sources.  See also Table 7.4 <i>Sodium bicarbonate (baking soda), synthetic.</i>

<b>7.3 Food-grade cleaners, disinfectants and sanitizers permitted without a mandatory removal event</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Sodium carbonate (soda ash)	Non-synthetic sources. See also <b>7.4 Sodium carbonate (soda ash), synthetic.</b>
Sodium citrate	Non-synthetic sources.
Sodium hydroxide (lye or caustic soda)	
Vinegar	If organic sources are not commercially available, non-organic sources are permitted.

**7.4 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**

<b>7.4 Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
Chlorine compounds	The following chlorine compounds are permitted: a) calcium hypochlorite; b) chlorine dioxide; and c) sodium hypochlorite.  May be used up to maximum label rates to disinfect and sanitize facilities, equipment, tools and food contact surfaces.
Detergents	Detergents shall be biodegradable (see <i>Biodegradable</i> definition in <i>Section 3</i> of <i>CAN/CGSB-32.310</i> ).  On equipment.
Iodine	Non-elemental only. Shall not exceed 5% solution by volume (example: iodophors).  On equipment.

<b>7.4 Cleaners, disinfectants and sanitizers permitted on organic product contact surfaces for which a removal event is mandatory</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
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)	On equipment.
Soaps	Soaps shall consist of fatty acids derived from animal or vegetable oils.
Sodium bicarbonate (baking soda), synthetic	
Sodium borate	
Sodium carbonate (soda ash), synthetic	
Sodium citrate	
Sodium percarbonate	
Sodium silicate	In detergents. See Table <b>7.4 Detergents</b> .
Surfactants	See Table <b>7.4 Detergents; Soaps</b> .
Wetting agents	Non-synthetic wetting agents, including saponins and microbial wetting agents. See Table <b>7.4 Detergents; Soaps</b> .



**8 Facility Management Substances**

**8.1** Substances listed in Table 8.3 are pesticides (See pesticides definition in *Section 3* of *CAN/CGSB-32.310*) that shall be used as annotated, in and around facilities, as specified in *Subsection 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.

**8.2** Substances listed in Table 8.3 may be used in facilities as specified in their annotations.

**8.3 Facility pest management substances**

<b>8.3 Facility pest management substances</b>	
<b>Substance Name(s)</b>	<b>Origin and Usage</b>
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 <sub>3</sub> )	Prohibited inside organic food processing and food storage facilities.
Clove oil	As a sprout inhibitor.
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.

<b>Table 8.4 Other facility management substances</b>	
Carbon dioxide	For controlled atmosphere storage.
Clove oil	Clove oil
Ethylene	For post-harvest ripening of tropical fruit and degreening of citrus.
Nitrogen	For controlled atmosphere storage.

Oxygen	For controlled atmosphere storage.
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**Annex A**  
(informative)  
**Alphabetized list of substances**

Table	Substance Name(s)	Origin and Usage
6.5	<i>Acer pennsylvanicum</i>	As an anti-foaming agent in maple syrup production.
7.3	Acetic acid	Non-synthetic sources may be used on food and plants. Non-synthetic and synthetic sources may be used on equipment.
4.3	Acetic acid	Non-synthetic sources. As an adjuvant, a pH regulator and for weed control.
5.3	Acetylsalicylic acid	Aspirin.
6.3	Acids	Including: a) alginic; b) citric—produced by microbial fermentation of carbohydrate substances; and c) lactic.
5.3	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.
6.3	Activated charcoal	Shall be of plant origin. Prohibited for use in the production of maple syrup.
6.5	Activated charcoal	Shall be of plant origin. Prohibited for use in the production of maple syrup.
4.3	Adhesives for sticky traps and barriers	
4.2	Agar	For use in initial mushroom spawn production.
6.3	Agar	See Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .

Table	Substance Name(s)	Origin and Usage
7.3	Alcohol, ethyl (ethanol)	If organic sources are not commercially available, non-synthetic sources may be used.  On equipment.
6.5	Alcohol, ethyl (ethanol)	Shall be organic if commercially available.
5.3	Alcohol, ethyl (ethanol)	Permitted as a disinfectant and sanitizer.
7.3	Alcohol, isopropyl	Non-synthetic and synthetic sources may be used.  On equipment.
5.3	Alcohol, isopropyl	Permitted as a disinfectant.
4.2	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> .
6.3	Alginates	The following alginates are permitted:  a) alginic acid;  b) potassium alginate; and  c) sodium alginate.

Table	Substance Name(s)	Origin and Usage
5.2	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><i>These exceptions shall be reviewed at the next full revision of the standard.</i></p>
4.2	Amino acids	<p>Shall be from non-synthetic sources.</p> <p>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>
4.3	Amino acids	<p>Shall be from non-synthetic sources.</p> <p>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>
6.3	Ammonium bicarbonate	As a leavening agent.
6.3	Ammonium carbonate	As a leavening agent.
4.3	Ammonium carbonate	As an attractant in insect traps.

Table	Substance Name(s)	Origin and Usage
8.3	Ammonium carbonate	As an attractant in insect traps.
6.3	Anhydrous sulphur dioxide, sulphurous acid (sulphur dioxide, SO <sub>2</sub> )	<p>For use as a preservative only in alcoholic beverages; minimal use of SO<sub>2</sub> is recommended. The use of sulphites from SO<sub>2</sub> bottled gas as liquid SO<sub>2</sub> or liberated from ignition of asbestos-free sulphur wicks is permitted.</p> <p>Minimal use of SO<sub>2</sub> is recommended.</p> <p>Maximum allowable levels of SO<sub>2</sub>, 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 from 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>
4.2	Animal manure	See <i>Sections 5 and 6 of CAN/CGSB-32.310</i> .
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.</p> <p>Manure sources shall conform to requirements specified in <i>Subsection 5.5.1 of CAN/CGSB-32.310</i>.</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 of <i>Subsection 5.5.2.5 of CAN/CGSB-32.310</i> have been met.</p>
5.3	Antibiotics	See <i>Subsection 6.7 of CAN/CGSB-32.310</i> , 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. Treated equipment shall be destroyed, in accordance with <i>Subsection 7.1.14.7 of CAN/CGSB-32.310</i> . If treated bees are taken out of organic production, they do not need not be destroyed.

Table	Substance Name(s)	Origin and Usage
5.3	Anti-inflammatory	Such as ketoprofen. Preference shall be given to non-synthetic alternatives.  To reduce inflammation.
5.2	Antioxidants	Non-synthetic sources. Derived using substances listed in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .
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	Aquatic plants and aquatic plant products	Non-synthetic extracts are permitted. Shall not contain synthetic preservatives, such as formaldehyde.  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.
6.3	Argon	
6.5	Argon	
4.3	Arthropod pathogens	See Table 4.3 <i>Biological organisms</i> .



Table	Substance Name(s)	Origin and Usage
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> .
6.5	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.
7.3	Ascorbic acid (vitamin C)	Non-synthetic sources shall be used.  On equipment.
6.3	Ascorbic acid (vitamin C)	Shall be non-synthetic if commercially available.  For use as an anti-browning agent used prior to the extraction or concentration of fruit or vegetable juice.
4.3	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.
4.2	Ash	Ash shall be from plant and animal sources. Ash obtained from off-farm sources 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 Fertilizing Residuals</i> .  Shall not cause heavy metal buildup in soil through repeated application.  Ash from burning minerals, manure, coloured paper, plastics or other synthetic substances is prohibited.
4.3	Baits for rodent traps	Baits shall not contain synthetic substances.
6.5	Bentonite	

Table	Substance Name(s)	Origin and Usage
4.3	Bentonite	See Table 4.2 <i>Mined minerals, unprocessed</i> .
4.2	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.
4.3	Biodynamic preparations for compost	
4.2	Biodynamic preparations for soil and plants	
4.3	Biological organisms	Biological organisms (living, dead or as extracts), such as such as viruses, bacteria, protozoa, fungi, insects and nematodes. Some examples are <i>Bacillus thuringiensis</i> , spinosad and granulosin.  Used to benefit plant production by reducing pest populations.
5.3	Biologics, including vaccines	
4.2	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.
4.3	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.
8.3	Boric acid	May be used for structural pest control (example: for ants). Direct contact with organic products is prohibited.

Table	Substance Name(s)	Origin and Usage
4.2	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 <b>4.2 Micronutrients</b>.</p>
5.3	Botanical compounds	<p>Botanical preparations, such as atropine, butorphanol and other medicines from herbaceous plants shall be used according to label specifications.</p>
4.3	Botanical pesticides	<p>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.</p>
4.2	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.</p> <p>Non-synthetic calcium chloride may be used to address nutrient deficiencies and physiological disorders.</p> <p>Shall not cause salt buildup in soil through repeated application.</p> <p>Calcium products used in controlled atmosphere storage are prohibited.</p> <p>See Table 4.2 <i>Gypsum</i></p>
5.3	Calcium borogluconate	<p>For milk fever. No withdrawal period required.</p>
6.5	Calcium carbonate	
6.3	Calcium carbonate	<p>Prohibited for use as a colouring agent.</p>

Table	Substance Name(s)	Origin and Usage
4.3	Calcium chloride	Non-synthetic, food-grade sources. Calcium chloride shall be used to address nutrient deficiencies and physiological disorders.
6.3	Calcium chloride	Permitted for: a) milk products; b) fat products; c) soybean products; and d) fruits and vegetables.
6.3	Calcium citrate	
6.5	Calcium hydroxide (lime)	
4.3	Calcium lignin sulphonate	See Table 4.3 <i>Lignin sulphonates</i> .
6.3	Calcium phosphates (mono-, di-, and tri-basic forms)	
4.3	Calcium polysulphide	See Table 4.3 <i>Lime sulphur</i> .
4.2	Calcium sulphate (gypsum)	See Table 4.2 <i>Gypsum (calcium sulphate)</i>
4.3	Calcium silicate	Non-synthetic sources. Calcium silicate shall be used to address nutrient deficiencies and physiological disorders.
6.3	Calcium sulphate (gypsum)	From mined sources.  Sulphates produced using sulphuric acid are prohibited.
4.2	Calcium sulphate (gypsum)	Mined sources; to correct calcium and sulphur deficiencies and soil salinity problems, as documented by visual symptoms or by testing of soil or plant tissue.  Sulphates produced using sulphuric acid are prohibited.

Table	Substance Name(s)	Origin and Usage
6.5	Calcium sulphate, (gypsum)	May be used: a) as a carrier for cakes and biscuits, b) for soybean products; and c) for bakers' yeast.  Sulphates produced using sulphuric acid are prohibited.
4.2	Cannery wastes	Shall be from organic sources. Non-organic cannery wastes shall be composted. See also Table 4.2 <i>Composting feedstocks</i> .
6.5	Carbon dioxide	
8.3	Carbon dioxide	
6.3	Carbon dioxide	Carbonation of wine or mead is prohibited.
4.3	Carbon dioxide	For soil and greenhouse use and for controlled atmosphere storage.
4.2	Cardboard	Cardboard shall not be waxed or impregnated with fungicide or prohibited substances.  May be used as mulch or as composting feedstock. See Table 4.2 <i>Composting feedstocks</i> .
6.3	Carrageenan (Irish moss)	Derived using substances in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .
6.5	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	Cellulose	As a filtering aid (non-chlorine bleached) and for use in inedible regenerative sausage casings.
4.2	Chelates	Non-synthetic and listed synthetic chelates are permitted. See Table 4.3 <i>Lignin sulphonates</i> .
4.3	Chelates	Non-synthetic and listed synthetic chelates are permitted. See Table 4.3 <i>Lignin sulphonates</i> .

Table	Substance Name(s)	Origin and Usage
7.3	Chlorine compounds	<p>The following chlorine compounds are permitted:</p> <ul style="list-style-type: none"> <li>a) calcium hypochlorite;</li> <li>b) chlorine dioxide;</li> <li>c) sodium hypochlorite.</li> </ul> <p>Chlorine compounds may be used:</p> <ul style="list-style-type: none"> <li>a) for wash water in direct contact with crops or food.</li> <li>b) in flush water applied to crops or fields, such as from cleaning irrigation systems, equipment, and storage and transport units.</li> </ul> <p>Shall not exceed maximum levels for safe drinking water.</p>
7.4	Chlorine compounds	<p>The following chlorine compounds are permitted:</p> <ul style="list-style-type: none"> <li>a) calcium hypochlorite;</li> <li>b) chlorine dioxide; and</li> <li>c) sodium hypochlorite.</li> </ul> <p>May be used up to maximum label rates to disinfect and sanitize facilities, equipment, tools and food contact surfaces.</p>
5.3	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.
4.3	Cholecalciferol (vitamin D <sub>3</sub> )	<p>May be used outdoors and inside greenhouses for rodent control when methods described in <i>Subsection 5.6.1 of CAN/CGSB-32.310</i>, have failed.</p> <p>Prohibited inside on-farm food processing and food storage facilities.</p>
8.3	Cholecalciferol (vitamin D <sub>3</sub> )	Prohibited inside organic food processing and food storage facilities.
6.3	Citric acid	From fruit and vegetable products.
7.3	Citric acid	Non-synthetic and synthetic sources are permitted.
4.3	Citric acid	Non-synthetic and listed synthetic sources may be used as a chelating agent and to adjust pH.

Table	Substance Name(s)	Origin and Usage
4.2	Clay	Bentonite, perlite and zeolite; as soil amendments or seed pellet additives. See Table 4.2 <i>Mined minerals, unprocessed</i> .
6.5	Clay dust	As a filtering agent in maple syrup production.
8.4	Clove oil	As a sprout inhibitor.
5.3	Colostrum whey	Probiotic.
5.3	Colostrum	Shall be organic if commercially available.
6.3	Colouring agents	Obtained from naturally-occurring, non-synthetic sources. Derived using substances in Table 6.3 <i>Extraction solvents, carriers and precipitation aids</i> .
4.2	Compost	See Table 4.2 <i>Compost obtained from off-farm sources; Compost produced on the farm; Compost tea; and Composting feedstocks</i> .
4.2	Compost obtained from off-farm sources	Compost obtained from off-farm sources shall conform to the criteria specified in Table 4.2 <i>Composting feedstocks</i> . In addition, compost obtained from off-farm sources: d) 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> ; e) shall not cause heavy metal buildup in soil through repeated application; and f) shall meet criteria for acceptable levels (MPN/g total solids) of human pathogens as specified in <i>Guidelines for Compost Quality</i> . See Table 4.2 <i>Worm castings</i> for information on vermicompost. See Table 4.2 <i>Microbial products</i> for information on compost starters.

Table	Substance Name(s)	Origin and Usage
4.2	Compost produced on the farm	<p>Compost produced on the farm shall conform to the criteria specified in Table 4.2 <i>Composting feedstocks</i>.</p> <p>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"> <li>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</li> <li>b) meet limits for acceptable levels (MPN/g total solids) of human pathogens specified in <i>Guidelines for Compost Quality</i>; or</li> <li>c) be considered as aged or raw manure rather than compost (that is, it meets requirements specified in Section 5.5.2.5 of CAN/CGSB-32.310.</li> </ul> <p>See Table 4.2 <i>Worm castings</i> for information on vermicompost.</p> <p>See Table 4.2 <i>Microbial products</i> for information on compost starters.</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 obtained 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 Section 5.5.2.5 of CAN/CGSB-32.310 have been met.</p> <p>See <i>Compost Tea</i> definition in Section 3 of CAN/CGSB-32.310.</p>



Table	Substance Name(s)	Origin and Usage
4.2	Composting feedstocks	<p>Acceptable feedstocks include:</p> <ul style="list-style-type: none"> <li>a) animal manures conforming to criteria specified in <i>Section 5.5.1 of CAN/CGSB-32.310</i>;</li> <li>b) animals, animal products and by-products (including fishery);</li> <li>c) plants and plant by-products (including forestry and source-separated yard debris, such as grass clippings and leaves), pomaces and cannery wastes;</li> <li><b>8.3.1</b> d) soils and minerals that conform to the requirements of this standard and of <i>CAN/CGSB-32.310</i>; and</li> <li>e) paper yard waste bags which contain coloured ink.</li> </ul> <p>When evidence indicates that composting feedstocks may contain a substance prohibited by <i>Subsection 1.4 of CAN/CGSB 32.310</i> known to be persistent in compost, documentation or testing of the final product shall be required. This requirement to document or test the final product does not apply to animal manures used as composting feedstocks.</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> <p>See Table 4.2 <i>Microbial products</i> for information on compost starters.</p>

Table	Substance Name(s)	Origin and Usage
4.3	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>
4.2	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>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>Copper ammonia base, copper ammonium carbonate, copper nitrate and cuprous chloride are prohibited.</p> <p>See Table 4.2 <i>Micronutrients</i>.</p>
5.3	Copper sulphate	As an essential nutrient (source of copper and sulphur) and for topical use (foot baths).
6.4	Cornstarch	Shall not contain chemosynthetic substances.
6.4	Cultures	See Table 6.4 <i>Micro-organisms</i> .
7.4	Detergents	<p>Detergents shall be biodegradable (see <i>Biodegradable</i> definition in Section 3 of CAN/CGSB-32.310).</p> <p>On equipment.</p>
8.3	Diatomaceous earth	
5.2	Diatomaceous earth	Approved as an anti-caking agent in feed to a maximum of 2% of the total diet.

Table	Substance Name(s)	Origin and Usage
6.5	Diatomaceous earth	As a food filtering aid or as a clarifying agent.
5.3	Diatomaceous earth	For use in control of external parasites.
4.3	Diatomaceous earth	Non-heated forms are permitted. Synthetic pesticides and synergists shall not be added.
4.2	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 must be listed in Table 4.2. If feedstocks are obtained from off-farm sources, the digestate must comply with the heavy metal restrictions in Table 4.2 <i>Compost obtained from off-farm sources</i>;</p> <p>b) the criteria for raw manure land application specified in <i>Section 5.5.2.3 of CAN/CGSB 32.310</i> shall be met;</p> <p>c) the digestate may be considered compost if it meets the criteria specified in Table 4.2 <i>Compost produced on the farm</i>.</p> <p>Anaerobic digestate may also 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>
4.3	Dormant oils	For use as a dormant spray on woody plants. Shall not be used as a dust suppressant.
4.3	Dust suppressants	<p>Non-synthetic substances are permitted, such as lactic acid and/or as listed in Tables 4.2 and 4.3, such as <i>Lignin sulphonate, Molasses and Vegetable oils</i>.</p> <p>Petroleum products are prohibited.</p>
4.2	Dust suppressants	<p>Non-synthetic substances are permitted, such lactic acid and/or as listed in Tables 4.2 and 4.3 (for example: <i>Lignin sulphonate, Molasses, Vegetable oils</i>).</p> <p>Petroleum products are prohibited.</p>

Table	Substance Name(s)	Origin and Usage
5.3	Electrolytes	<p>Including, but not limited to: CMPK (Calcium, Magnesium, Phosphorus, Potassium), calcium propionate and calcium sulphate.</p> <p>Orally or by injection. Shall not contain antibiotics.</p>
5.2	Energy feeds and forage concentrates (grains) and roughages (hay, silage, fodder, straw)	Shall be obtained from organic sources. May include silage preservation products (see Table 5.2 <i>Hay or silage preservation products</i> ).
5.2	Enzymes	<p>Naturally-occurring substances 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>
4.2	Enzymes	Shall be derived microbiologically from natural non-synthetic substances. Shall not be fortified with synthetic plant nutrients.

Table	Substance Name(s)	Origin and Usage
6.5	Enzymes	<p>Shall be from an organic source if commercially available.</p> <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) animal-derived. 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	Enzymes	<p>Shall be organic if commercially available.</p> <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: 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.
4.3	Extractants	<p>Permitted extractants include non-synthetic substances such as: cocoa butter, lanolin, animal fats, alcohols and water.</p> <p>Extraction with synthetic solvents is prohibited, except as specified in the annotation of substances listed in Table 4.3.</p>

Table	Substance Name(s)	Origin and Usage
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 4.2.
6.3	Extraction solvents, carriers and precipitation aids	The following may be used to derive substances listed in Tables 5.2 and <b>6.3-6.5</b> , where applicable: a) water; b) culinary steam, as described in <i>Subsection 8.1.2 b)</i> of <i>CAN/CGSB 32.310</i> ; c) organic alcohols, fats and oils, if commercially available; and d) substances listed in Tables <b>6.3-6.5</b> of this standard.
4.2	Feather meal	
4.3	Ferric phosphate (iron ortho-phosphate, iron phosphate)	Permitted as a molluscicide.  Shall be used in a manner such that runoff into water bodies is prevented.  Contact with crops is prohibited.
6.3	Ferrous sulphate	For iron enrichment or fortification of products when recommended or required by regulation. Sulphates produced using sulphuric acid are prohibited.
4.3	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.
4.2	Fish farm wastes	Shall be composted.

Table	Substance Name(s)	Origin and Usage
4.2	Fish meal, fish powder, hydrolysate, emulsions and solubles	<p>The following fish products are permitted:</p> <ul style="list-style-type: none"> <li>a) fish meal;</li> <li>b) fish powder; and</li> <li>c) hydrolysate, emulsions and solubles—non-synthetic substances or those derived from non-synthetic substances.</li> </ul> <p>Addition to fish products of ethoxyquin or other synthetic preservatives, fertilizers and other chemically synthesized substances not listed in this standard is prohibited. 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"> <li>a) vinegar;</li> <li>b) non-synthetic citric acid;</li> <li>c) synthetic citric acid;</li> <li>d) phosphoric acid; and</li> <li>e) sulphuric acid.</li> </ul> <p>The amount of acid used for pH adjustment shall not exceed the minimum needed to stabilize the product.</p>
6.4	Flavours	<p>Shall be from organic sources if commercially available. Derived from non-synthetic sources (such as, plants, meat, seafood, micro-organisms, etc.) using approved methods (See <i>Section 10</i> of <i>CAN/CGSB-32.310</i>), and substances (See <i>Table 6.3 Extraction solvents, carriers and precipitation aids</i>).</p>
5.3	Formic acid	<p>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.</p>
4.3	Formulants	<p>Formulants shall be used in conjunction with substances listed in <i>Table 4.3</i>, as follows:</p> <ul style="list-style-type: none"> <li>a) for applications on crops, formulants shall be classified in <i>PMRA List 4A or 4B</i> or non-synthetic.</li> <li>b) formulants classified in <i>PMRA List 3</i> may be used with passive pheromone dispensers.</li> </ul> <p>Formulants classified in <i>PMRA List 1 or List 2</i> are prohibited.</p>

Table	Substance Name(s)	Origin and Usage
4.2	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>Fish meal, fish powder, hydrolysate, emulsions and solubles; Aquatic plants and plant products; Humates, humic acid and fulvic acid.</i>
5.3	Formulants (inerts, excipients)	Shall be used in conjunction with substances listed in Table 5.3.
6.5	Gelatine	Shall be from organic sources if commercially available.  Permitted sources are: a) plants; and b) animals. Animal gelatine may be used in preparations of canned meat or as a gelling agent for gummed candy. If derived from cattle, gelatine shall be guaranteed free of specified risk 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.
6.3	Gelatine	Shall be organic if commercially available.  Gelatine may be sourced from: a) plants; or 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.
6.3	Glucono delta lactone	Production by the oxidation of D-glucose with bromine water is prohibited.
5.3	Glucose	
6.3	Glycerides (mono- and diglycerides)	From organic sources if commercially available. For use in drum drying of products.



Table	Substance Name(s)	Origin and Usage
5.3	Glycerol (glycerine, glycerin)	Shall be from organic sources if commercially available. Shall be produced using fermentation or by hydrolysis of natural (vegetable or animal) fats and oils.
6.3	Glycerol (glycerine, glycerin)	Shall be from organic sources if commercially available. Shall be produced using fermentation or by hydrolysis of natural (vegetable or animal) fats and oils.
7.3	Glycerol (glycerine, glycerin)	Shall be produced using fermentation or by the hydrolysis of natural (vegetable or animal) fats and oils.
4.3	Growth regulators for plants	Non-synthetic plant hormones, such as gibberellic acid, indoleacetic acid and cytokinins, are permitted.
4.2	Guano	Shall be decomposed, dried deposits from wild bats or birds. Domesticated fowl excrement is considered <i>manure</i> , not <i>guano</i> .
6.3	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.
5.2	Hay or silage preservation products	Preference should be given to bacterial or enzymatic additives derived from bacteria, fungi and plants and food by-products (such as molasses and whey).  The following acids may be used: lactic, propionic and formic.
4.3	Homeopathic preparations	
5.3	Homeopathy and biotherapies	
5.3	Honey	Shall be organic.
4.3	Hormones	See Table 4.3 <i>Growth regulators for plants</i> .

Table	Substance Name(s)	Origin and Usage
4.2	Humates, humic acid and fulvic acid	<p>Permitted if extracted by:</p> <ul style="list-style-type: none"> <li>a) non-synthetic substances;</li> <li>b) microbial fermentation; or</li> <li>c) potassium hydroxide—potassium hydroxide levels used in the extraction process shall not exceed the amount required for extraction.</li> </ul> <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 Fertilizing Residuals</i>.</p>
4.2	Humus from worms and insects (vermicompost)	See Table 4.2 <i>Worm castings</i> .
4.3	Hydrated lime	For plant disease control.
7.3	Hydrogen peroxide	
4.3	Hydrogen peroxide	Permitted for use as a fungicide.
5.3	Hydrogen peroxide	<p>Pharmaceutical grade hydrogen peroxide is permitted for external use (disinfectant),</p> <p>Food-grade hydrogen peroxide is permitted for internal use (for example, added to livestock drinking water).</p>
4.2	Inoculants	See Table 4.2 <i>Microbial products</i> .
7.4	Iodine	<p>Non-elemental only. Shall not exceed 5% solution by volume (example: iodophors).</p> <p>On equipment.</p>
5.3	Iodine	<p>Non-elemental only; not to exceed 5% solution by volume (example: iodophors).</p> <p>For use as a topical disinfectant. Sources include potassium iodide and elemental iodine. As a cleaning agent, iodine shall be followed by a hot-water rinse.</p>

Table	Substance Name(s)	Origin and Usage
4.2	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 <b>4.2 Micronutrients</b> .
5.3	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.
6.5	Isinglass	As a fining agent (fish-based).
6.5	Kaolin	As a clarifying agent.
4.3	Kaolin clay	Kaolin clay and calcined kaolin clay. Addition of synthetic chemicals to kaolin clay during calcination is prohibited.
6.3	Kelp and kelp products	For use as a thickener and dietary supplement.
4.2	Kelp and kelp products	See Table <b>4.2 Aquatic plants and aquatic plant products</b> .
4.2	Leaf mould	
6.5	Lecithin	Shall be organic if commercially available. Bleached form is permitted if processed using substances listed in <b>Tables 6.3-6.5</b> .
6.3	Lecithin	Shall be organic if commercially available. Bleached form is permitted if processed using substances listed in <b>Tables 6.3-6.5</b> .
4.3	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.
7.4	Lime	All forms of lime, including calcium carbonate, calcium hydroxide and calcium oxide.

Table	Substance Name(s)	Origin and Usage
4.3	Lime sulphur (calcium polysulphide)	Permitted on plants as: a) a fungicide; b) an insecticide; and c) an acaricide (mite control).
5.3	Lime, hydrated	Shall not be used to deodorize animal wastes.
4.2	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.  Shall be used with caution to prevent magnesium buildup in soil.  Calcium products that have been used in controlled atmosphere storage are prohibited.
5.3	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 7 days for dairy animals.
4.2	Magnesium	Non-synthetic substances or those derived from natural substances, without the addition of chemically synthesized substances or chemical treatments.  The following sources of magnesium are permitted: a) magnesium rock—magnesium carbonate, magnesium chloride; b) dolomitic limestone (not slaked); c) magnesium sulphate (MgSO <sub>4</sub> ): Epsom Salts (may be synthetic), kieserite. MgSO <sub>4</sub> shall be used to correct a documented magnesium deficiency.
6.3	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).

<b>Table</b>	<b>Substance Name(s)</b>	<b>Origin and Usage</b>
6.3	Magnesium chloride	Derived from seawater.
4.3	Magnesium chloride	Non-synthetic sources.
6.3	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 $\geq 70\%$ and $< 95\%$ organic ingredients.
6.3	Magnesium sulphate	
5.3	Magnesium sulphate	Mined sources. A source of magnesium and sulphur.
6.3	Malic acid	
4.2	Manganese	Manganous oxide and manganese sulphate are permitted, to correct a documented manganese deficiency.  See Table <b>4.2 Micronutrients</b> .
4.2	Manure, composted	See Table <b>4.2 Compost</b> .
4.2	Manure, non-organic manure source	See <i>Subsection 5.5 of CAN/CGSB-32.310</i> .
6.3	Meat curing agents	Extract, juice or cultured powder of organic celery or organic chard, if commercially available.
4.2	Meat Meal	Shall be processed by, for example: drying, heat sterilization and/or composting.
4.2	Microbial products	All microbials including yeast, fungi, azolla and bacteria are permitted unless exposed to ionizing radiation. Ionizing radiation is permitted for use on peat moss carrier before the addition of the micro-organism.

Table	Substance Name(s)	Origin and Usage
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. See Table 4.2 <i>Boron; Copper; Iron; Manganese; Molybdenum; and Zinc</i>.</p>
6.4	Micro-organisms	<p>Includes starter and dairy cultures and other preparations of micro-organisms normally used in product processing.</p> <p>Ancillary ingredients used for micro-organism preparations: If micro-organisms prepared on organic substrates are not commercially available, non-synthetic substrates (such as milk, lactose, soy, etc.) are permitted.</p> <p>Other ancillary ingredients used in micro-organism preparations (such as carriers and fillers etc.) shall be organic, if such a product (the combination of ancillary ingredients used in conjunction with microorganisms) is commercially available. Substances used as anti-caking agents 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>
5.2	Micro-organisms and yeasts	If organic sources of yeast are not commercially available, non-synthetic yeast sources, including yeast autolysate, shall be used.
5.3	Micro-organisms and yeasts	If organic sources of yeast are not commercially available, non-synthetic yeast sources, including yeast autolysate, shall be used.
4.2	Milk	

Table	Substance Name(s)	Origin and Usage
5.2	Milk replacer	<p>Shall be organic if commercially available. Without antibiotics and animal fats or by-products.</p> <p>Permitted for emergency use.</p>
4.2	Mined minerals, unprocessed	<p>Sources include: basalt, pumice, sand, feldspar, mica, granite dust and unprocessed rock dust. Minerals extracted from seawater are permitted.</p> <p>A mined mineral shall not have undergone any change in its molecular structure through heating or combining with other substances. Shall not be processed or fortified with synthetic chemicals.</p> <p>Mined minerals are regarded as supplements to a balanced, organic soil-building program. Some of the minerals that are mined can also be made synthetically or are by-products of industry; investigate the source of any new substance.</p> <p>Sodium nitrate is prohibited. Sources that are mixed with petroleum products, such as those from stone engraving, are prohibited.</p>
5.3	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> <p>Minerals from any source are permitted for medical use.</p>
5.2	Minerals, trace minerals, elements	<p>Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium choride or magnesium oxide.</p> <p>Synthetic nutrient minerals may be used if non-synthetic sources are not commercially available.</p>
4.2	Molasses	Shall be organic.
5.2	Molasses	Shall be organic.
4.2	Molybdenum	<p>To correct documented molybdenum deficiencies.</p> <p>See Table <b>4.2</b> <i>Micronutrients</i>.</p>

<b>Table</b>	<b>Substance Name(s)</b>	<b>Origin and Usage</b>
4.2	Mulches	<p>Organic plant residues may be used for mulching. If organic 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 mulch: glossy paper and coloured ink are prohibited.</p> <p>Paper: glossy paper and coloured ink are prohibited.</p>



Table	Substance Name(s)	Origin and Usage
4.3	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>Bioplastic films may be left to decompose in the field if they do not contain substances prohibited by <i>Subsection 1.4 of CAN/CGSB 32.310</i> and if requirements for bioplastics in CAN/BNQ 0017-988 (ISO 17088 or its equivalent) are met.</p>
4.2	Mushroom compost	See Table <b>4.2 Compost</b> .
4.2	Naturally occurring biological organisms	Includes worms and their products. See Table <b>4.2 Worm castings</b> .
8.3	Neem oil	
4.3	Nitrogen	For controlled atmosphere storage.
6.4	Nitrogen	Shall be food-grade.
6.5	Nitrogen	Shall be food-grade.

Table	Substance Name(s)	Origin and Usage
4.2	Oilseed meals	Shall be organic if commercially available.
5.3	Oxalic acid	For mite control in honeybee colonies.
6.4	Oxygen	
6.5	Oxygen	
4.3	Oxygen	For controlled atmosphere storage.
5.3	Oxytocin	For post-parturition therapeutic use. Meat from treated animals will not lose its organic status. See <i>Subsection 6.7.6 d)</i> of CAN/CGSB 32.310, for criteria pertaining to the mandatory withdrawal period.
6.3	Ozone	
6.5	Ozone	
7.3	Ozone	
5.3	Paraffin	Shall be food-grade. For use in hives.
5.3	Parasiticides and anti-microbials	Shall respect requirements set out in <i>Subsection 6.7</i> of CAN/CGSB-32.310 with regard to the use of internal parasiticides.
4.2	Peat moss	
6.3	Pectin	High-methoxyl and low-methoxyl pectin sources are permitted.
7.3	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.
4.3	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> .
6.5	Perlite	For use as a filter aid.
4.2	pH buffers	Shall be non-synthetic, such as citric acid or vinegar.  Lye and sulphuric acid are prohibited.

<b>Table</b>	<b>Substance Name(s)</b>	<b>Origin and Usage</b>
4.3	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.
4.2	Phosphate rock	Shall not be fortified or processed with synthetic chemicals. Cadmium shall not exceed 90 mg/kg P <sub>2</sub> O <sub>5</sub> .
7.4	Phosphoric acid	On dairy equipment.
5.3	Physical teat seals	Synthetic and non-synthetic ingredients are permitted. Shall be free from antibiotics.  For post-lactation use. Shall be completely removed prior to nursing or milking.  Products that create a barrier within the teat canal should be prescribed and administered under veterinary supervision.
4.3	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.
5.3	Plant oils	To control external parasites.

Table	Substance Name(s)	Origin and Usage
4.3	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>
4.2	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: shall be obtained or derived from wood that has not been treated with paint or fortified or processed with synthetic chemicals.</p>
4.3	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>
4.2	Pomaces	<p>Feedstocks shall be from organically grown fruits or vegetables. Non-organic pomaces shall be composted. See Table 4.2 <i>Composted feedstocks</i>.</p>

Table	Substance Name(s)	Origin and Usage
4.2	Potassium	The following potassium sources are permitted: a) langbeinite, mined sulphate of potash magnesia and mined potassium salts (sylvinite and kainite); b) potassium rock powder—includes basalt, biotite, mica, feldspar, granite and greensand; c) potassium chloride (KCl)—muriate of potash and rock potash. KCl shall not cause salt buildup in soils through repeated application; d) potassium sulphate—shall be produced by combining naturally occurring brines or mined minerals. Fortification with synthetic chemicals is prohibited. Potassium sulphate made using reactants (such as sulphuric acid or ammonia) is prohibited.
6.3	Potassium acid tartrate ( $KC_4H_5O_6$ )	If the non-synthetic form is not commercially available, the synthetic form is permitted.
7.3	Potassium bicarbonate	On equipment.
4.3	Potassium bicarbonate	Permitted for pest and disease control in greenhouses and other crops.
6.5	Potassium carbonate	
7.4	Potassium carbonate	Documentation shall demonstrate that effluent discharge was neutralized to minimize negative environmental impact.
6.3	Potassium carbonates (mono and bi)	
6.3	Potassium chloride	Non-synthetic sources.
6.3	Potassium citrate	
7.4	Potassium hydroxide (caustic potash)	
6.5	Potassium hydroxide (caustic potash)	For pH adjustment. Prohibited for use in lye peeling of fruits and vegetables.

Table	Substance Name(s)	Origin and Usage
6.4	Potassium iodide	From non-synthetic sources. Shall be used when legally required. Synthetic potassium iodide is permitted for use only in products whose contents are $\geq 70\%$ and $< 95\%$ organic ingredients.
6.3	Potassium metabisulphite	See <i>Anhydrous sulphur dioxide, sulphurous acid (sulphur dioxide, SO<sub>2</sub>)</i> .
7.4	Potassium permanganate	Not to exceed 1% solution by volume.
6.3	Potassium phosphate (mono-, di-, and tribasic forms)	For use in products whose contents are $\geq 70\%$ and $< 95\%$ organic ingredients.
6.3	Potassium tartrate (K <sub>2</sub> C <sub>4</sub> H <sub>4</sub> O <sub>6</sub> . INS 336)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
4.2	Potting soil	Shall not contain synthetic wetting agents or synthetic fertilizers.
5.3	Prebiotics	From organic sources if commercially available.
5.2	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 0.
5.2	Probiotics	
5.3	Probiotics	
5.2	Protein feeds	Shall be from organic sources.
8.3	Pyrethrins	Without piperonyl butoxide as a carrier.  Direct contact with organic products is prohibited.
4.3	Pyrethrum	Shall be combined with acceptable formulants listed in Table 4.3. See Table 4.3 <i>Botanical pesticides</i> for restrictions.

Table	Substance Name(s)	Origin and Usage
4.3	Quick lime	Also known as 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 contain no synthetic additives.
4.3	Salt	Non-synthetic sources of sodium chloride and calcium chloride. For disease control and prevention in mushroom production.
6.4	Salt	Substances listed in Tables <b>6.3</b> or <b>6.4</b> may be added to mined or sea salt.  See Table <b>6.3</b> <i>Sodium chloride</i> and <i>Potassium chloride</i> .  See definition of <i>Salt</i> in <i>Section 3</i> of <i>CAN/CGSB-32.310</i> .
4.2	Seaweed and seaweed products	See Table <b>4.2</b> <i>Aquatic plants and aquatic plant products</i> .
4.3	Seaweed and seaweed products	See Table <b>4.3</b> <i>Aquatic plants and aquatic plant products</i> .
5.2	Seaweed meal	
5.3	Sedatives	Such as xylazine.
4.3	Seed treatments	Microbial products, kelp, yucca, gypsum, clays and botanicals. See Table <b>4.3</b> <i>Peracetic Acid; Treated Seeds</i> .
5.3	Selenium products	Derived from sodium selenate or sodium selenite. See <b>Table 5.3</b> <i>Minerals, trace minerals, elements</i> . May be used to address documented deficiencies in the stock, soils or feed supplies.
4.2	Shell from aquatic animals	Includes chitin.
4.3	Shell from aquatic animals	Includes chitin.
6.5	Silica	As a filtering agent (food-grade powder) in maple syrup production.
6.3	Silicon dioxide	

Table	Substance Name(s)	Origin and Usage
6.5	Silicon dioxide	
6.4	Smoke flavour	See Table 6.3 <i>Yeast</i> .
7.4	Soap-based algicide (demossers)	On equipment.
4.3	Soaps	Soaps (including insecticidal soaps) shall consist of fatty acids derived from animal or vegetable oils.
7.4	Soaps	Soaps shall consist of fatty acids derived from animal or vegetable oils.
4.3	Soaps, ammonium	As a large animal repellent.  Direct contact with soil or edible portion of crop is prohibited.
8.3	Soaps, ammonium	As a large animal repellent.  Direct contact with organic products is prohibited.
6.3	Sodium acid pyrophosphate	For use as a leavening agent.
4.3	Sodium bicarbonate	For pest and disease control. In greenhouses and for other crops.
6.3	Sodium bicarbonate (baking soda)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
6.5	Sodium bicarbonate (baking soda)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
7.3	Sodium bicarbonate (baking soda)	Non-synthetic sources. See also Table 7.4 <i>Sodium bicarbonate (baking soda), synthetic</i> .
7.4	Sodium bicarbonate (baking soda), synthetic	
7.4	Sodium borate	



<b>Table</b>	<b>Substance Name(s)</b>	<b>Origin and Usage</b>
6.3	Sodium carbonate (soda ash)	If the non-synthetic form is not commercially available, the synthetic form is permitted.
7.3	Sodium carbonate (soda ash)	Non-synthetic sources. See also <b>7.4 Sodium carbonate (soda ash), synthetic</b> .
7.4	Sodium carbonate (soda ash), synthetic	
6.3	Sodium chloride	Non-synthetic sources.
7.4	Sodium citrate	
6.3	Sodium citrate	Non-synthetic sources.
7.3	Sodium citrate	Non-synthetic sources.
5.3	Sodium Hydroxide	For use in dehorning paste.
6.3	Sodium hydroxide (lye or caustic soda)	
7.3	Sodium hydroxide (lye or caustic soda)	
6.5	Sodium hydroxide (lye or caustic soda)	Prohibited for use in lye peeling of fruits and vegetables.
7.4	Sodium percarbonate	
6.3	Sodium phosphates	For use in dairy products.
4.3	Sodium silicate	For tree fruit and fibre processing.
7.4	Sodium silicate	In detergents. See Table <b>7.4 Detergents</b> .
4.2	Soil	From organic sources. Shall comply with restrictions specified in <i>Subsection 5.1.2 of CAN/CGSB-32.310</i> .

Table	Substance Name(s)	Origin and Usage
4.2	Sphagnum moss	Shall not contain synthetic wetting agents.
6.4	Starch	From rice and waxy maize. 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.
4.3	Sterile insects	See Table <b>4.3</b> <i>Biological organisms</i> .
4.2	Stillage and stillage extract	Ammonium stillage is prohibited.
4.3	Sugar	Organic sugar may be used as an ingredient in a crop production aid.
5.3	Sulphur	For control of external parasites.
4.3	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	For foliar use.
4.2	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.
4.3	Summer oils	On foliage, as suffocating or stilet oils.
4.2	Surfactants	Non-synthetic substances. See Table <b>4.2</b> <i>Formulants, Wetting agents</i> ; and Table 4.3 <i>Soaps, Vegetable oils</i> .
4.3	Surfactants	Non-synthetic substances. See Table <b>4.3</b> <i>Soaps; Vegetable oils; Wetting agents</i> .
7.4	Surfactants	See Table <b>7.4</b> <i>Detergents; Soaps</i> .
6.5	Talc	As a filtering agent.

Table	Substance Name(s)	Origin and Usage
6.5	Tannic acid	<p>Shall be from an organic source if commercially available.</p> <p>Shall be derived using substances listed in <b>Table 6.3</b> <i>Extraction solvents, carriers and precipitation aids</i>.</p> <p>Permitted as a filtration aid for wines.</p>
6.3	Tartaric acid (C <sub>4</sub> H <sub>6</sub> O <sub>6</sub> . INS 334)	<p>If the non-synthetic form is not commercially available, the synthetic form is permitted.</p> <p>For beverages.</p>
6.5	Tartaric acid (C <sub>4</sub> H <sub>6</sub> O <sub>6</sub> . INS 334)	<p>Shall be from non-synthetic sources.</p> <p>For beverages.</p>
6.3	Tocopherols and mixed natural concentrates	<p>Derived from vegetable oil when rosemary extracts are not a suitable alternative.</p>
4.3	Transplant and potting media	<p>Shall be composed entirely of permitted substances.</p>
4.3	Treated seed	<p>Seed treated with naturally-occurring biological management agents is permitted.</p> <p>Seed pelletized with clay, gypsum, biological organisms (such as rhizobium) or other non-synthetic coatings is permitted.</p> <p>Plastic polymer pelletization of seed is prohibited.</p> <p>·</p> <p>See also Table <b>4.3</b> <i>Peracetic acid; Seed treatments</i>.</p>

Table	Substance Name(s)	Origin and Usage
4.3	Tree seals	Plant or milk-based paints are permitted. Shall not be combined with fungicides or other synthetic chemicals. See Table <b>4.3 Plant Protectants</b> .  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.
5.3	Vaccines	See <i>Biologics, including vaccines</i> .
6.5	Vegetable oils	From organic sources if commercially available. Derived using substances listed in Table <b>6.3 Extraction solvents, carriers and precipitation aids</b> .
4.3	Vegetable oils	Plant oils shall not contain synthetic pesticides.  For use as spreader-stickers, surfactants and carriers.
6.3	Vegetable oils	Shall be organic if commercially available. Derived using substances listed in Table <b>6.3 Extraction solvents, carriers and precipitation aids</b> .
4.2	Vermicasts	See Table <b>4.2 Worm castings</b> .
4.2	Vermiculite	
7.3	Vinegar	If organic sources are not commercially available, non-organic sources are permitted.
4.3	Vinegar (acetic acid)	Non-synthetic sources. See Table <b>4.3 Acetic acid</b> .
4.3	Virus sprays	
4.2	Vitamins	Non-synthetic sources of all vitamins and synthetic sources of vitamins B <sub>1</sub> , C (ascorbic acid) and E are permitted for use in organic crop production.
5.2	Vitamins	Permitted for enrichment or fortification.
5.3	Vitamins	Vitamin formulants that comply with Canadian regulations are accepted.  Orally, topically or by injection.

Table	Substance Name(s)	Origin and Usage
6.4	Vitamins and mineral nutrients	Shall be used when legally required. From non-synthetic sources if commercially available.
4.3	Water	
4.3	Water, recycled	<p>Recycled wash water from all organic operations, including dairy operations, may be spread on crop lands. Requirements for land application, as specified in <i>Subsection 5.5.2.5 of CAN/CGSB 32.310</i>, shall be met.</p> <p>In all other uses, recycled water must meet applicable irrigation water regulatory requirements and only contain substances listed in Tables 4.2, 4.3, 7.3 and 7.4.</p>
6.3	Waxes	<p>If organic waxes, such as beeswax, are not commercially available, non-synthetic sources, such as carnauba wax, shall be used.</p> <p>Organic waxes or carnauba wax may be applied to fresh produce.</p> <p>See Table <b>6.5 Waxes</b>.</p>
6.5	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>
4.2	Wetting agents	Non-synthetic wetting agents, including saponins and microbial wetting agents.
4.3	Wetting agents	<p>Non-synthetic wetting agents, including saponins and microbial wetting agents, are permitted.</p> <p>See Table <b>4.3 Soaps</b>.</p>

Table	Substance Name(s)	Origin and Usage
7.4	Wetting agents	Non-synthetic wetting agents, including saponins and microbial wetting agents. See Table 7.4 <i>Detergents; Soaps</i> .
4.2	Wood ash	See Table 4.2 <i>Ash</i> .
4.2	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>Composting 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.
6.3	Yeast	If organic sources of yeast are not commercially available, these non-synthetic sources of yeast may be used: a) autolysate b) bakers' (may contain lecithin, as listed in Table 6.3); c) brewers'; d) nutritional; and e) smoked.  Growth on petrochemical substrate and sulphite waste liquor is prohibited.  Non-synthetic smoke flavouring process shall be documented.
4.2	Yeast	See Table 4.2 <i>Microbial products</i> .

Table	Substance Name(s)	Origin and Usage
6.3	Yeast foods	For use in alcoholic beverages: a) potassium chloride—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)—for cider, mead and wine.
4.2	Zinc	Zinc oxide and zinc sulphate may be used to correct a documented zinc deficiency.  See Table <b>4.2</b> <i>Micronutrients</i> .