

List of Materials for Use in OCal Cannabis Production

This instruction is intended to assist certified operations and certifying agents with choosing materials for use in OCal nonmanufactured cannabis and by listing materials that are consistent with the National List of Allowed and Prohibited Substances, 7 CFR § 205.600, § 205.601, and § 205.602.

This list is not exhaustive; nonsynthetic (natural) materials not included on the list may meet the requirements for use in OCal cultivation and distribution. Cultivators and distributors should always check with their certifying agents regarding the use of any material prior to use.

Find more classification information in OCal 5033 Classification of Unique Materials, OCal 5033-1 Decision Tree for Classification of Materials, OCal 5034 Materials for OCal Cannabis Production, and OCal 5034-2 List of Materials Prohibited for Use in OCal Cannabis Production.

Acetic Acid

Nonsynthetic

Made by oxidative or anaerobic fermentation. Solutions that contain less than 8% acetic acid are vinegar. See also, Vinegar.

Reference: 3 CCR 10105

Agar

Nonsynthetic

Also called “agar-agar.” See also, Aquatic Plant Products.

Reference: 3 CCR 10105

Agricultural Substances

Nonsynthetic

Agricultural substances are permitted unless specifically prohibited at 7 CFR 205.602.

This includes, but is not limited to, agricultural products listed at 7 CFR 205.606 of the National List. Agricultural substances used in organic crop production are not required to be certified organic.

Reference: 3 CCR 10105

Alcohol

Nonsynthetic

Ethanol made by fermentation is permitted without restriction. For *Synthetic* alcohol, see Ethanol or Isopropanol.

Reference: 3 CCR 10105

Alfalfa Meal or Pellets

Nonsynthetic

Pelletization process must not involve prohibited materials.

Reference: 3 CCR 10203(c)(3)

Algae

Nonsynthetic

See Aquatic Plant Products.

Almond Hull Trash

Nonsynthetic

See Plants.

Aloe Extract

Nonsynthetic

See Plant Extracts.

Amino Acids*Nonsynthetic*

Natural amino acids derived from plants, animals, and microorganisms that have not been genetically modified are permitted. Amino acids that have been chemically modified from their source are prohibited. Reference: 3 CCR 10105

Ammonium Carbonate*Synthetic*

Permitted only for use as bait in insect traps. No direct contact with crop or soil. Reference: 7 CFR 205.601(e)

Animal By-Products and Materials*Nonsynthetic*

Includes parts of animals and animal byproducts. May not be used in a manner that contaminates crop, water or soil with pesticide residues, heavy metals or pathogens. Reference: 3 CCR 10105 & 10203(b)

Aquatic Plant Products*Nonsynthetic or Synthetic**Nonsynthetic*

Natural aquatic plants and plant products, including plant products extracted with *Nonsynthetic* materials, are allowed.

Synthetic

Synthetically extracted aquatic plant products are permitted as plant or soil amendments. Extraction process is limited to the use of potassium hydroxide or sodium hydroxide; solvent amount used is limited to that amount necessary for extraction. May not contain *Synthetic* preservatives or other substances not provided for at 7 CFR 205.601(j).

Reference: 3 CCR 10105, 10203(c)(3), and 205.601(j)(1); OCal Policy Memo 14-1

Arthropods*Nonsynthetic*

See Biological Controls and Predators and Parasites. Reference: 3 CCR 10206(b)(1) & 10206(d)(2)

Ash*Nonsynthetic*

Ash from plant and animal sources is permitted if it has not been treated or combined with prohibited substances. Ash from burning manure is prohibited. Reference: 3 CCR 10203 (d)(4) & 7 CFR 205.602(a)

Attapulgitte Clay*Nonsynthetic*

See Clay.

Azadirachta Indica*Nonsynthetic*

See Neem and Neem Derivatives.

Bacillus Species*Nonsynthetic*

Includes *B. amyloliquefaciens*, *B. cereus*, *B. polymyza*, *B. lichenformis*, *B. sphaericus*, *B. subtilis*, and *B. thuringiensis*. Reference: 7 CFR 205.107 Reference: 3 CCR 10105

Bagasse*Nonsynthetic*

Leftover plant stalks and fibers from sugar processing. See Food Processing By-Products. Reference: 3 CCR 10203(c) & 10203(d)(5)

Bark*Nonsynthetic*

Reference: 3 CCR 10203(c)(3)

Basalt

Nonsynthetic
See Mined Minerals.

Beauveria bassiana

Nonsynthetic
Reference: 3 CCR 10105

Beeswax

Nonsynthetic
Reference: 3 CCR 10105

Bentonite

Nonsynthetic
See Clay.

Biochar

Nonsynthetic
Biochar is biomass that has been carbonized or charred. Sources must be untreated plant or animal material. Pyrolysis process must not use prohibited additives.
Reference: 3 CCR 10203(d)(4)

Biodegradable

Biobased Mulch Film
Synthetic
See Mulch.

Biodynamic Preparations

Nonsynthetic
Includes horn manure spray, horn silica, yarrow flowers, chamomile, stinging nettle, oak bark, dandelion, valerian, and horsetail (equisetum) spray. Preparations containing animal manure, including horn manure spray, must comply with manure restrictions at § 10203(c)(1).
Reference: 3 CCR 10105 & 10203(c)(1)

Biological Controls

Nonsynthetic
Includes living organisms and viruses that are not regulated as biopesticides.

Genetically modified organisms are prohibited. See also, Predators and Parasites.

Reference: 3 CCR 10206(b)(1) & 10206(d)(2)

Biotite

Nonsynthetic
See Mined Minerals.

Blood Meal

Nonsynthetic
Reference: 3 CCR 10203(c)

Bone Char

Nonsynthetic
Reference: 3 CCR 10203(d)(4)

Bone Meal

Nonsynthetic
Reference: 3 CCR 10203(c)

Borates and Borax

Nonsynthetic
Natural mined sources are permitted. For *Synthetic* boron, see Boron Products.
Reference: 3 CCR 10105, 10106(b)(3), & 10106(d)(2)

Boric Acid

Synthetic
Permitted as an insecticide for structural pest control, no direct contact with organic food or crops.
For micronutrient use, see Boron Products.
Reference: 7 CFR 205.601(e)(3)

Boron

Synthetic
Soluble boron products are permitted as a plant or soil amendment. Soil deficiency must be documented by testing. Allowed soluble boron products include boric acid, hydrated forms of sodium tetraborate, sodium borate derivatives, disodium

octaborate, and its hydrated forms, and hydrated forms of colemanite. Boron products made from nitrates or chlorides are not allowed. Not to be used as a defoliant, herbicide, or desiccant.
Reference: 7 CFR 205.601(j)(6)

Brewer's Waste

Nonsynthetic

Reference: 3 CCR 10203(c)

Calcium

Nonsynthetic

See Calcium Carbonate, Gypsum, or Calcium Chloride

Calcium Carbonate

Nonsynthetic

Also called "limestone." Naturally mined forms are allowed. May not be sourced from byproduct of food or paper processing.
Reference: 3 CCR 10203(d)(2)

Calcium Chloride

Nonsynthetic

Nonsynthetic sources only (from brine process). Permitted only as a foliar spray to treat a physiological disorder associated with calcium uptake. *Synthetic* sources of calcium chloride are prohibited.
Reference: 7 CFR 205.602(c)

Calcium Hydroxide

Synthetic

See Hydrated Lime.

Calcium Hypochlorite

Synthetic

See Chlorine Materials.

Calcium Lignosulfonate

Synthetic

See Lignin Sulfonate.

Calcium Polysulfide

Synthetic

See Lime Sulfur.

Calcium Sulfate

Nonsynthetic

See Gypsum.

Cannery Wastes and Cannery Waste-Water

Nonsynthetic

Includes peels, stems, and cores, vegetable and fruit waste processed by physical or mechanical means. Plant and animal materials may not be chemically altered by a manufacturing process unless the resulting material is provided for under 7 CFR 205.601, the chemical change is created by a naturally occurring biological process, or the chemical change is created by heating or burning biological matter.
Reference: 3 CCR 10203(d)(5)

Capsaicin

Nonsynthetic

See Plant Extracts.

Cardboard

Synthetic

See Newspapers or Other Recycled Papers.

Carnauba Wax

Nonsynthetic

See Plants.

Castor Oil

Nonsynthetic

See Oils, Plant and Animal

Chalk

Nonsynthetic

See Mined Minerals.

Chelating Agents***Nonsynthetic or Synthetic***

Natural chelating agents are allowed.

Allowed sources of chelating agents include, but are not limited to,

Nonsynthetic amino acids, citric acid (to form citrate in solution), tartaric acid made from grape wine, and gluconic acid.

Synthetic chelating agents are only permitted if included on the National List for that purpose.

Reference: 3 CCR 10105 & 7 CFR 205.601(j)(4)

Chitin***Nonsynthetic***

Must be from a natural source, such as sea animals or fungi.

Reference: 3 CCR 10105

Chlorine Dioxide***Synthetic***

See Chlorine Materials.

Chlorine Materials***Synthetic***

Permitted as an algicide, disinfectant, and sanitizer, including irrigation system cleaning systems.

Allowed chlorine materials include calcium hypochlorite, chlorine dioxide, and sodium hypochlorite. Allowance also includes electrolyzed water (hypochlorous acid). Use must comply with California Code of Regulations, title 22, § 64533.5 and Safe Drinking Water Act (collectively, SDWA) levels of 4 mg/L (4ppm) expressed as chlorine, or 0.8 mg/L (0.8 ppm) expressed as chlorine dioxide.

Residual chlorine levels in the water shall not exceed the maximum residual disinfectant limit under the SDWA.

Residual Chlorine levels in the water in direct crop contact (when used pre-harvest) or as water from clearing irrigation systems applied to soil should not exceed the maximum residual disinfectant limit under the SDWA. Chlorine products may be used up to maximum labeled rates for disinfecting and sanitizing equipment or tools.

Reference: 7 CFR 205.601(a)(2) & OCal Guidance Document 5026.

Citric Acid***Nonsynthetic or Synthetic***

Natural citric acid produced from microbial fermentation of carbohydrate substances (e.g., sugar) is permitted. Production process may not use genetically modified microorganisms.

Synthetic forms of citric acid are prohibited except as specified at 7 CFR 205.601.

Reference: 3 CCR 10105 & 7 CFR 205.601(j)(7)

Clay***Nonsynthetic***

Includes, but is not limited to, attapulgite, bentonite, montmorillonite, kaolin, and fuller's earth. See also, Mined Minerals.

Reference: 3 CCR 10203(d)(2)

Cobalt***Synthetic***

Permitted as a plant or soil amendment. Soil deficiency must be documented by testing. Not to be used as a defoliant, herbicide, or dessicant.

Allowed forms include cobalt oxide (CoO), cobalt sulfate (CoSO₄), cobalt carbonate (CoCO₃), and cobalt silicates. Cobalt materials made from nitrates or chlorides are not allowed. Reference: 3 CCR 10203(d)(2)



Cocoa Bean Hulls

Nonsynthetic

Reference: 3 CCR 10203(c)(3)

Coconut Fiber

Nonsynthetic

Reference: 3 CCR 10203(c)(3)

Coffee Grounds

Nonsynthetic

Reference: 3 CCR 10105 & 10203(c)(3)

Compost

Nonsynthetic

Composted plant materials: Compost that contains no animal materials as feedstock may be used without restriction provided that it contains no prohibited or restricted-use plant materials. Must be made from allowed compost feedstocks.

In-vessel or static aerated pile:

Includes plant and animal materials composted through a process that establishes an initial C:N ratio of between 25:1 and 40:1 and maintains a temperature of between 131°F and 170°F for 3 days using an in-vessel or static aerated pile system. Must be made from allowed compost feedstocks.

Windrows:

Includes plant and animal materials composted through a process that establishes an initial C:N ratio of between 25:1 and 40:1 and maintains a temperature of between 131°F and 170°F for 15 days, during which period the composting materials must be turned a minimum of five times. Must be made from allowed compost feedstocks.

Alternative Composting Methods:

Compost is acceptable if: (i) made from only allowed feedstock materials; (ii) the compost

undergoes an increase in temperature to at least 131°F (55°C) and remains there for a minimum of 3 days; and (iii) the compost pile is mixed or managed to ensure that all of the feedstock heats to the minimum temperature for the minimum time.

Animal Materials:

Animal materials include, but are not limited to, manure, slaughter renderings, tankage, and blood meal.

Reference: 3 CCR 10203(c)(2) & OCal 5021

Compost Inoculants

Nonsynthetic

May not be cultured on sewage sludge.

Synthetic growth media not approved for use as plant or soil amendments at 7 CFR 205.601 must not be present in the formulated product.

Reference: 3 CCR 10105

Compost Tea

Nonsynthetic

Compost tea made from compost not meeting the requirements of § 10203(c) or OCal 5021 is subject to restrictions of § 10203(c)(1) for raw animal manure.

Reference: 3 CCR 10203(c) & OCal 5021

Copper, Fixed

Synthetic

For plant disease control, copper-based material must be used in a manner that minimizes accumulation in the soil and shall not be used as herbicides.

Copper products that are exempt from tolerance by the EPA [40 CFR 180.1021(b)(1)] are permitted. Allowed copper substances include Bordeaux mixture, basic copper carbonate (malachite), copper-ethylenediamine complex, copper hydroxide, copper-lime mixtures, copper linoleate, copper oleate, copper oxychloride,

copper octanoate, copper sulfate basic, copper sulfate pentahydrate, cupric oxide, and cuprous oxide.

For other uses, see Copper Products and Copper Sulfate.

Reference: 7 CFR 205.601(i)

Copper Products

Synthetic

Permitted as a plant or soil amendment. Soil deficiency must be documented by testing. Not to be used as a defoliant, herbicide, or dessicant.

Allowed forms include copper oxide (CuO), copper sulfate (CuSO₄), copper carbonates and copper silicates. Those made from nitrates or chlorides are not allowed.

For other uses, see Copper, Fixed or Copper Sulfate.

Reference: 7 CFR 205.601(j)

Copper Sulfate

Synthetic

For micronutrient use, see Copper Products.

For plant disease control, substance must be used in a manner that minimizes accumulation of copper in the soil.

Use in Aquatic Rice Systems:

For use as tadpole shrimp control in aquatic rice production, use is limited to one application per field during any 24-month period. Application rates are limited to levels which do not increase baseline soil test values for copper over a timeframe agreed upon by the producer and accredited certifying agent.

For use as an algicide in aquatic rice systems and for tadpole shrimp control in aquatic rice systems; use is not to exceed

one application per field during any 24-month period. Application rates are limited to those which do not increase baseline soil test values for copper over a time frame agreed upon by the producer and accredited certifying agent.

Reference: 7 CFR 205.601(a)(3), 205.601(e)(4) & 205.601(i)

Corn Gluten

Nonsynthetic

Reference: 3 CCR 10203(c)(3)

Corn Steep Liquor and Solids

Nonsynthetic

Also called “condensed fermented corn solubles.”

See also, Food Processing By-Products. Reference: 3 CCR 10203(c)(3)

Cotton Gin Trash

Nonsynthetic

May not be used in a manner that contaminates crop, water, or soil with pesticide residues.

Reference: 3 CCR 10203(c)(3)

Cottonseed Meal

Nonsynthetic

May not be used in a manner that contaminates crop, water, or soil with pesticide residues.

Reference: 3 CCR 10203(c)(3)

Crab Meal

Nonsynthetic

See Shellfish Meal.

Crop Residues

Nonsynthetic

May not be used in a manner that contaminates crop, water or soil with pesticide residues, heavy metals or pathogens.

Reference: 3 CCR 10203(c)(3)

Cytokinins

Nonsynthetic

See Growth Regulators.

Dairy Products

Nonsynthetic

Includes, but is not limited to, dairy cultures, milk, cheese, cream, yogurt, casein, and whey.

Reference: 3 CCR 10105

Diatomaceous Earth

Nonsynthetic

Mined sources, including calcined forms.

Reference: 3 CCR 10203(d)(2)

Dolomite

Nonsynthetic

See Mined Minerals.

Dormant Oils

Synthetic

See Oils, Horticultural.

Eggshell Meal

Nonsynthetic

Reference: 3 CCR 10105

Elemental Sulfur

Synthetic or

Nonsynthetic

See Sulfur.

Enzymes

Nonsynthetic

May be produced by microbial processes or by extraction from plants or other organisms. Must not be from genetically modified organisms.

Reference: 3 CCR 10105

Epsom Salts

Nonsynthetic or Synthetic

See Magnesium Sulfate.

Ethanol

Synthetic

Also called “ethyl alcohol.” Permitted as algicide, disinfectants, and sanitizer, including irrigation system cleaning systems. For *Nonsynthetic* ethanol, see Alcohol.

Reference: 7 CFR 205.601(a)(1)

Fatty Acids

Nonsynthetic

Fatty acids produced from plant or animal oils that have been hydrolyzed through heat, pressure, steam, or enzymes only.

Reference: 3 CCR 10105

Feather Meal

Nonsynthetic

Reference: 3 CCR 10105 & 10203(c)

Feldspar

Nonsynthetic

See Mined Minerals.

Fermentation Products

Nonsynthetic

Products made by the biological activity of bacteria, fungi, or other microorganisms.

Reference: 3 CCR 10105

Ferric and Ferrous Compounds

Synthetic

For micronutrient use, see Iron.

Ferric Phosphate

Synthetic

Permitted only as slug or snail bait. Also called “Iron Phosphate” or “Iron (III)

Phosphate.” Reference: 7 CFR 205.601(h)

Fish Meal and Powder

Nonsynthetic

May not contain *Synthetic* stabilizers or preservatives unless provided for at 7 CFR 205.601(j).

Reference: 3 CCR 10105 & 10203(c)

Fish Products, Liquid

Synthetic

Permitted as plant or soil amendments. May be pH adjusted with sulfuric, citric, or phosphoric acid. The amount of acid used shall not exceed the minimum needed to lower the pH to 3.5.

Reference: 7 CFR 205.601(j)(7)

Food Processing Byproducts

Nonsynthetic

Includes food waste, cannery waste, and pomaces. Plant and animal materials chemically altered by a manufacturing process are not permitted unless resulting material is provided for under 7 CFR 205.601.

Reference: 3 CCR 10203(c)(3) & 10203(d)(5)

Fuller's Earth

Nonsynthetic

See Clay.

Fulvic Acids

Nonsynthetic

Fulvic acids are the fractions of humates soluble at neutral to acid pH. May be extracted from allowed humates with water or *Nonsynthetic* acids. See also Humates.

Reference: 3 CCR 10203(d)(2)

Fungal Preparations

Nonsynthetic

See Microbial Products.

Garlic and Garlic Oil

Nonsynthetic

Reference: 3 CCR 10105

Gibberellic Acid

Nonsynthetic

Also called "Gibberellin A3." Acceptable if made from a fermentation process. See also, Growth Regulators.

Reference: 3 CCR 10105

Gluconic Acid

Nonsynthetic

Produced by fermentation by *Aspergillus niger*. See also, Chelating Agents.

Reference: 3 CCR 10105

Granite Dust

Nonsynthetic

May not be mixed with petroleum products.

Reference: 3 CCR 10203(d)(2)

Green Manure

Nonsynthetic

See Plants.

Greensand

Nonsynthetic

See Mined Minerals.

Growth Regulators

Nonsynthetic

Natural growth regulators include, but are not limited to, gibberellic acid, indole acetic acid (IAA) and cytokinins. *Synthetic* growth regulators are prohibited unless specifically included on the National List for this purpose.

Reference: 3 CCR 10105 & 7 CFR 205.601(k)

Guano

Nonsynthetic

Includes bat guano and seabird guano.

Domesticated fowl excrement is considered manure, not guano. Includes decomposed and dried deposits from wild bats or wild birds. Subject to raw manure restrictions at 3 CCR 10203 unless composted or heat

processed. Guano must not be directly treated with pesticides.

Reference: 3 CCR 10203(c)(1)

Gums

Nonsynthetic

Natural gums are allowed. Includes, but is not limited to, arabic gum; carob bean gum; guar gum; and locust bean gum.

Reference: 3 CCR 10105

Gypsum

Nonsynthetic

Only mined forms are acceptable. May not be sourced from recycled drywall. Also called “Calcium Sulfate.”

Reference: 3 CCR 10203(d)

Homeopathic Preparations

Nonsynthetic

Natural materials are allowed, unless included at 7 CFR 205.602. Any *Synthetic* materials used must be included at 7 CFR 205.601 of the National List and used in compliance with any annotations provided.

Reference: 3 CCR 10105

Hoof and Horn Meal

Nonsynthetic

Reference: 3 CCR 10105

Horticultural Oils

Synthetic

See Oils, Horticultural.

Humates

Nonsynthetic

Acceptable if derived from leonardite, lignite, or coal. See also, Mined Minerals.

Reference: 3 CCR 10203(d)(2)

Humic Acids

Synthetic or Nonsynthetic

May be derived from leonardite, lignite, coal. Naturally occurring deposits, water and alkali extracts only.

Reference: 3 CCR 10203(d)(2) & 7 CFR 205.601(j)(3)

Hydrated Lime

Synthetic

Permitted for plant disease control only. Not permitted as a fertilizer or soil amendment.

Reference: 7 CFR 205.601(i)

Hydrogen Chloride

Synthetic

Gaseous form of hydrochloric acid.

Permitted for delinting cotton seed for planting only.

Reference: 7 CFR 205.601(n)

Hydrogen Peroxide

Synthetic

Also called “hydrogen dioxide.” Permitted as an algicide, disinfectants, and sanitizer, including irrigation system cleaning systems. Also permitted for plant disease control.

Reference: 7 CFR 205.601(a)(4) & 205.601(e)

Inert Ingredients

Synthetic

Includes substances categorized as EPA List 4— Inerts of Minimal Concern on EPA list dated August 2004. For passive pheromone dispensers, substances classified as List 3 – Inerts of Unknown Toxicity on EPA list dated August 2004 are also permitted.

Allowed inert ingredients are only permitted in pesticide formulations and may not be used in other types of products.

Reference: 7 CFR 205.601(m) and OCal 5008

Inoculants*Nonsynthetic*

Synthetic growth media not provided for on the National List at 7 CFR 205.601 must not be present in the final product. See Microbial Products.

Reference: 3 CCR 10105

Insect Extracts*Nonsynthetic*

Ground insects diluted with water (e.g., bug juice).

Reference: 3 CCR 10206(b)(3)

Iron*Synthetic*

Permitted as a plant or soil amendment. Not to be used as a defoliant, herbicide, or dessicant. Soil deficiency must be documented by testing.

Allowed forms include iron sulfates (FeSO_4 or $\text{Fe}_2(\text{SO}_4)_3$), iron oxides (FeO , Fe_2O_3 , or Fe_3O_4), iron carbonate (FeCO_3), and iron silicate. Those made from nitrates or chlorides are not allowed.

Reference: 7 CFR 205.601(j)(6)

Iron Phosphate*Synthetic*

See Ferric Phosphate.

Isopropanol*Synthetic*

Also called “rubbing alcohol” or “isopropyl alcohol.” Permitted as an algicide, disinfectant, and sanitizer, including irrigation system cleaning systems.

Reference: 7 CFR 205.601(a)(1)

Kainit

See Mined Minerals.

Kaolin Clay

See Clay.

Kelp and Kelp Meal*Nonsynthetic*

See also, Aquatic Plant Products.

Reference: 3 CCR 10203(c)(3)

Kieserite*Nonsynthetic*

A mineral found in marine evaporites, $\text{MgSO}_4 \cdot \text{H}_2\text{O}$. See also Magnesium Sulfate and Mined Minerals.

Reference: 3 CCR 10203(d)(2)

Lactic Acid*Nonsynthetic*

Produced through fermentation by *Lactobacillus* spp.

Reference: 3 CCR 10105

Lactose*Nonsynthetic*

Precipitated from whey protein using ethanol. If *Synthetic* ethanol is used, it must be removed from the final product.

Reference: 3 CCR 10105

Langbeinite

See Mined Minerals.

Leaf Mold*Nonsynthetic*

Reference: 3 CCR 10105

Lecithin*Nonsynthetic*

See also, Agricultural Substances.

Reference: 3 CCR 10105

Leonardite

See Humates.

Lignin Sulfonate*Synthetic*

Also called “lignosulfonate.” Includes ammonium lignosulfonate, calcium

lignosulfonate, magnesium lignosulfonate, and sodium lignosulfonate.

Permitted as a chelating agent, dust suppressant, and as a floating agent in postharvest handling.

Reference: 7 CFR 205.601(j) & 205.601(l)

Lignite

See Humates.

Lime Sulfur

Synthetic

Allowed as an insecticide (including acaricide or mite control) and for plant disease control. Includes calcium polysulfide.

Reference: 7 CFR 205.601(e) & 205.601(i)

Limestone

See Calcium Carbonate.

Limonene

Nonsynthetic

Also called "D-limonene."

Reference: 3 CCR 10105

Magnesium Carbonate

See Mined Minerals.

Magnesium Chloride

See Mined Minerals.

Magnesium Rock

Nonsynthetic

Reference: 3 CCR 10203(d)(2)

Magnesium Sulfate

Synthetic

Includes hydrated forms. Allowed with a documented soil deficiency. See also, Kieserite.

Reference: 7 CFR 205.601(j)

Magnetite

See Mined Minerals.

Maltodextrin

See Dextrose.

Manganese

Synthetic

Permitted as a plant or soil amendment. Soil deficiency must be documented by testing. Not to be used as a defoliant, herbicide, or dessicant.

Allowed forms include manganese sulfate ($MnSO_4$), manganese oxide (MnO), manganese carbonate ($MnCO_3$), and manganese silicate. Those made from nitrates or chlorides are not allowed.

Reference: 7 CFR 205.601(j)

Manure

Nonsynthetic

Manure includes feces, urine, other excrement, and bedding produced by livestock that has not been composted (7 CFR 205.2). Manure does not include fish feces or insect frass.

Manure from organic or conventional livestock is allowed for organic crop production under the conditions described below.

Raw Manure

Raw animal manure must be composted unless it is: (i) applied to land used for a crop not intended for human consumption; (ii) incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with the soil surface or soil particles; or (iii) incorporated into the soil not less than 90 days prior to the harvest of a product whose edible portion does not have direct contact with the soil surface or soil particles.

Composted Manure

Composted manure may be used as a supplement to a soil building program without a specific interval between application and harvest. See Compost.

Processed Manure / Heat Processed Manure

Processed manure may be used as a supplement to a soil building program without a specific interval between application and harvest.

Processed manure must be treated so that all portions of the product, without causing combustion, reach a minimum temperature of either 150° F (66° C) for at least one hour or 165° F (74° C), and are dried to a maximum moisture level of 12%; or an equivalent heating and drying process could be used.

Processed manure products must not contain more than 1×10^3 (1,000) MPN fecal coliform per gram of processed manure sampled and must not contain more than 3 MPN Salmonella per 4 grams of processed manure sampled.

Reference: 3 CCR 10200, 10203(c) & OCal 5006

Manure Tea*Nonsynthetic*

Animal manure tea may only be (i) applied to land used for a crop not intended for human consumption; (ii) incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with the soil surface or soil particles; or (iii) incorporated into the soil not less than 90 days prior to the harvest of a product whose edible portion does not have direct contact with the soil surface or soil particles.

See also, Manure.

Reference: 3 CCR 10203(c) & OCal 5006

Marl

See Mined Minerals.

Meat Byproducts and Waste*Nonsynthetic*

Must not be treated with prohibited materials such as *Synthetic* colorings or solvents. See also, Tankage.

Reference: 3 CCR 10105

Mica

See Mined Minerals.

Microbial Biopesticides*Nonsynthetic*

Must not contain *Synthetic* growth media unless provided for on the National List at 7 CFR 205.601.

Reference: 3 CCR 10206(d)(2)

Microbial Products*Nonsynthetic*

Microorganisms produced using genetic engineering are prohibited.

Reference: 3 CCR 10105

Micronutrients*Synthetic*

See Boron, Cobalt, Copper Products, Iron, Manganese, Molybdenum, Selenium, or Zinc.

Milk*Nonsynthetic*

Reference: 3 CCR 10105

Mined Minerals*Nonsynthetic*

Mined minerals are permitted if not processed or formulated with prohibited materials, such as *Synthetic* dust

suppressants, anti-caking agents, or pelleting agents.

Manufacturing process should be reviewed since some substances can be produced using chemical synthesis or are industry by-products.

To be considered *Nonsynthetic*, minerals must not have been heated (calcined) in a way that produces a chemical change in the material.

Mined Minerals of low solubility includes, but is not limited to, basalt, chalk, clays, gypsum, langbeneite, leonardite, limestone, marl, mica, perlite, sand, stone meal, sulfate of potash, vermiculite, and zeolite.

Mined Minerals of high solubility includes calcium chloride and potassium chloride. Mined minerals of high solubility must be used in compliance with the conditions established at 7 CFR 205.602. Reference: 3 CCR 10203(d)(2) & 10203(d)(3)

Molasses

Nonsynthetic

Both organic and nonorganic molasses are permitted. Nonorganic molasses may not contain *Synthetic* scale inhibitors, aggregation and precipitation agents, or additives to control fluidity that are not provided for at 7 CFR 205.601. Reference: 3 CCR 10105

Molybdenum

Synthetic

Permitted as a plant or soil amendment. Soil deficiency must be documented by testing. Not to be used as a defoliant, herbicide, or dessicant.

Allowed forms include molybdcic oxide (MoO_3) and sodium molybdate (Na_2MoO_4). Those made from nitrates or chlorides are not allowed.

Reference: 7 CFR 205.601(j)

Montmorillonite Clay

See Clay.

Mulch

Nonsynthetic or *Synthetic*

Mulch includes any; *Nonsynthetic* material, such as wood chips, leaves, or straw, or any *Synthetic* material included on the National List for such use, such as newspaper or plastic that serves to suppress weed growth, moderate soil temperature, or conserve soil moisture.

Natural Mulch

Natural mulch includes leaves, straw, crop residues, and other fully biodegradable materials.

Newspaper and Recycled Paper

Newspaper or other recycled paper, without glossy or colored inks, is permitted as mulch.

Plastic Mulch

Petroleum-based plastic mulch, other than polyvinyl chloride (PVC), is permitted. The allowance does not include biodegradable plastic. Plastic mulch must be removed from the field at the end of the growing or harvest season. For crops grown as annuals, removal must occur annually. For perennial crops, plastic mulch must be removed before the plastic decomposes or breaks down to prevent removal.

Muriate of Potash

See Potassium Chloride.

Mushroom Compost and Spent**Mushroom Substrate***Nonsynthetic*

Must be derived from allowed materials. Materials that contain manure are subject to restrictions at § 10203(c)(1) for raw animal manure unless they are composted before or after mushroom production according to § 10203(c)(2) or OCal 5021. See also, Compost.

Reference: 3 CCR 10105, 10203(c), and OCal 5021

Mycorrhizae*Nonsynthetic*

Reference: 3 CCR 10105

Neem and Neem Derivatives*Nonsynthetic*

Includes neem cake and neem oil. Azadirachtin, an extract of neem, is also permitted.

Reference: 3 CCR 10105

Nematodes*Nonsynthetic*

See Biological Controls.

Newspaper or Other Recycled Paper*Synthetic*

Includes newspaper and other recycled paper such as cardboard, without glossy or colored inks. Does not include paper that is not recycled (i.e., virgin paper).

Permitted as mulch or as a compost feedstock.

Reference: 7 CFR 205.601(b) & 205.601(c)

Oils, Horticultural*Synthetic*

Narrow range oils are permitted as insecticides and for plant disease control as dormant, suffocating, and summer oils. Horticultural oils do not include benzene, naphthalene, toluene, and xylene.

Narrow range oils are defined under 7 CFR 205.2 as petroleum derivatives, predominately of paraffinic and naphthenic fractions with 50 percent boiling point (10 mm Hg) between 415°F and 440°F.

Reference: 7 CFR 205.601(e) & 205.601(i)

Oils, Plant and Animal*Nonsynthetic*

Includes, but is not limited to, anise oil, bergamot oil, canola oil, castor oil, citronella oil, clove oil, corn oil, cottonseed oil, eugenol, fish oil, garlic oil (*allium sativum*), geraniol, jasmine oil, jojoba oil, lavandin oil, lemongrass oil, linseed oil, mustard oil, neem oil, oil of geranium, orange oil, peppermint oil, mint oil, sesame oil, soybean oil, and thyme oil.

Reference: 3 CCR 10105 and 10203(c)(3)

Oxytetracycline Calcium Complex*Synthetic*

See Tetracycline.

Oystershell Lime*Nonsynthetic*

Ground shells from oysters. Calcined oyster shell (calcium oxide, quick lime, calcium hydroxide) is considered *Synthetic* and is not permitted as a fertilizer or soil amendment.

Reference: 3 CCR 10105; 7 USC 6508

Ozone Gas*Synthetic*

Permitted as an irrigation system cleaner only.

Reference: 7 CFR 205.601(a)

Paper*Synthetic*

See Newspaper or Other Recycled Papers.

Peanut Meal*Nonsynthetic*

Reference: 3 CCR 10203(c)(3)

Peat Moss*Nonsynthetic*Must not contain *Synthetic* wetting agents.

Reference: 3 CCR 10105

Peracetic Acid*Synthetic*

For use in disinfecting equipment, seed, and asexually propagated planting material.

Also permitted to control fire blight bacteria.

Reference: 7 CFR 205.601(a) & 205.601(i)

Perlite*Nonsynthetic*

See Mined Minerals.

Petroleum Distillates*Synthetic*

See Oils, Horticultural.

Pheromones*Synthetic*

As insect management.

Reference: 7 CFR 205.601(f)

Phosphate Rock*Nonsynthetic*Must not be fortified or processed with *Synthetic* chemicals. Includes colloidal phosphate rock. See also, Mined Minerals.

Reference: 3 CCR 10203(d)(2)

Pine Resins*Nonsynthetic*

Reference: 3 CCR 10105

Plant Extracts*Nonsynthetic**Nonsynthetic* plant extracts are allowed.

Reference: 3 CCR 10105

Plant Protectants*Nonsynthetic*

Includes, but is not limited to, natural materials that protect plants from harsh environmental conditions such as frost and sunburn, or from infection, or the build-up of dirt on leaf surfaces, or injury by a pest.

Allowed *Nonsynthetic* plant protection materials include, but are not limited to, diatomaceous earth, kaolin clay, pine oil, pine resin, and yucca.

Reference: 3 CCR 10105

Plants*Nonsynthetic*

Includes 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.

Reference: 3 CCR 10203(c)(3)

Pomace*Nonsynthetic*

Includes skins, pulp, seeds, and stems of grapes, olives, tomatoes, apples, or other fruit.

Reference: 3 CCR 10203(c)(3)

Potassium Bicarbonate*Synthetic*

Allowed for plant disease control only.

Reference: 7 CFR 205.601(i)

Potassium Chloride*Nonsynthetic*

From mined sources only. Must be applied in a manner that minimizes chloride accumulation in the soil.

Reference: 7 CFR 205.602(e)

Potassium Silicate, Aqueous*Synthetic*

Allowed as an insecticide and for plant disease control. The silica used in the

manufacture of potassium silicate must be sourced from naturally occurring sand.
Reference: 7 CFR 205.601(e) & 7 CFR 205.601(i)

Potassium Sulfate

Nonsynthetic

Only if from langbeinite or evaporated from natural brine. See also, Mined Minerals.

Synthetic sources of potassium sulfate are prohibited.

Reference: 3 CCR 10203(d)(2)

Potting Soil

Nonsynthetic or *Synthetic*

Must be composed entirely of allowed *Nonsynthetic* materials or *Synthetic* materials from 7 CFR 205.601 permitted as plant and soil amendments. Must not contain *Synthetic* wetting agents.

Reference: 3 CCR 10105 & 7 CFR 205.601

Predators and Parasites

Nonsynthetic

Augmentation or introduction of predators or parasites of a pest species is permitted. See also, Biological Controls.

Reference: 3 CCR 10206(b)(1)

Propolis

Nonsynthetic

Resinous mixture produced by honeybees.

Reference: 3 CCR 10105

Pseudomonas sp.

Nonsynthetic

Includes *P. putida*, *P. fluorescence*, *P. syringae*, and *P. aeruginosa*. See also, Microbial Biopesticides.

Reference: 3 CCR 10105

Pumice

Nonsynthetic

Volcanic rock. See also, Mined Minerals.

Reference: 3 CCR 10203(d)(2)

Pyrethrum

Nonsynthetic

Pyrethrum is an allowed natural botanical extract; pyrethroids are *Synthetic* and prohibited. *Synthetic* solvents used for extraction of pyrethrum must not be present in the final product. Piperonyl butoxide may not be used as a synergist.

Reference: 3 CCR 10105

Quassia ~~a~~Amara

Nonsynthetic

Reference: 3 CCR 10105, 10206(e)

Rhizobium spp.

Nonsynthetic

Includes symbiotic bacteria that form nodules on the roots of legumes and fix nitrogen. See Inoculants.

Reference: 3 CCR 10105

Rice Hulls

Nonsynthetic

See Plants.

Rotenone

Nonsynthetic

The EPA has not registered for sale any rotenone products in the United States.

Reference: 3 CCR 10105, 10206(e)

Ryania

Nonsynthetic

Reference: 3 CCR 10105, 10206(e)

Sabadilla

Nonsynthetic

Reference: 3 CCR 10105, 10206(e)

Sand

Nonsynthetic

See Mined Minerals.

Saponins*Nonsynthetic*

See Plant Extracts.

Sawdust*Nonsynthetic*

From untreated and unpainted wood only.

See also, Plants.

Reference: 3 CCR 10203(c)(3)

Sea Salt*Nonsynthetic*

Reference: 3 CCR 10105 & 10203(d)(3)

**Seaweed and
Seaweed Products***Nonsynthetic or Synthetic*

See Aquatic Plant Products.

Seed Preparations*Nonsynthetic**Nonsynthetic* materials are allowed for use on seeds before planting, including, but not limited to, microbial products, kelp, yucca, gypsum, plant extracts and various clays.

Reference: 3 CCR 10105

Selenium*Synthetic*

Permitted as a plant or soil amendment. Soil deficiency must be documented by testing.

Not to be used as a defoliant, herbicide, or dessicant.

Allowed forms include sulfates, carbonates, oxides, or silicates of selenium. Those made from nitrates or chlorides are not allowed.

Reference: 7 CFR 205.601(j)(6)

Shellfish Meal*Nonsynthetic*

May not contain prohibited stabilizers or preservatives.

Reference: 3 CCR 10105

Soap*Synthetic*

The following soaps are permitted:

Soap-based algicide/demossers, as an algicide, disinfectant, and sanitizer, including irrigation system cleaning systems.

Soap-based herbicides, for use in farmstead maintenance (roadway, ditches, right of ways, building perimeters) and ornamental crops.

Soaps, ammonium. Includes ammonium salts of fatty acids. Only permitted for use as a large animal repellent only, no contact with soil or edible portion of crop.

Insecticidal soaps.

Reference: 7 CFR 205.601(a), 205.601(b), 205.601(d), and 205.601(e)

Soda*Nonsynthetic*

Sodium carbonate. Unprocessed mined sources are allowed. See also, Mined Minerals.

Reference: 3 CCR 10203(d)(2)

Sodium Bicarbonate*Nonsynthetic*

See Mined Minerals.

Sodium Carbonate Peroxyhydrate*Synthetic*

Permitted as algicide, disinfectants, and sanitizer, including irrigation system cleaning systems.

Federal law restricts the use of this substance in food crop production to approved food uses identified on the product label.

Reference: 7 CFR 205.601(a)

Sodium Chloride*Nonsynthetic*

Table salt. Mined sources and evaporation from natural brines only. Must not contain *Synthetic* anti-caking agents not provided for at 7 CFR 205.601.

Reference: 3 CCR 10105

Sodium Hypochlorite*Synthetic*

See Chlorine Materials.

Sodium Silicate*Synthetic*

Permitted as a floating agent in postharvest handling of tree fruit and fiber processing.

Reference: 7 CFR 205.601(l)

Sorghum*Nonsynthetic*

See Plants.

Soybean Meal*Nonsynthetic*

Reference: 3 CCR 10203(c)(3)

Sphagnum Moss*Nonsynthetic*

Must not contain *Synthetic* wetting agents.

Reference: 3 CCR 10105

Spinosad*Nonsynthetic*

Derived from *Saccharopolyspora spinosa*.

See also, Microbial Biopesticides.

Reference: 3 CCR 10105

Sticky Traps and Barriers*Synthetic*

Permitted for insect control.

Reference: 7 CFR 205.601(e)

Stone Meal*Nonsynthetic*

See Mined Minerals.

Straw*Nonsynthetic*

Reference: 3 CCR 10203(c)(3)

Sucrose Octanoate Esters*Synthetic*

Sucrose octanoate esters (CAS #s—42922–74–7; 58064–47–4).

Permitted as an insecticide. Must be used in accordance with approved labeling.

Reference: 7 CFR 205.601(e)

Sugar*Nonsynthetic*

Reference: 3 CCR 10203(c)(3)

Sulfate of Potash Magnesia*Nonsynthetic*

From mined sources only. See also, Mined Minerals.

Reference: 3 CCR 10203(d)(2)

Sulfur*Synthetic* or *Nonsynthetic*

Synthetic elemental sulfur is permitted as an insecticide, for plant disease control, and as a plant or soil amendment.

Nonsynthetic sulfur is allowed without restriction for use.

Reference: 7 CFR 205.601(e), 205.601(i) & 205.601(j)

Sulfurous Acid*Synthetic*

Sulfurous acid (CAS # 7782–99–2) for on-farm generation of substance utilizing 99% purity elemental sulfur 7 CFR 205.601(j)(2).

Reference: 7 CFR 205.601(j)

Talc*Nonsynthetic*

See Mined Minerals.

Tankage*Nonsynthetic*

The rendered, dried, and ground by-products that are largely meat and bone from animals that are slaughtered or that have died otherwise. See Meat By-Products and Waste.

Reference: 3 CCR 10105

Trace Minerals*Nonsynthetic or Synthetic*

See Mined Minerals or a specific micronutrient: Boron, Cobalt, Copper Products, Iron, Manganese, Molybdenum, Selenium, or Zinc.

Trichoderma Species*Nonsynthetic*

Includes *T. asperellum*, *T. atroviride*, *T. fasciculatum*, *T. gamsii*, *T. hamatum*, *T. harzianum*, *T. koningii*, *T. reesie*, *T. virens*, and *T. viride*. See also, Microbial Biopesticides.

Reference: 3 CCR 10105

Vegetable Protein Hydrolysate*Nonsynthetic*

Vegetable matter, including soy, that has been hydrolyzed through heat, pressure, steam, or enzymes is allowed. Acid hydrolyzed vegetable protein is prohibited.

Reference: 3 CCR 10105

Vermicompost*Nonsynthetic*

Vermicompost that meets the following criteria may be used without restriction: 1) Made only from allowed feedstocks, 2) Aerobic conditions are maintained by regular additions of layers of organic matter, turning, or employing forced air pipes such that moisture is maintained at 70-90%, and 3) The duration of vermicomposting is sufficient to produce a finished product that does not contribute to contamination of crops, soil, or

water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.

Reference: 3 CCR 10203(c) & OCal 5021

Vermiculite*Nonsynthetic*

See Mined Minerals.

Vinasse*Nonsynthetic*

Nonsynthetic vinasse is permitted. Vinasse is classified as *Nonsynthetic* if it does not contain prohibited additives, such as pH adjusters, sanitizers, ammonium compounds, antibiotics or chlorine materials and is not fortified with nitrogen.

Reference: 3 CCR 10105; NOSB Formal Recommendation, May 2, 2014.

Vinegar*Nonsynthetic*

Produced through the fermentation of ethanol by acetic acid bacteria. See also, Acetic Acid.

Reference: 3 CCR 10105

Viruses*Nonsynthetic*

See Biological Controls.

Vitamins B1, C, E*Synthetic*

Permitted as plant or soil amendments. Vitamin C is also called "Ascorbic Acid."

Reference: 7 CFR 205.601(j)

Vitamin D3*Synthetic*

Also called "Cholecalciferol." Permitted as a rodenticide.

Reference: 7 CFR 205.601(g)

Water and Wastewater*Nonsynthetic*

Water and wastewater is permitted, provided that it is used in a manner that does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.

Reference: 3 CCR 10105

Wetting Agents

Nonsynthetic

Nonsynthetic wetting agents, including saponins and microbial wetting agents, are allowed.

Reference: 3 CCR 10105

Wheat Middlings

Nonsynthetic

See Plants.

Whey Protein

Nonsynthetic

Reference: 3 CCR 10105

Wood Ash

Nonsynthetic

Wood ash must be produced from untreated and unpainted wood. Wood stove ashes must not be generated from burning of colored paper, plastic, or other prohibited materials. See also, Ash.

Reference: 3 CCR 10203(d)(4)

Wood Chips and Shavings

Nonsynthetic

From untreated and unpainted wood only.

Reference: 3 CCR 10203(c)(3)

Wool

Nonsynthetic

Reference: 3 CCR 10105

Worms and Worm Castings

Nonsynthetic

See Vermicompost.

Yeast

Nonsynthetic

Yeast must not be produced using excluded methods. Includes *Saccharomyces cerevisia*, yeast extract autolysate, and yeast hydrolysate. See also, Microbial Products.

Reference: 3 CCR 10105

Yucca

Nonsynthetic

See Plant Extracts.

Zeolite

Nonsynthetic

See Mined Minerals.

Zinc

Synthetic

Permitted as a plant or soil amendment. Soil deficiency must be documented by testing. Not to be used as a defoliant, herbicide, or dessicant.

Allowed forms include zinc sulfate ($ZnSO_4$), zinc oxide (ZnO), zinc carbonate ($ZnCO_3$), and zinc silicate. Those made from nitrates or chlorides are not allowed.

Reference: 7 CFR 205.601(j)(6)

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