

COLORADO DEPARTMENT OF AGRICULTURE

Inspection and Consumer Services Division

Fertilizers and Soil Conditioners

8 CCR 1202-4

Part 1. LEGAL AUTHORITY

1.1 Title 35, Article 12, Colorado Revised Statutes.

Part 2. DEFINITIONS:

2.1 These rules incorporate the official terms as published in the 2008 official publication of the Association of American Plant Food Control Officials, inc. (AAPFCO), incorporated herein by reference (later amendments not included), except as the commissioner designates otherwise in specific cases.

Part 3. REGISTRATION

3.1 Each commercial fertilizer, soil conditioner, or plant amendment product shall be registered by the person whose name appears on the label before being distributed in this state. All registrations shall expire annually on June 30. Applications for renewal of registrations must be submitted each year on or before that date.

3.2 Each manufacturing facility that produces commercial fertilizer custom mixes in this state must be registered as required in section 35-12-104(7), C.R.S. All registrations shall expire annually on June 30. Applications for renewal of registrations must be submitted each year on or before such date.

3.3 Each manufacturing facility that produces compost in this state must be registered as required in section 35-12-104(8)(a), C.R.S. All registrations shall expire annually on December 31. Applications for renewal of registrations must be submitted each year on or before such date.

3.4 Each manufacturing facility in this state that produces compost shall register with the commissioner except that:

- a. Producers of less than 10 tons of compost per calendar year shall not be required to register;
- b. Any facilities regulated under section 14 of part 1 of the Colorado Department of Public Health and Environment regulations pertaining to solid waste sites and facilities, 6 CCR 1007-2, shall not be required to register.

3.5 Only fertilizers containing essential plant nutrients derived from sources recognized by AAPFCO may be registered. Iron sucrate may only be registered for use as an iron source for specialty fertilizers.

Part 4. DISTRIBUTION FEES - REPORTS

4.1 Each registrant shall file an affidavit annually with the commissioner within forty-five days after January 1 each year that discloses the pounds or tonnage of commercial fertilizer, soil conditioner, or plant amendment sold or distributed in the state during the preceding twelve-month period.

4.2 Such affidavit shall be submitted on the form furnished by the commissioner, and shall accurately report all information related to product distribution specified on the form.

Part 5. LABEL REQUIREMENTS

5.1 Fertilizer Labels

The following information shall be displayed on the product label in a readable and conspicuous form:

- (a) Product Name
- (b) Grade
- (c) Guaranteed Analysis in the following format and order:
Guaranteed Analysis
 Total Nitrogen (N) _____ %
 _____ % Ammoniacal Nitrogen**
 _____ % Nitrate Nitrogen**
 _____ % Water Insoluble Nitrogen*
 _____ % Urea Nitrogen**
 _____ % (other recognized and determinable forms of Nitrogen)
- (d) Available Phosphate (P₂O₅) _____ %
- (e) Soluble Potash (K₂O) _____ %
- (f) Other nutrients, elemental basis _____ %***
- (g) Directions for use sufficient to ensure the safe and effective use of the product that, at a minimum, specify:
 - (i) the type(s) of plant(s) for which the product is intended
 - (ii) the recommended application method(s) and rate(s)
 - (iii) Any warning or caution statements necessary to avoid harm to the target plant(s), or other plants or animals
- (h) Net Weight or mass, net volume of liquid or dry material, or count.

* If claimed or the statement "organic" or "slow acting nitrogen" or similar terms are used on the label

** If claimed.

*** as prescribed by rule 5.2

5.2 Plant Nutrients in addition to Nitrogen, Phosphate, and Potash

- (a) Other plant nutrients, when mentioned in any form or manner shall be guaranteed only on an available elemental basis. Sources of the elements guaranteed and proof of availability shall be provided the commissioner upon request. The minimum percentages which will be accepted for registration are as follows:

<u>Element</u>	<u>Minimum %</u>
Calcium	1.00
Magnesium (Mg)	0.50
Sulfur (S)	1.00
Boron (B)	0.02
Chlorine (Cl)	0.10
Cobalt (Co)	0.0005
Copper (Cu)	0.05
Iron (Fe)	0.10
Manganese (Mn)	0.05
Molybdenum (Mo)	0.0005
Nickel (Ni)	0.0010

<u>Element</u>	<u>Minimum %</u>
Sodium (Na)	0.10
Zinc (Zn)	0.05

Any of the above-listed elements which are guaranteed shall appear in the order listed, immediately following guarantees for the primary nutrients, nitrogen, phosphorous and potassium.

- (b) In determining the percentages of the plant nutrients guaranteed on the label the analytical methods specified in Section 6 shall be used, except that for copper, iron, manganese, zinc and cobalt, only that which is in the Na₂ EDTA soluble form as determined by the analytical method in rule 6. (c), or that which is in the water soluble form determined by the analytical method in rule 6 (d), whichever is higher, may be guaranteed. However, if the source for iron is iron sucrate, this exception does not apply.

(c) Guarantees or claims for the above-listed plant nutrients are the only ones which will be accepted except that fertilizer guarantees may include other nutrients, recognized by AAPFCO. Proposed labels and directions for use of the fertilizer shall be furnished with the application for registration upon request.

5.3 Slowly Released Plant Nutrients

- (a) No fertilizer label shall bear a statement that connotes or implies that certain plant nutrients contained in a fertilizer are released slowly over a period of time, unless the slow release components are identified and guaranteed at a level of at least 15% of the total guarantee for that nutrient(s).
- (b) Types of products recognized by the commissioner to have slow release properties include, but not limited to, are (1) water insoluble products, such as natural organics, urea form materials, urea-formaldehyde products, isobutylidene diurea, oxamide, etc., (2) coated slow release, such as sulfur coated urea and other encapsulated soluble fertilizers, (3) occluded slow release, where fertilizers or fertilizer materials are mixed with waxes, resins, or other inert materials and formed into particles and (4) products containing water soluble nitrogen such as ureaform materials, urea-formaldehyde products, methylenediurea (mdu), dimethylenetriurea (dmtu), dicyanodiamide (dcd), etc.
- (c) The term, "water insoluble", and "occluded slow release" are accepted as descriptive of these products, provided the manufacturer can show a testing program to substantiate the claim that is acceptable to the commissioner.
- (d) A laboratory procedure, acceptable to the commissioner for evaluating the release characteristics of the product(s) must be provided by the manufacturer.

5.4 Soil Conditioner and Plant Amendment Labels-The following information shall be displayed on the product label in a readable and conspicuous form.

- (a) Net Weight or mass, net volume of liquid or dry material, or count.
- (b) Product Name
- (c) Statement of composition including the name and percentage of each conditioning and amending ingredient as defined in the 2008 official publication of the Association of American Plant Food Control Officials, Inc., incorporated herein by reference (later amendments not included). If no AAPFCO definition exists, the common or usual name shall be used.

- (d) Total percentage of other ingredients.
- (e) Purposes of product.
- (f) Directions for use sufficient to ensure the safe and effective use of the product that, at a minimum, specify:
 - (i) the type(s) of plant(s) or soil(s) for which the product is intended
 - (ii) the recommended application method(s) and rate(s)
 - (iii) Any warning or caution statements necessary to avoid harm to the target plants (if applicable), or other plants or animals
- (h) Name and address of the registrant.

5.5 **Compost Labels –**

- (a) The following information shall be displayed on the product label in a readable and conspicuous form.
 - (i) Product name.
 - (ii) Directions for use sufficient to ensure the safe and effective use of the product that at minimum, specify:
 - (a) The type(s) of plant(s) or soil(s) for which the product is intended;
 - (b) The recommended application method(s) and rate(s); and
 - (c) Any warning or caution statements necessary to avoid harm to the target plants (if applicable), or other plants or animals.
 - (iii) Name and address of the manufacturer or distributor.
 - (iv) Net weight or volume.
 - (v) Additional analytical information, if supplied, shall be listed under the heading “typical analysis” and shall not be considered to be a guarantee
- (b) Compost distributed in bulk should be accompanied by a printed or written statement showing the ph level & soluble salt level in addition to the information required above.
- (c) Any product labeled as compost must meet the following minimum standards:
 - (i) The product must contain carbon and nitrogen in a ratio of less than or equal to 25, as determined by the method specified in rule 6.2 (a).
 - (ii) The product must contain ammonia nitrogen and nitrate nitrogen in a ratio of less than or equal to 5, as determined by the method specified in rule 6.2 (b).
 - (iii) When analyzed using the Dewar self heating capacity test, the product’s temperature must not rise more than 10 degrees c, as determined by the method specified in rule 6.2 (c).

Part 6. Analytical Methods

- 6.1 The methods of sampling and analysis for fertilizers and soil conditioners shall be those set forth in the 18th edition of the official methods of Association of Official Analytical Chemists,

International, incorporated herein by reference (later amendments not included), provided that copper, iron, manganese, zinc and cobalt shall be analyzed using only the following methods:

- (a) Disodium salt of ethylenediamine tetra acetic acid solubility of copper, iron, manganese, zinc, and cobalt, AOAC method 965.09 (e)(2)
- (b) Water extraction-soluble K₂O. sodium, chlorine, molybdenum boron, copper, iron, manganese, zinc, cobalt and sulfur AOAC method 983.02.
- (c) Iron sucrate AOAC method 965.09 (a)

6.2 The methods for sampling and analysis of compost shall be those specified in test methods for the examination of composting and compost, US Composting Council Research and Education Foundation (CCREF), and United States Department of Agriculture (USDA) (TMECC, 2002) incorporated herein by reference (later amendments not included).

- (a) The carbon : nitrogen ratio shall be determined using TMECC method 04.02D/2002-04-07 for analyzing total carbon and total nitrogen content.
- (b) The ammonia-nitrogen : nitrate-nitrogen ratio shall be determined using TMECC method 04.02C/2002-04-07 for ammonia-nitrogen and TMECC method 04.02D/2002-04-07 for nitrate-nitrogen content.
- (c) The Dewar self heating test shall be performed using TMECC method 05.08D/2002-04-07.

6.3 Investigational Allowances

- (a) A commercial fertilizer shall be deemed deficient if the analysis of any nutrient is below the guarantee by an amount exceeding the values in the following schedule, or if the overall index value of the fertilizer is below 98%:

Guarantee percent	Nitrogen percent	Available Phosphoric acid percent	Potash percent
4 or less	0.49	0.67	0.41
5	0.51	0.67	0.43
6	0.52	0.67	0.47
7	0.54	0.68	0.53
8	0.55	0.68	0.60
9	0.57	0.68	0.65
10	0.58	0.69	0.70
12	0.61	0.69	0.79
14	0.63	0.70	0.87
16	0.67	0.70	0.94
18	0.70	0.71	1.01
20	0.73	0.72	1.08
22	0.75	0.72	1.15
24	0.78	0.73	1.21
26	0.81	0.73	1.27
28	0.83	0.74	1.33
30	0.86	0.75	1.39
32 or more	0.88	0.76	1.44

For guarantees not listed, calculate the appropriate value by Interpolation.

- (b) Other elements shall be deemed deficient if any element is below the guarantee by an amount exceeding the values in the following schedule:

<u>ELEMENT</u>	<u>GUARANTEE</u>	<u>ALLOWABLE DEFICIENCY</u>
Calcium and Sulfur	1% and up	0.2 units + 5% of guarantee
Magnesium	0.5% and up	0.2 units + 5% of guarantee
Boron	.02% to 5%	.003 units + 15% of guarantee
Cobalt and Molybdenum	5.0% and up .0005% to 1.0%	Potash Schedule 3.5 (a) .0001 units + 30% of guarantee
Chlorine, Iron & Sodium	1.0% to 4.0% 4.1% and up 0.1% to 4.0%	.2 units + 10% of guarantee Potash schedule 3.5 (a) .005 units + 10% of guarantee
Copper, Manganese, & Zinc	4.1% and up .05% to 4.0% 4.1% and up	Potash Schedule 3.5 (a) .005 units + Potash Schedule 3.5 (a)

- (c) The overall index value is calculated by comparing the commercial value guaranteed with the commercial value found. Unit values of the nutrients used shall be those referred to in section 35-12-110, C.R.S. Overall index value-example of calculation for a 10-10-10 grade found to contain 10.1% total nitrogen (N), 10.2% available phosphoric acid (P₂O₅), and 10.1% soluble potash (K₂O) Nutrient unit values are assumed to be \$3.00 per unit N, \$2.00 per unit P₂O₅ and \$1.00 per unit K₂O.

10.0 units N	X 3 =	30.0
10.0 units P ₂ O ₅	X 2 =	20.0
10.0 units K ₂ O	X 1 =	<u>10.0</u>
Commercial value guarantee =		60.0
10.0 units N	X 3 =	30.3
10.2 units P ₂ O ₅	X 2 =	20.4
10.1 units K ₂ O	X 1 =	<u>10.1</u>
Commercial value found =		60.8
Overall index value 60.8/60.0 X 100=101.3%		

- (d) Soil conditioner ingredients and plant amending ingredients shall be deemed deficient if found below an amount exceeding 0.2 unit + 5% of the guarantee.
- (e) The above tolerances listed in (a) and (b) are for single samples run in duplicate, additional analysis and/or additional samples will lower tolerances.

Part 7.0 Adulteration

7.1 Fertilizer

- (a) Any product distributed as a fertilizer that contains guaranteed amounts of phosphates and/or micronutrients shall be deemed adulterated if it contains one or more metals in amounts greater than the levels of metals established by the following table:

Metals	ppm per 1% P ₂ O ₅	ppm per 1% Micronutrients ³
1. Arsenic	13	112
2. Cadmium	10	83
3. Cobalt	136 ⁶	2228 ⁶
4. Lead	61	463
5. Mercury	1	6
6. Molybdenum	42	300 ⁴
7. Nickel	250	1,900
8. Selenium	26	180
9. Zinc	420	2,900 ⁴

- (b) To use the above table:

(i) first:

(a) **Fertilizers with a phosphate guarantee but no micro-nutrient guarantee,** Multiply the percent guaranteed P₂O₅ in the product by the values in the table to obtain the maximum allowable concentration of each metal. The minimum value for P₂O₅ utilized as a multiplier shall be 6.0.

(b) **Fertilizers with one or more micro-nutrient guarantees but no phosphate guarantee,** Multiply the sum of the guaranteed percentages of all micro-nutrients in the product by the value in the appropriate column in the Table to obtain the maximum allowable concentration (ppm) of each metal. The minimum value for micro-nutrients utilized as a multiplier shall be 1.

(c) **Fertilizers with both a phosphate and a micro-nutrient guarantee,** Multiply the guaranteed percent P₂O₅ by the value in the appropriate column. The minimum value for P₂O₅ utilized as a multiplier shall be 6.0.

(ii) Then Multiply the sum of the guaranteed percentages of the micro-nutrients by the value in the appropriate column. The minimum value for micro-nutrients utilized as a multiplier shall be 1.

(iii) Then Utilize the higher of the two resulting values as the maximum allowable concentration (ppm) of each metal.

7.2 Compost

(a) Any product labeled and distributed as compost shall be deemed adulterated if it contains one or more metals in amounts greater than the levels of metals established by the following table:

Metals	Maximum level mg/kg dry weight basis
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

(b) Any product labeled and distributed as compost shall be deemed adulterated if it contains pathogen concentration greater than the following levels:

(i) Fecal coliform in an amount greater than 1000 most probable number per gram of total solids (dry weight basis); or

(ii) Salmonella sp. bacteria in an amount greater than three (3) most probable number per four (4) grams of total solids (dry weight basis).