

REGULATIONS UNDER THE KENTUCKY FERTILIZER LAW

As Amended on
April 12, 2000

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12 KAR 4:080. Plant nutrients.

RELATES TO: KRS 250.366(7)

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: To prescribe in detail when and how plant nutrients in addition to nitrogen, phosphorus and potassium shall be registered and guaranteed.

Section 1. Plant nutrients in addition to nitrogen, phosphorus and potassium when mentioned in any form or manner shall be registered and shall be guaranteed. Guarantees shall be made on the elemental basis. Sources of the elements guaranteed and proof of availability shall be provided the director upon request. Except guarantees for those water soluble nutrients labeled for hydroponic or continuous liquid feed programs, and guarantees for potting soils, the minimum percentages which will be accepted for registration are as follows:

Element	Percent
Calcium (Ca)	1.0000
Magnesium (Mg)	0.5000
Sulfur (S)	1.0000
Boron (B)	0.0200
Chlorine (Cl)	0.1000
Cobalt (Co)	0.0005
Copper (Cu)	0.0500
Iron (Fe)	0.1000
Manganese (Mn)	0.0500
Molybdenum (Mo)	0.0005
Sodium (Na)	0.1000
Zinc (Zn)	0.0500

Section 2. Guarantees or claims for the plant nutrients listed in Section 1 of this administrative regulation are the only ones which will be accepted. Proposed labels and directions for the use of the fertilizer shall be furnished with the application for registration upon request. Any of the elements listed in Section 1 of this administrative regulation which are guaranteed shall appear in the order listed and shall immediately follow guarantees for the primary nutrients of nitrogen, phosphorus and potassium if present.

(11 Ky.R. 509; eff. 11-13-84; Am. 21 Ky.R. 450; eff. 9-28-94.)

12 KAR 4:090. Guaranteed analysis.

RELATES TO: KRS 250.366(7), (17)

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: To prescribe the format of the guaranteed analysis required to be on a fertilizer label.

Section 1. The following information in the format presented is the minimum required for all fertilizer labels. For packaged products, this information shall either:

- (1) Appear on the front or back of a package;
- (2) Occupy at least the upper-third of a side of a package; or
- (3) Be printed on a tag and attached to the package.

Section 2. This information shall be in a readable and conspicuous form. For bulk products, this same information in written or printed form shall accompany delivery and be supplied to the purchaser at time of delivery.

- (1) Net weight.
- (2) Brand and grade: provided that the grade shall not be required when no primary nutrients are claimed.
- (3) Guaranteed analysis:*

Total Nitrogen (N)** _____%

_____% Ammoniacal Nitrogen

_____% Nitrate Nitrogen

_____% Water Insoluble Nitrogen

_____% Urea Nitrogen

_____% (Other recognized and determinable forms of N)

Available Phosphate (P₂O₅) _____%

Soluble Potash (K₂O) _____%

(Other nutrients, elemental basis)*** _____%

*If percentage is zero, the nutrient shall be omitted from the statement except in nutrient guarantee breakdowns.

**If the chemical forms of N are claimed, the form shall be guaranteed in the format shown and the percentages of the individual forms shall add up to the total nitrogen percentage. No implied order of the forms of nitrogen is intended.

***As prescribed by 12 KAR 4:080.

- (4) Sources of nutrients, when shown on the label, shall be listed below the completed guaranteed analysis statement.
- (5) Name and address of registrant or licensee.

(11 Ky.R. 510; eff. 11-13-84; Am. 21 Ky.R. 451; eff. 9-28-94.)

12 KAR 4:100. Slowly released nutrients.

RELATES TO: KRS 250.366(7), (17), (18)

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: To interpret the fertilizer law as it relates to the proper labeling of slowly released nutrients.

Section 1. No fertilizer labeling 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 nutrient or nutrients are identified and guaranteed at a level of at least fifteen (15) percent of the total guarantee for that nutrient(s).

Section 2. Types of products with slow release properties recognized are:

- (1) Water insoluble, 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 slowly available nitrogen such as urea-formaldehyde products, methylenediurea (MDU), dimethylenetriurea (DMTU), dicyanodiamide (DCD), urea-triazone solutions, etc.

The terms, "water insoluble, coated slow release, slow release, controlled release, slowly available water soluble, and occluded slow release" are accepted as descriptive of these products, provided the manufacturer can show a testing program substantiating the claim (testing under guidance of Kentucky Agricultural Experiment Station personnel or a recognized reputable researcher acceptable to the director). A laboratory procedure, acceptable to the director for evaluating the release characteristics of the product(s) shall also be provided by the manufacturer.

Section 3. If an amount of nitrogen is designated as organic, then the water insoluble nitrogen or the slow release nitrogen guarantee shall not be less than sixty (60) percent of the nitrogen so designated. Coated urea shall not be included in meeting the sixty (60) percent requirement.

Section 4. Until more appropriate methods are developed, AOAC International method 970.04 is to be used to confirm the coated slow release and occluded slow release nutrients and others whose slow release characteristics depend on particle size. AOAC International method 945.01 shall be used to determine the water insoluble nitrogen of organic materials. AOAC International methods 970.04 and 945.01 are in Official Methods of Analysis 15th Edition (1990) and are hereby incorporated by reference. This material is available for inspection and copying at 103 Regulatory Services Building, University of Kentucky, Lexington, Kentucky, during regular business hours of 8 a.m. to 5 p.m., Monday through Friday.

(11 Ky.R. 510; eff. 11-13-84; Am. 21 Ky.R. 452; 1023; eff. 9-28-94.)

12 KAR 4:110. Terms and definitions.

RELATES TO: KRS 250.406

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: To utilize standard terms and definitions which reduces

regulatory problems for companies selling fertilizer in Kentucky and other states.

Section 1. Definitions.

- (1) "Acid-forming fertilizer" means a fertilizer capable of increasing the residual acidity of soil.
- (2) "Acidulated bone" means a fertilizer made from ground bone or bone meal that has been treated with sulfuric acid.
- (3) "Acidulated fish tankage" means a fertilizer that is derived from rendered fish or fish scrap treated with sulfuric acid.
- (4) "Activated sewage" means a fertilizer made from sewage freed from grit and coarse solids and aerated after being inoculated with microorganisms. The resulting flocculated organic matter is withdrawn from the tanks, filtered with or without the aid of coagulants, dried, ground and screened.
- (5) "Ammoniated superphosphate" means a fertilizer obtained when superphosphate is treated with ammonia or with solutions which contain ammonia and other compounds of nitrogen. The guaranteed percentages of nitrogen and of available phosphate shall be stated as part of the name.
- (6) "Ammonium nitrate" means a fertilizer that is chiefly the ammonium salt of nitric acid. It shall contain not less than thirty-three (33) percent nitrogen, one-half (1/2) of which is in the ammonium form and one-half (1/2) in the nitrate form.
- (7) "Ammonium phosphate (fertilizer grade)" means a fertilizer obtained when phosphoric acid is treated with ammonia (anhydrous or aqueous), and consists principally of monoammonium phosphate and diammonium phosphate or a mixture of these two (2) salts. The guaranteed percentage of nitrogen and of available phosphate shall be stated as part of the name.
- (8) "Ammonium phosphate-sulfate (fertilizer grade)" means a fertilizer obtained when a mixture of phosphoric acid and sulfuric acid is treated with ammonia. It consists principally of a mixture of ammonium phosphate and ammonium sulfate. The guaranteed

percentages of nitrogen and of available phosphate shall be stated as a part of the name.

- (9) "Ammonium sulfate nitrate" means a fertilizer that is a double salt of ammonium sulfate and ammonium nitrate which are present in equal molecular proportions. It shall contain not less than twenty-six (26) percent nitrogen, one-fourth (1/4) of which is in the nitrate form and three-fourths (3/4) in the ammonium form.
- (10) "Ammonium thiosulfate (fertilizer grade)" means a commercial fertilizer composed principally of $(\text{NH}_4)_2\text{S}_2\text{O}_3$. The guaranteed percentages of nitrogen and sulfur shall be stated as part of the name.
- (11) "Animal manure" means a fertilizer derived from the excreta of animals together with whatever bedding materials are needed to follow good dairy barn, feed lot, poultry house, etc., practice in order to maintain proper sanitary conditions.
- (12) "Available phosphate" means the sum of the water soluble and the citratesoluble phosphate in a fertilizer.
- (13) "Basic lime phosphate (lime-based superphosphate)" means a superphosphate to which liming materials have been added at least six (6) percent in excess of the quantity required to convert all water soluble phosphate to the citratesoluble form.
- (14) "Basic phosphate slag" means a fertilizer that is a by-product obtained in the manufacture of steel from phosphatic iron ores. The product shall:
- (a) Contain no admixture of materials other than those resulting from the original process of manufacture;
 - (b) Contain not less than twelve (12) percent total phosphate of which at least eighty (80) percent shall be available phosphate; and
 - (c) Be ground so that not less than ninety (90) percent passes through a U.S. Standard No. 50 sieve (300 μm opening) and seventy (70) percent of the material passes through a U.S. Standard No. 100 sieve (150 μm

opening). Any basic phosphate slag not conforming to this definition shall be designated low phosphate.

- (15) "Bat guano" means partially decomposed bat manure.
- (16) "Calcined phosphate" means a fertilizer made from phosphate rock which has been heated, with or without one (1) or more catalysts or reagents, sufficient to volatilize and remove most or all organic, carbonate, fluoride and other impurities, and/or thermally altered to more available calcium phosphate compounds, depending on the process. Included are compounds known as fused tricalcium phosphate, defluorinated phosphate, rhenania phosphate and various trade names. A significant portion of the phosphate is citrate soluble and such percentage shall be stated as part of the brand name.
- (17) "Calcium metaphosphate" means a fertilizer that is a vitreous product substantially free from crystalline phosphates, resulting from the treatment of phosphate rock with gaseous phosphorus pentoxide at high temperatures. The guaranteed percentage of available phosphate shall be stated as part of the name.
- (18) "Calcium nitrate" means a fertilizer that is chiefly the calcium salt of nitric acid. It shall contain not less than fifteen (15) percent nitrate nitrogen.
- (19) "Chelate" means the type of compound or chemical union in which a central metallic ion is joined to a chelating agent in the same molecule by two (2) or more bonds. Such linkages result in the formation of one (1) or more heterocyclic rings in which the metal is part of the ring.
- (20) "Chelated plant nutrients" means metallic secondary nutrients and micronutrients which have reacted with chelating agents and have the property of being available under pH conditions in which the nutrients normally form insoluble compounds.
- (21) "Chelating agent" means a compound having two (2) or more sites of attachment to a metallic ion to form a chelate. Examples are EDTA (ethylenediaminetetraacetic acid),

- NTA (nitrilo-triacetic acid), polyphosphoric acid, proteins and polyflavonoids.
- (22) "Citrate-soluble phosphate" means that part of the total phosphate in a fertilizer that is insoluble in water but soluble in a solution of citrate of ammonia according to AOAC International Method 960.01.
- (23) "Coated slow release fertilizer" means a fertilizer containing sources of water soluble nutrients, release of which in the soil is controlled by a coating applied to the fertilizer.
- (24) "Compost" means a biologically stable material derived from the composting process.
- (25) "Composting" means the biological decomposition of organic matter which may be accomplished by mixing and piling in such a way to promote aerobic and/or anaerobic decay. The process inhibits pathogens, viable weed seeds, and odors.
- (26) "Continuous liquid feed" means the external application of water soluble nutrients in the irrigation water every time the plant requires water.
- (27) "Crude, inert, or slow-acting nitrogenous materials" means low value fertilizers made from unprocessed organic substances relatively high in nitrogen but having nitrogen activity indexes of less than fifty (50) percent by the alkaline (AOAC International Method 920.07) and less than eighty (80) percent by the neutral (AOAC International Method 920.06) permanganate methods.
- (28) "Cyanamide" means a commercial product consisting principally of calcium cyanamide (CaNCN) and carbon and it shall contain not less than nineteen and five-tenths (19.5) percent nitrogen.
- (29) "DAP (fertilizer grade)" means a fertilizer composed of ammonium phosphates, principally diammonium phosphate, resulting from the ammoniation of phosphoric acid. It may contain up to two (2) percent nonammoniacal nitrogen. The guaranteed percentage of nitrogen and available phosphate shall be stated as part of the name.
- (30) "Dicalcium phosphate" means a manufactured fertilizer consisting chiefly of dicalcic salt of phosphoric acid.
- (31) "Dicyanodiamide (cyanoguanidine)" means a fertilizer that is a water soluble organic compound of formula $C_2N_4H_4$ which contains at least sixty-five (65) percent nitrogen. It is a source of slowly available nitrogen.
- (32) "Dimethylenetriurea (DMTU)" means a fertilizer that is a water soluble condensation product resulting from the reaction of two (2) molecules of formaldehyde with three (3) molecules of urea, with the elimination of two (2) molecules of water. It has a minimum total nitrogen content of forty-one (41) percent and is a source of slowly available nitrogen.
- (33) "Double sulfate of potash and magnesia (langbeinite)" means a fertilizer containing not less than twenty-one (21) percent soluble potash (K_2O) nor less than fifty-three (53) percent sulfate of magnesia and not more than two and one-half (2.5) percent chlorine.
- (34) "Dried blood" means a fertilizer that is the collected blood of slaughtered animals, dried and ground and containing not less than twelve (12) percent nitrogen.
- (35) "Fertilizer formula" means the quantity and analysis of the crude stock materials used in making a mixed fertilizer.
- (36) "Filler" means any substance added to fertilizer materials to provide bulk, prevent caking or serve some purpose other than providing essential plant nutrients.
- (37) "Fish tankage" means a fertilizer derived from dried, ground, rendered or unrendered whole fish or fish scrap.
- (38) "Garbage tankage" means the rendered, dried and ground product derived from waste household food materials.
- (39) "Granular fertilizer" means a fertilizer in which ninety-five (95) percent or more of the product is retained on a series of sieves within the range of U.S. No. 4 (4.75 mm opening) to and including U.S. No. 20 (0.850 mm opening) and in which the largest particle passes through a sieve having an opening not larger than four (4) times that of the sieve which

- retains ninety-five (95) percent or more of the product.
- (40) "Ground raw bone" means a fertilizer made from ground animal bones that have not been previously steamed under pressure, heated, or otherwise manipulated.
- (41) "Ground sterilized bone" means a fertilizer made from ground animal bones or bone meal that have been previously steamed under pressure, heated, or rendered sterile in some other acceptable manner.
- (42) "Hoof and horn meal" means a fertilizer derived from processed dried and ground hoofs and horns.
- (43) "Hydroponics" means a system in which water soluble nutrients are placed in intimate contact with the plant's root system, being grown in an inert supportive medium which supplies physical support for the roots but which does not add or subtract plant nutrients.
- (44) "Isobutylidene diurea" means a fertilizer that is the condensation product of isobutyraldehyde and urea having a minimum total nitrogen content of thirty (30) percent. It is a source of slowly available nitrogen by virtue of particle size, solubility decreasing with increase in particle size. Material conforming to the description of a "granular fertilizer" will have ninety (90) percent of its nitrogen content in the water insoluble form prior to grinding as tested by AOAC International Method 945.01.
- (45) "Kainit" means a fertilizer that is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve (12) percent soluble potash (K_2O).
- (46) "Kelp (seaweed)" means a fertilizer derived from the dried marine algae of the botanical divisions of Rhodophyta (red algae), Phaeophyta (brown algae), and Chlorophyta (green algae).
- (47) "Liquid fertilizer" means a fluid fertilizer in which the plant nutrients are in true solution.
- (48) "Magnesium sulfate" means a fertilizer consisting chiefly of the chemical compound, magnesium sulfate, with or without combined water, such as, epsom salts ($MgSO_4 \cdot 7H_2O$), kieserite ($MgSO_4 \cdot H_2O$) and calcined kieserite ($MgSO_4$).
- (49) "Manganese sulfate" means a fertilizer consisting of anhydrous manganese sulfate ($MnSO_4$).
- (50) "Manipulation" means processed or treated in any manner, including drying to a moisture content of less than thirty (30) percent, composting, bagging, leaching, pelleting, dissolution and recrystallization.
- (51) "MAP (fertilizer grade)" means a fertilizer composed of ammonium phosphates, principally monoammonium phosphate, resulting from the ammoniation of phosphoric acid. The guaranteed percentage of nitrogen and available phosphate shall be stated as part of the name.
- (52) "Melamine" means a fertilizer that is a sparingly soluble organic compound of formula $C_3H_6N_6$ which contains at least sixty-six (66) percent nitrogen. (CAS No. 10878-1 2,4,6 triamino-1,3,5-triazine, triamino-s-triazine).
- (53) "Methylenediurea (MDU)" means a fertilizer that is a water soluble condensation product resulting from the reaction of one (1) molecule of formaldehyde with two (2) molecules of urea, with the elimination of one (1) molecule of water. It has a minimum total nitrogen content of forty-two (42) percent and is a source of slowly available nitrogen.
- (54) "Micronutrients" means the essential plants nutrients of boron, chlorine, cobalt, copper, iron, manganese, molybdenum, sodium and zinc.
- (55) "Mine run potash salts" means fertilizers that are potash salts containing a high percentage of chloride and from twenty (20) percent to thirty (30) percent soluble potash (K_2O).
- (56) "Muriate of potash (commercial potassium chloride)" means a fertilizer that contains forty-eight (48) percent to sixty-two (62) percent soluble potash (K_2O) chiefly as chloride.

- (57) "Natural base fertilizer" means a mixed fertilizer where more than half of the fertilizer materials is natural and where more than half of the sum of the guaranteed primary nutrient percentages is derived from natural materials.
- (58) "Natural fertilizer" means a fertilizer composed only of natural organic and/or natural inorganic fertilizer materials and natural fillers.
- (59) "Natural inorganic fertilizer" means a mineral nutrient source that exists in or is produced by nature and may be altered from its original state only by physical manipulation.
- (60) "Natural organic fertilizers" means organic fertilizers derived from either plant or animal products. These fertilizers:
- (a) May be subjected to biological degradation processes under normal conditions of aging, rainfall, sun-curing, air-drying, composting, rotting, enzymatic, or anaerobic/aerobic bacterial action, or any combination of these; and
 - (b) Shall not be mixed with synthetic materials or changed in any physical or chemical manner from their initial state except by manipulations such as drying, cooking, chopping, grinding, shredding, hydrolysis, or pelleting.
- (61) "Nitrate of potash or potassium nitrate" means a fertilizer that is chiefly the potassium salt of nitric acid. It shall contain not less than twelve (12) percent nitrogen and forty-four (44) percent soluble potash.
- (62) "Nitrate of soda or sodium nitrate" means a fertilizer that is chiefly the sodium salt of nitric acid. It shall contain not less than sixteen (16) percent nitrate nitrogen and twenty-six (26) percent sodium.
- (63) "Nitrate of soda potash or sodium and potassium nitrate" means a fertilizer that is chiefly the sodium and potassium salts of nitric acid. It shall contain not less than fifteen (15) percent nitrate nitrogen, ten (10) percent soluble potash and eighteen (18) percent sodium.
- (64) "Nitrogen stabilizer" means a substance added to a fertilizer which extends the time the nitrogen component of the fertilizer remains in the soil in the ammoniacal form.
- (65) "Nitrophosphate" means a fertilizer obtained by acidulation of phosphate rock with nitric acid resulting in a complex mixture of nitrates and phosphates that does not contain nitrate nitrogen and phosphorus in the same molecule. The process is subject to modifications designed to remove the hygroscopic calcium nitrate formed such as ammoniation, physical separation, coacidulation with sulfuric or phosphoric acids, or subsequent treatment with carbon dioxide.
- (66) "Nonacid-forming fertilizer" means a fertilizer that is not capable of increasing the residual acidity of the soil.
- (67) "Organic base fertilizer" means a mixed fertilizer where more than half of the fertilizer materials is organic and where more than half of the sum of the guaranteed primary nutrient percentages is derived from organic materials.
- (68) "Organic fertilizer" means a fertilizer containing carbon combined covalently with one (1) or more elements essential for plant growth other than hydrogen and oxygen.
- (69) "Oxamide (fertilizer grade)" means a fertilizer that is the diamide of oxalic acid of the formula $C_2H_4N_2O_2$ which contains twenty-eight (28) to thirty-two (32) percent nitrogen. It is a source of slowly available nitrogen.
- (70) "Peat" means the partly decayed vegetable matter of natural occurrence. It is composed chiefly of organic matter that contains some nitrogen of low activity.
- (71) "Pelletized fertilizer" means a fertilizer whose physical form is uniform in size and usually of globular shape containing one (1) or more nutrients produced by one (1) of several methods including:
- (a) Solidification of a melt while falling through a countercurrent stream of air;

- (b) Dried layers of slurry applied to recycling particles;
 - (c) Compaction;
 - (d) Extrusion; and
 - (e) Granulation.
- (72) "Phosphate" means the phosphorus in a fertilizer that is designated and guaranteed as equivalent to phosphorus pentoxide (P_2O_5).
- (73) "Phosphate rock" means a natural rock containing one (1) or more calcium phosphate minerals of sufficient purity and quantity to permit its use, either directly or after concentration, in the manufacture of commercial fertilizers.
- (74) "Polymer coated fertilizer" means a coated slow release fertilizer consisting of fertilizer particles coated with a polymer (plastic) resin and is a source of slowly available plant nutrient(s).
- (75) "Polymer coated urea (PCU)" means a coated slow release fertilizer consisting of urea particles coated with a polymer (plastic) resin. It typically contains about forty (40) percent nitrogen and is a source of slowly available nitrogen.
- (76) "Polyphosphates" means a general class of phosphatic fertilizers made from the salts of any of a series of polyphosphoric acids, whose molecular structure contains two (2) or more phosphorus atoms linked by oxygen. Solutions may contain several ionic species such as orthophosphates, pyrophosphates, and polyphosphates containing three (3) or more phosphorus atoms, commonly known as tripolyphosphates or tetrapolyphosphates and water.
- (77) "Potash" means the potassium in a fertilizer that is designated and guaranteed as equivalent to potassium oxide (K_2O).
- (78) "Potting soil" means a material suitable for holding and growing potted plants and usually made from natural materials. It may include fertilizers, pesticides and/or soil amendments.
- (79) "Precipitated phosphate" means a fertilizer that consists mainly of dicalcium phosphate obtained by neutralizing with calcium hydroxide the acid solution of either phosphate rock or processed bone.
- (80) "Primary nutrients" means nitrogen (N), available phosphate (P_2O_5) or phosphorus (P), and soluble potash (K_2O) or potassium (K).
- (81) "Process tankage" means a fertilizer made under steam pressure from crude inert nitrogenous materials, with or without the use of acids or bases, for the purpose of increasing the activity of nitrogen. These products shall be called "process tankage" with or without further qualification and the water insoluble nitrogen shall test at least fifty (50) percent active by the alkaline permanganate method (AOAC International Method 920.07), or eighty (80) percent active by the neutral permanganate method (AOAC International Method 920.06).
- (82) "Secondary nutrients" means the essential plant nutrients of calcium, magnesium, and sulfur.
- (83) "Sheep manure wool waste" means a fertilizer that is the by-product from wool-carding establishments consisting chiefly of sheep manure, seeds, and wool fiber.
- (84) "Slow or controlled release fertilizer" means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference "rapidly available nutrient fertilizer" such as ammonium nitrate, urea, ammonium phosphate, or potassium chloride. Such delay of initial availability or extended time of continued availability may occur by a variety of mechanisms including:
- (a) Controlled water solubility of the material by semipermeable coatings, occlusion, or by inherent water insolubility of polymers, natural nitrogenous organics, protein materials, or other chemical forms;
 - (b) By slow hydrolysis of water soluble low molecular weight compounds; or
 - (c) By other unknown means.

- (85) "Soft phosphate with colloidal clay" means a very finely divided, low-analysis fertilizer that is a byproduct from mining Florida rock phosphate by a hydraulic process in which the colloidal materials settle at points in artificial basins farthest from the washer, and are later removed after the natural evaporation of the water.
- (86) "Slurry fertilizer" means a fluid fertilizer containing dissolved and undissolved plant nutrient materials which requires continuous mechanical agitation to assure homogeneity.
- (87) "Soluble potash" means the potash contained in a fertilizer which is soluble in aqueous ammonium oxalate, aqueous ammonium citrate, or water, according to an applicable AOAC International Method.
- (88) "Stabilized nitrogen fertilizer" means a fertilizer to which a nitrogen stabilizer has been added.
- (89) "Sulfate of ammonia or ammonium sulfate" means a fertilizer that is chiefly the ammonium salt of sulfuric acid. It shall contain not less than twenty and five-tenths (20.5) percent nitrogen.
- (90) "Sulfate of potash (commercial potassium sulfate)" means a fertilizer containing not less than forty-eight (48) percent soluble potash (K_2O), chiefly as sulfate, and not more than two and one-half (2.5) percent chlorine.
- (91) "Sulfate of potash magnesia" means a fertilizer containing not less than twenty-five (25) percent soluble potash (K_2O) nor less than twenty-five (25) percent sulfate of magnesia and not more than two and one-half (2.5) percent chlorine.
- (92) "Sulfur coated urea" means a coated slow release fertilizer consisting of urea particles coated with sulfur. The product is usually further coated with a sealant (two (2) percent to three (3) percent of total weight) and a conditioner (two (2) percent to three (3) percent of total weight). It typically contains about thirty (30) percent to forty (40) percent nitrogen and about ten (10) percent to thirty (30) percent sulfur.
- (93) "Superphosphate" means a fertilizer that is obtained when phosphate rock is treated with either sulfuric acid, phosphoric acid, or a mixture of those acids. The guaranteed percentage of available phosphate shall be stated as a part of the name.
- (94) "Superphosphoric acid" means the acid form of polyphosphates, consisting of a mixture of orthophosphoric and polyphosphoric acids. Ionic species distribution varies with concentration, typically sixty-eight (68) to eighty-three (83) percent P_2O_5 .
- (95) "Suspension fertilizer" means a fluid fertilizer containing dissolved and undissolved plant nutrients where the undissolved plant nutrients are suspended with the aid of a nonfertilizer suspending agent or by the inherent properties of the undissolved materials. Mechanical agitation may be necessary in some cases to facilitate uniform suspension of the undissolved plant nutrients.
- (96) "Synthetic" means any substance generated from another material or materials by means of a chemical reaction.
- (97) "Tankage (without qualification)" means a fertilizer made from the rendered, dried, and ground by-product, largely meat and bone, from slaughtered animals or those that have otherwise died.
- (98) "Triazone" means a fertilizer that is a water soluble compound of formula $C_3H_7N_3O$ which contains at least forty-one (41) percent total nitrogen. (CAS No. 709814-6, 1,3,5 triazin-2-one, tetrahydro-s-triazone)
- (99) "Unit" means twenty (20) pounds of plant food or one (1) percent of a ton.
- (100) "Unmanipulated" means materials not subjected to manipulation.
- (101) "Urea" means a fertilizer that is the commercial synthetic acid amide of carbonic acid and it shall contain not less than forty-five (45) percent nitrogen.
- (102) "Urea-formaldehyde products (sparingly soluble)" means fertilizers that are reaction products of urea and formaldehyde which:
- (a) Contain less than thirty-five (35) percent total nitrogen, largely in water insoluble but slowly available form;

- (b) Have not less than sixty (60) percent of the total nitrogen in water insoluble form; and
 - (c) Shall have activity indexes of the water insoluble nitrogen that are either:
 1. Not less than forty (40) percent by the AOAC International Method 955.05 (nitrogen activity index for urea-formaldehyde products); or
 2. Not less than fifty (50) percent by AOAC International Method 920.07 (alkaline permanganate) or eighty (80) percent by AOAC International Method 920.06 (neutral permanganate). They shall have the percentage of total nitrogen as part of the product name; for example: Twenty (20) percent N Urea-Formaldehyde.
- (103) "Urea-formaldehyde products (water soluble)" means fertilizers that are reaction products of urea and formaldehyde which:
- (a) Contain at least thirty (30) percent nitrogen, largely in water soluble form;
 - (b) Have some slowly available nitrogen products present;
 - (c) Form stable aqueous solutions; and
 - (d) Contain a maximum of fifty-five (55) percent free urea, with the remainder of the urea being chemically combined as methylolureas, methylolurea ethers, and/or methylenediurea (MDU) and dimethylenetriurea (DMTU).
- (104) "Ureaform materials (sparingly soluble)" means fertilizers that are reaction products of urea and formaldehyde which:
- (a) Contain at least thirty-five (35) percent nitrogen, largely in water insoluble but slowly available form;
 - (b) Have at least sixty (60) percent of the total nitrogen content in water insoluble form; and
 - (c) Have a water insoluble nitrogen activity index of not less than forty

(40) percent when determined by AOAC International Method 955.05.

(105) "Urea-triazone solution" means a fertilizer that is a stable solution resulting from controlled reaction in aqueous medium of urea, formaldehyde, and ammonia which:

- (a) Contains at least twenty-five (25) percent total nitrogen; and
- (b) Shall contain no more than forty (40) percent nor less than five (5) percent of the total nitrogen from unreacted urea and not less than forty (40) percent of the total nitrogen from triazone. All other nitrogen shall be derived from water soluble, dissolved reaction products of the above reactants. It is a source of slowly available nitrogen.

(106) "Vegetable manure" means plant material that has been composted.

(11 Ky.R. 511; eff. 11-13-84; Am. 12 Ky.R. 1519; eff. 4-17-86; 21 Ky.R. 453; 1023; eff. 9-28-94.)

12 KAR 4:120. Definition of "percentage."

RELATES TO: KRS 250.366(17)

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: To prescribe an unambiguous way of using the term "percentage" on a fertilizer label.

Section 1. The term of "percentage" by symbol or word, when used on fertilizer labeling shall represent only the amount of individual plant nutrients in relation to the total product by weight.

(11 Ky.R. 512; eff. 11-13-84.)

12 KAR 4:130. Investigational allowances.

RELATES TO: KRS 250.366(19), 250.391(3), 250.396(1), (2), 250.401

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: To prescribe scientifically sound and fair investigational allowances as a basis for declaring a fertilizer sample deficient in its guaranteed analyses and to detail the calculation of the index value of a fertilizer.

Section 1. A fertilizer shall be deemed deficient if the analysis of an official sample for any primary nutrient is below the guarantee by an amount exceeding the values in the following schedule.

Guaranteed percent	Total Nitrogen (N) percent*	Available Phosphate (P ₂ O ₅) percent*	Soluble Potash (K ₂ O) percent*
05 or less	0.37	0.65	0.39
06	0.47	0.71	0.47
07	0.59	0.77	0.56
08	0.72	0.82	0.63
09	0.81	0.86	0.70
10	0.89	0.89	0.76
12	1.03	0.95	0.87
14	1.18	1.02	0.96
16	1.29	1.12	1.05
18	1.43	1.19	1.12
20	1.57	1.32	1.18
22	1.62	1.39	1.22
24	1.65	1.46	1.26
26	1.66	1.53	1.29
28	1.58	1.59	1.33
30	1.28	1.67	1.36
32 or more	1.28	1.67	1.36

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

*For these investigational allowances to be applicable, the procedures recommended by AOAC International for obtaining samples, preparation and analysis shall be used. These are described in the 15th Edition (1990) of the Official Methods of Analysis of the AOAC International. In evaluating replicate data, Table 19, page 935, Journal of the Association of Official Analytical Chemists, Volume 49, No. 5, October, 1966, shall be followed. The above materials are hereby incorporated by reference and are available for inspection and copying at 103 Regulatory Services Building, University of Kentucky, Lexington, Kentucky, during regular business hours of 8 a.m. to 5 p.m., Monday through Friday.

Section 2. A fertilizer shall be deemed deficient in the overall index value if the overall index value is less than ninety-seven (97) percent.

- (1) The overall index value is calculated by comparing the value guaranteed with the value found. Unit values of the nutrients used shall be those referred to in KRS 250.401.
- (2) Overall index value. Example of calculation for a 10-10-10 grade found to contain ten and one-tenth (10.1) percent Total Nitrogen (N), ten and two-tenths (10.2) percent Available Phosphate (P₂O₅) and ten and one-tenth (10.1) percent Soluble Potash (K₂O). Nutrient unit values are assumed to be three (3) dollars per unit N, two (2) dollars per unit (P₂O₅), and one (1) dollar per unit K₂O.

10.0 units N	x3=	10.0
10.0 units P ₂ O ₅	x2=	20.0
10.0 units K ₂ O	x1=	10.0
Commercial Value Guaranteed =		60.0
10.0 units of N	x3=	30.3
10.2 units of P ₂ O ₅	x2=	20.4
10.1 units K ₂ O	x1=	10.1
Commercial Value Found =		60.8
Overall Index Value = 100(60.8/60.00) =		101.3%

Section 3. Secondary and minor elements shall be deemed deficient if the analysis of an official sample for any of these elements is below the guarantee by an amount exceeding the values in the following schedule:

Element	Investigational Allowance
Calcium)	0.2 unit + 5% of guarantee
Magnesium)	0.2 unit + 5% of guarantee
Sulfur)	0.2 unit + 5% of guarantee
Boron)	0.003 unit + 15% of guarantee
Molybdenum)	0.0001 unit + 30% of guarantee
Chlorine)	0.005 unit + 10% of guarantee
Copper)	0.005 unit + 10% of guarantee
Iron)	0.005 unit + 10% of guarantee
Manganese)	0.005 unit + 10% of guarantee
Sodium)	0.005 unit + 10% of guarantee
Zinc)	0.005 unit + 10% of guarantee

The maximum allowance when calculated in accordance to the above shall be one (1) unit (1%).

(11 Ky.R. 512; eff. 11-13-84; Am. 21 Ky.R. 457; 1027; eff. 9-28-94.)

12 KAR 4:140. Monetary penalties.

RELATES TO: KRS 250.396(1), (2)

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: To prescribe the specific method of calculating the monetary penalties required by the fertilizer law.

Section 1. Penalties for deficiencies in Total Nitrogen (N), Available Phosphate (P₂O₅), soluble potash (K₂O), and index value shall be calculated from the following schedule:

Number of Investigational Allowances Below Guarantee	Penalty Schedule
≤2	Equal to the monetary value of the deficiency
>2 ≤3	Two (2) times the monetary value of the deficiency
>3	Three (3) times the monetary value of the deficiency

Section 2. Minimum standards and overages of primary nutrients are allowed to reduce penalties calculated in Section 1 of this administrative regulation for fertilizer with index values equal to or greater than ninety-seven (97) percent on the basis of the following schedule:

Number of Investigational Allowances Below Guarantee	Penalty Adjustments
No more than one (1) deficiency that is less than or equal to two (2) investigational allowances	Penalty adjusted to zero
No more than one (1) deficiency that is greater than two (2) but less than three (3) investigational allowances	Value of overages may adjust up to 100% of the value of the deficiencies
Two (2) deficiencies that are less than three (3) investigational allowances; or, no more than one (1) deficiency that is equal to or greater than three (3) but less than four (4) investigational allowances	Value of overages may adjust up to 75% of the value of the deficiencies

Section 3. When a fertilizer is subject to a penalty from both a primary nutrient deficiency and an index value deficiency, only the larger penalty shall apply; however, in no case shall the penalty exceed the total value of the fertilizer.

Section 4. Penalties for deficiencies in secondary and minor elements and for excess chlorine in tobacco fertilizer shall be calculated from the following schedule.

(1) Deficiencies.

Number of Investigational Allowances Below Guarantee	Penalty Schedule
≤2	Equal to the monetary value of the deficiency
>2	Two (2) times the monetary value of the deficiency

(2) Excess chlorine in tobacco fertilizers. The investigational allowance for maximum chlorine shall be five-tenths (0.5) percent.

Number of Investigational Allowances Above Maximum Chlorine Guarantee	Penalty Schedule
≤2	Equal to the difference in the soluble potash (for tobacco) unit value and the nontobacco soluble potash unit value
>2	Two (2) times the difference in the soluble potash (for tobacco) unit value and the nontobacco soluble potash unit value

Section 5. Any penalty assessed under Section 1 of this administrative regulation shall be added to any penalty assessed under Section 4 of this administrative regulation and the total shall be paid by the registrant to the consumer of the lot of fertilizer represented by the sample within three (3) months after the date of notice from the director, receipts taken therefore and promptly forwarded to the director. If said consumer cannot be found, the amount of the penalty payments shall be paid to the Kentucky Agricultural Experiment Station within three (3) months after the date of the notice from the director to the registrant and set aside for purchase of equipment for the sampling, handling, analyzing and reporting of results of analyses of official samples and for the education of the Kentucky fertilizer industry on the newest methods in manufacturing blended fertilizers. If the lot of fertilizer is on hand at a retail location the penalty payments assessed under this section shall be used to reduce the retail price of the fertilizer if it is to be relabeled and sold.

Section 6. In no case shall the total of the penalties assessed under this administrative regulation exceed the retail value of the fertilizer.

(11 Ky.R. 514; eff. 11-13-84; Am. 12 Ky.R. 1519; 1730; eff. 4-17-86; 21 Ky.R. 458; eff. 9-28-94.)

12 KAR 4:160. Guaranteed nutrients.

RELATES TO: KRS 250.366(7)

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: To interpret the fertilizer law as it relates to the format for guaranteeing chemical forms of a guaranteed nutrient.

Section 1. When the chemical forms of a plant nutrient are guaranteed, the percentage for each component shall be shown before the name of the form. Example:

Total nitrogen (N).....	34%
17% nitrate nitrogen	
17% ammoniacal nitrogen	
Magnesium (mg).....	2.0%
1% water soluble magnesium (Mg)	
Sulfur (S).....	10.0%
5% free sulfur (S)	
5% combined sulfur (S)	
Iron (Fe).....	2.0%
2% chelated iron (Fe)	
Manganese (Mn).....	1.0%
0.5% water soluble manganese (Mn)	

(11 Ky.R. 516; eff. 11-13-84; Am. 21 Ky.R. 459; eff. 9-28-94.)

12 KAR 4:170. Maximum chlorine guarantees for tobacco fertilizers.

RELATES TO: KRS 250.366(7), 250.411(1)

STATUTORY AUTHORITY: KRS 250.421

NECESSITY, FUNCTION, AND CONFORMITY: KRS 250.421 requires the director of the Kentucky Agricultural Experiment Station to enforce the provisions of KRS 250.371 to 250.451 and to promulgate and enforce administrative regulations necessary to implement KRS 250.371 to 250.451. This administrative regulation establishes the specific format and conditions for maximum chlorine

guarantee for tobacco fertilizers, which is necessary for production of quality tobacco.

Section 1.

- (1) Until January 1, 2001, bagged tobacco fertilizer sold for or represented for use on field crop tobacco, shall, in addition to the other guarantees specified by 12 KAR Chapter 4, state a maximum chlorine guarantee not to exceed two and five-tenths (2.5) percent in the following format:

Chlorine (Cl), Maximum 2.5%

- (2) The maximum chlorine guarantee shall be prominently and conspicuously placed below the Guaranteed Analysis required by 12 KAR 4:090.
- (3) On or after January 1, 2001, the provisions of Section 2 of this administrative regulation shall apply to bagged tobacco fertilizer.

Section 2.

- (1) Except as provided by Section 1 of this administrative regulation, all fertilizers sold for or represented for use on field crop tobacco, shall, in addition to the other guarantees specified by 12 KAR Chapter 4, state a maximum chlorine guarantee not to exceed fifty (50) pounds chlorine per acre (equivalent to 100 pounds of muriate of potash per acre) in the following format:

Chlorine (Cl), Maximum 50 lb./acre

- (2) The maximum chlorine guarantee shall be prominently and conspicuously displayed on the label as required by KRS 250.376.
- (3) The invoice, shipping ticket, or bag label shall:
 - (a) State the rate of application expressed as pounds or tons of the blended fertilizer per acre;
 - (b) State clearly that the fertilizer is for use on tobacco; and
 - (c) Give directions for use to include a maximum application rate so that no more than fifty (50) pounds of chlorine is applied per acre.

- (4) The provisions of this administrative regulation shall not apply to fertilizers for use on plant beds.

(11 Ky.R. 516; Am. 970; eff. 11-13-84; 26 Ky.R. 1586; eff. 4-12-2000.)