

O-F-241D  
August 1, 1975  
SUPERSEDING  
Fed. Spec. O-F-241C  
May 13, 1964

FEDERAL SPECIFICATION

FERTILIZER, MIXED, COMMERCIAL

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers a commercial fertilizer mixture containing either two or three of the primary plant nutrients, namely, nitrogen (N), available phosphoric acid ( $P_{27}O_{57}$ ), and potash ( $K_{27}O$ ). Secondary and micro plant nutrients may also be included in the mixture. These mixtures may be applied directly to the soil in solid or liquid form.

1.2 Classification.

1.2.1 Types and classes. Commercial mixed fertilizer shall be of the following types and classes and shall be furnished according to the grades specified in the invitation for bids (see 6.2).

Type I - Solid form

Class 1 - Powdered or pulverized.

Class 2 - Granular or pelleted.

Type II - Liquid form.

Class 1 - Solution.

Class 2 - Suspension.

Class 3 - Slurry.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications:

UU-S-48 - Sacks, Shipping, Paper.

PPP-B-1714 - Bags, Shipping: Woven Polypropylene.

Federal Standard:

Fed. Std. No. 123 - Marking for Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

**Military Standards:**

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.  
MIL-STD-129 - Marking for Shipment and Storage.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

**Laws and Regulations:**

16 CFR 1500 - Federal Hazardous Substances Act.  
49 CFR 171-179 - Hazardous Materials Regulations.

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof).

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

**Association of Official Analytical Chemists (AOAC):**

Official Methods of Analysis.

(Application for copies should be addressed to the Association of Official Analytical Chemists, P.O. Box 540, Benjamin Franklin Station, Washington, DC 20044.)

**Association of American Plant Food Control Officials (AAPFCO):**

Official Publication.

(Application for copies should be addressed to the Treasurer, Association of American Plant Food Control Officials, 619 Kuhlman Court, Columbia, MO 65201.)

National Motor Freight Traffic Association, Inc., Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations, Inc. Tariff Order Section, 1616 P Street N.W., Washington, DC 20036.)

Uniform Classification Committee, Agent:

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza., Chicago, IL 60606.)

### 3. REQUIREMENTS

3.1 Material. Material used in the manufacture of commercial mixed fertilizer shall be of such kind and quality that will insure conformance with the requirements of this specification.

3.1.1 Primary plant nutrients. Nitrogen (N), available phosphoric acid ( $P_2O_5$ ), and soluble potash ( $K_2O$ ) shall be of a form suitable for use in the type and class of fertilizer specified in the invitation for bids (see 6.2).

3.1.2 Secondary plant nutrients. Calcium, magnesium, and sulfur shall be of a form suitable for use in the type class of fertilizer specified in the invitation for bids (see 6.2).

3.1.3 Micro plant nutrients. Boron, chlorine, cobalt, copper, iron, manganese, molybdenum, sodium, and zinc shall be of a form suitable for use in the type and class of fertilizer specified in the invitation for bids (see 6.2).

3.2 Grade. Commercial mixed fertilizer shall meet the minimum requirements for the respective percentage of total nitrogen (N), available phosphoric acid ( $P_2O_5$ ), and soluble potash ( $K_2O$ ) as expressed by the grades of fertilizer specified in the invitation for bids (see 6.2 and 6.4).

3.2.1 Investigational allowances. A commercial mixed fertilizer shall be deemed deficient in nutrient content if the analysis is below the guarantee by an amount exceeding the values set by the Association of American Plant Food Control Officials, or if the overall index value of the fertilizer is below 98 percent. The overall index value shall be calculated according to the procedure of the Association of American Plant Food Control Officials.

3.3 Adulteration. A commercial mixed fertilizer shall not contain ground leather, hoof meal, horn meal, hair, wood waste, tartar pomace, urea resin scrap, etc., which has not been treated to make available the primary, secondary, and

micro plant nutrients which they contain. The fertilizer shall not contain material which is detrimental to the soil or plant.

3.4 Condition. The fertilizer shall be cured and seasoned. Each grade of fertilizer shall be ready for direct application to the soil and shall possess the proper mechanical condition for satisfactory drillability. When received at the point of delivery, the fertilizer should be a free-flowing, thoroughly and uniformly mixed product, or for the type II, class 2 and class 3 fertilizer, in a state which can be thoroughly and uniformly mixed by agitation before use.

3.5 Solubility. Unless otherwise specified, solid fertilizer (type I) shall not be required to be completely water soluble. Phosphorus (i.e., phosphoric acid) shall be soluble in water and neutral ammonium citrate, as defined in AOAC Official Methods of Analysis. Potassium (i.e., potash) shall be soluble in ammonium oxalate, as defined in the AOAC Official Methods of Analysis.

3.6 Particle size. For granular or pelleted fertilizer (type I, class 2), the particle size range shall be specified, or if not specified, shall conform to the particle size range defined in the AAPFCO Official Publication.

3.7 State laws. The fertilizer shall comply with applicable state fertilizer laws.

3.8 Labeling. Each container of fertilizer shall be legibly marked by lithographing, stenciling or printing directly on the container, or by affixing a white label to the container, with a black water-resistant ink which will not smear or rub off during handling (see 5.3), with the following information:

Grade:

Guaranteed Analysis:

Total Nitrogen (N).....	_____	percent
Available Phosphoric acid (P <sub>2</sub> O <sub>5</sub> ).....	_____	percent
Soluble Potash (K <sub>2</sub> O).....	_____	percent

For bulk fertilizer, the grade and guaranteed analysis shall be specified on the bill of lading or accompanying certificate.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Quality conformance inspections. The fertilizer shall be inspected to determine conformance to the requirements of sections 3 and 5.

4.2.1 Quality conformance inspection sampling. Sampling for inspection

shall be in accordance with MIL-STD-105, at the inspection levels and acceptable quality levels (AQL's) specified herein.

4.2.2 Examination for defects in net contents. The sample unit for this examination shall be one filled primary container. The lot shall consist of fertilizer of one grade, type, and class, manufactured in one batch or during one 24-hour period. The lot shall be unacceptable if the average net contents per unit container is less than the specified or indicated quantity. The inspection level shall be S-2 with an AQL of 4.0 percent defective.

4.2.3 Examination of preparation for delivery. The fertilizer shall be inspected for conformance to the requirements of section 5. The sample unit for this examination shall be one filled shipping container, fully prepared for delivery. The lot shall be the number of containers offered for inspection at one time. The inspection level shall be S-2 with an AQL of 4.0 percent defective.

Examine	Defect
Contents	Not as specified.
Container	Not as specified.
Markings	Omitted; incorrect; illegible; improper size, location, sequence or method of application.
Materials	Component missing or damaged.
Workmanship	Bulging or distortion of containers.

4.2.3.1 Examination of closure of bag or sack. The bag or sack shall be examined for defects in closure in accordance with the appendix of its specification.

4.2.4 Testing of end item. The fertilizer shall be tested to conform to the requirements of section 3, in accordance with the following test methods. Samples shall be obtained as prescribed in the Official Methods of Analysis of the Association of Official Analytical Chemists. Each sample shall consist of at least 1 pound of material. The samples shall be thoroughly mixed to yield a composite sample. Reduce the composite to the quantity required, preferably by riffing or quartering. Place the composite sample in a clean, dry, air-tight glass container with identifying lot number and date. All tests shall be performed on the composite sample. Care shall be exercised to prevent loss or absorption of moisture during sampling, weighing and storage. The lot shall be unacceptable if the composite fails to meet any test requirement of this specification. The test report shall contain individual values utilized in expressing the final result.

### 4.3 Test methods

4.3.1 Chemical analysis. Unless otherwise specified, chemical analysis, if required by the purchaser, shall be made in accordance with the Official Methods of Analysis of the Association of Official Analytical Chemists in effect on the date of the invitation for bids, or in accordance with methods that give

equivalent results (see 6.2).

## 5. PREPARATION FOR DELIVERY

5.1 Packing. Packing shall be level A, B, or C, as specified.

5.1.1 Level A and B. When specified (see 6.2), 50, 80, or 100 pounds of fertilizer of one type, class, and grade only shall be packed in a bag conforming to PPP-B-1714 or in a sack conforming to UU-S-48.

5.1.2 Level C. Fertilizer of one type, class, and grade only shall be packed in quantities and containers which comply with the U.S. Department of Transportation (DOT) regulations for hazardous materials, the Uniform Freight Classification or the National Motor Freight Classification, as applicable.

5.2 Bulk quantities. Fertilizer may also be purchased in bulk (see 6.2). The loading and shipment shall conform to the applicable carrier rules and regulations.

5.3 Marking. In addition to any special markings required in the procurement documents, marking of the containers shall be in accordance with Fed. Std. No. 123 for civil agencies or MIL-STD-129 for military agencies, as applicable.

5.3.1 Special marking. Each container of fertilizer shall be marked with the information specified in 3.8.

## 6. NOTES

6.1 Intended use. Fertilizer covered by this specification is intended for application to soil in solid or liquid form.

6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Type and class required (see 1.2.1).
- (c) Grade required (see 3.2 and 6.4).
- (d) Source of nitrogen.
- (e) Whether chemical analysis is required (see 4.3.1).
- (f) Quantity of fertilizer desired per shipping container.
- (g) Level of packing required (see 5.1).
- (h) Bulk purchases (see 5.2).

6.3 Definitions. Unless otherwise specified in this specification, the general fertilizer terminology shall correspond to the terms and definitions listed in the Official Publication of the Association of American Plant Food Control Officials.

6.4 Grade. "Grade" as used in this specification means the minimum guaranteed plant nutrient content of the fertilizer expressed in percentages (whole numbers) of nutrient component; namely, total nitrogen (N), available phosphoric acid ( $P_{25}$ ), and soluble potash ( $K_{20}$ ). In expressing grades of

fertilizer, the percentage of total nitrogen, available phosphoric acid, and soluble potash shall be stated in the order given. For example, 5-10-15 means a fertilizer having a minimum of 5 percent total nitrogen, 10 percent available phosphoric acid, and 15 percent soluble potash.

6.5 Bid samples. If samples are necessary, the requirement shall be included in the invitation for bids.

MILITARY INTERESTS:

DOD has waived coordination on revisions and amendments to this Federal Specification until further notice.

Preparing Activity:

GSA-FSS

CIVIL AGENCY COORDINATING ACTIVITIES:

AID  
GSA-FSS, PBO  
HEW-FDA  
TVA  
USDA-ARS  
VA-DMS

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