

TT-I-521

DECEMBER 9, 1930

SUPERSEDING
U. S. G. M. S. 163
June 30, 1924.

FEDERAL SPECIFICATION

INK; COPYING AND RECORD

This specification was approved for promulgation by the Federal Specifications Board on December 9, 1930, for the use of the departments and independent establishments of the Government in the purchase of record and copying ink, and shall become mandatory for all departments and independent establishments of the Government not later than April 15, 1931. It may be put into effect, however, at any earlier date after promulgation.

PREAMBLE.

Until the present supply of printed specifications is exhausted, prospective bidders are informed that the specifications below listed conform in technical detail to this specification:

Army: Specification No. 4-75, Ink, record and copying.

A. APPLICABLE FEDERAL SPECIFICATIONS.

A-1. There are no other Federal specifications applicable to this specification.

A-2. Special requirements of individual departments of the Government are noted in section H.

B. TYPE.

B-1. Record and copying ink shall be of the blue-black type.

C. MATERIAL AND WORKMANSHIP.

C-1. The manufacturer is given wide range in the selection of raw materials and processes of manufacture, provided that the ink produced is of as high quality as the standard prescribed in section E-1.

D. GENERAL REQUIREMENTS.

D-1. See section E.

E. DETAIL REQUIREMENTS.

E-1. Record and copying ink shall be iron gallo-tannate ink, not inferior in any essential to one properly prepared according to the following formula, in which all of the ingredients are of the strength

TT-1-521-2
(Dec., 1930)

and quality prescribed in the edition of the United States Pharmacopœia which is current at the time bids are asked for.

	Grams
Tannic acid.....	23.4
Gallic acid crystals.....	7.7
Ferrous sulphate.....	30.0
Hydrochloric acid, dilute, U. S. P.....	25.0
Carbolic acid (phenol).....	1.0
Soluble blue (Brit. Col. Index No. 707; Schultz No. 539).....	3.5
Water to make a volume of 1 liter at 20° C.	

F. METHOD OF SAMPLING AND TESTS.

F-1. Any requirements applicable to individual Departments are noted in section H.

F-2. Sampling.

F-2a. An original unopened bottle, bearing all of the manufacturer's marks, shall be sent to the testing laboratory, when such bottle contains not less than 16 fluid ounces (1 pint). When the ink is furnished in smaller bottles, enough of them to aggregate at least 16 fluid ounces shall be sent to the laboratory with all marks intact.

F-3. Preliminary examination.

F-3a. The 16-ounce bottle, or the combined contents of the smaller bottles, shall be allowed to stand undisturbed for 24 hours to allow any sediment to settle. Sufficient of the clear ink for all of the tests shall then be drawn off in a pipette. The bottle shall then be inverted slowly, and the amount and character of any sediment noted.

F-4. Tests.

F-4a. The sample shall be tested in comparison with standard ink made according to the formula in section E-1.

F-4b. Streaks shall be made by allowing measured portions, of about 0.6 ml. (see sec. I-4) each, of the ink to flow freely across a sheet of white bond paper which is pinned to a board or clamped to a pane of glass, and held at an inclination of 45°. For better comparison, streaks of the standard ink shall be made on the same sheet as those of the sample.

F-4c. When the streaks are dry, the sheet shall be examined on the front and the reverse sides. The streaks of the sample shall have the same general form as those of the standard, they shall be as uniform in color when viewed from the front and the back, and shall show no more evidence of striking through the paper.

F-4d. The paper shall be cut into inch-wide strips at right angles to the streaks. Some of the strips shall be kept away from light and fumes, and others used for making the following tests, after they have been exposed to diffused daylight for one week.

F-4e. After a week's exposure to diffused daylight, the streaks of the sample shall be as intensely black as those of the standard.

F-4f. After exposure to direct sunlight for 96 hours, or at a distance of about 10 inches from an arc or ultra-violet light for 48 hours, the streaks of the sample shall show no more evidence of fading than those of the standard.

F-4g. Strips shall be soaked in water and in 50 per cent alcohol for 24 hours at room temperature. The sample shall show no greater loss of color than the standard.

NOTE.—Ethyl alcohol denatured with methanol is suitable for this test.

F-4h. Strips shall be soaked in bleaching powder solution containing *N/200* chlorine. The effect upon the sample, in comparison with the standard, shall be noted after 15 minutes, 1 hour, and 24 hours at room temperature. The sample shall show no greater loss of color than the standard.

F-4i. The content of metallic iron shall be determined in 10 ml. of the sample by any suitable chemical procedure. The content of metallic iron shall be not less than 0.58 g. nor more than 0.70 g. per 100 ml.

F-4j. Twenty-five ml. each of the sample and of the standard shall be allowed to stand undisturbed in colorless glass vessels (50-ml. beakers) loosely covered with filter paper to keep out dust. After two weeks' exposure to diffused daylight and air, at ordinary room temperature, the sample shall be as free from mold and deposit upon its surface and upon the sides and bottom of the container as the standard.

F-4k. The sample shall be no more corrosive to steel pens than the standard. For each sample under test, including the standard, select two new pens from the same box. Clean the pens with alcohol and then with ether, dry them in an oven at 105° C., and weigh each pair together to the nearest mg. Immerse each pair of pens in 25 ml. of the ink, contained in a small beaker or flask. After 48 hours remove the pens, wash and scrub them with water and a cloth to cleanse them thoroughly, rinse them with alcohol, dry them in an oven at 105° C., and weigh. If the pens in the sample lose more weight than those in the standard, the test shall be repeated with both the sample and the standard. If the loss in the sample is again greater than the loss in the standard ink, the sample shall be rejected.

G. PACKAGING, PACKING, AND MARKING.

G-1. Any special requirements of the individual departments are noted in section H.

G-2. Packaging.—Unless otherwise noted, commercial packages are acceptable under this specification.

G-3. Packing.—Unless otherwise specified, the ink shall be delivered in standard commercial containers, so constructed as to insure acceptance by common or other carriers, for safe transportation, at the lowest rate, to the point of delivery.

G-4. Marking.—Unless otherwise specified, shipping containers shall be marked with the name of the material, the size of the individual bottles and the total number of bottles contained therein, as defined by the contract or order under which the shipment is made; the name of the contractor, and the number of the contract or order.

H. REQUIREMENTS APPLICABLE TO INDIVIDUAL DEPARTMENTS.

H-1. The following departmental specifications of the issue in effect on the date of invitation for bids shall form a part of this specification.

H-2. Army: Specification No. 100-2B, Standard Specifications for Marking Shipments.

TT-1-531-4
(Dec., 1950)

L. NOTES.

I-1. The record and copying ink covered by this specification is suitable for writing permanent records. It is not recommended for making more than one press copy, nor for use in fountain pens, nor for other ordinary purposes.

I-2. To avoid confusion of names, and for convenience, it is a common practice to refer to dyes by their numbers in one or both of the following books: Society of Dyers and Colourists, Colour Index, 1st ed., 1924; Gustav Schultz, Farbstofftabellen, 5th ed., 1914. The dye required for making the standard ink is one of the few which are suitable for this purpose, as well as for making ink on a commercial scale.

I-3. The symbol ml., in section F-4b and elsewhere in this specification, stands for milliliter, the volume of liquid usually called cubic centimeter.

I-4. For making ink streaks (sec. F-4b), a piece of glass tubing about 3.5 mm. in bore and 250 mm. long is used. The ends can be fire-polished, but should not be constricted. A mark etched or scratched 62 mm. from one end indicates the required volume, 0.6 ml., of ink. By drawing the ink up to the mark, holding the tube vertically against the paper near the top, and allowing the ink to flow suddenly down across the paper, uniform streaks will be obtained. Separate clean, dry tubes should be provided for the standard and the sample.

I-5. It is believed that this specification adequately describes the characteristics necessary to secure the desired material, and that normally no samples will be necessary prior to award to determine compliance with this specification. If, for any particular purpose, samples with bids are necessary, they should be specifically asked for in the invitation for bids, and the particular purpose to be served by the bid sample should be definitely stated, the specification to apply in all other respects.

I-6. This specification governs all United States Government purchases of record and copying ink. Users are requested to retain this specification in permanent file until a revision is issued.

(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, Standards, and Handbooks 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 25, D. C.)

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston, New York, Atlanta, Chicago, Kansas City, Mo., Dallas, Denver, San Francisco, Los Angeles, Seattle, and Washington, D. C.)

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

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

Notice.—When drawings, specifications, or other data are furnished to manufacturers or others for any purpose, other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever, and the furnishing of said drawings, specifications, or other data by the Government is not to be regarded, by implication or otherwise, as in any manner licensing the holder, or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

☆GPO : 1958 O - 441903 (390)

Copies of this specification may be purchased Price 5 cents