

MIL-F-12784B
 14 November 1973
 SUPERSEDING
 MIL-F-12784A
 18 March 1954

MILITARY SPECIFICATION

FLUX, SOLDERING (STEARINE COMPOUND IC-3)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers a stearic acid soldering flux (see 6.1).

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

NN-P-71	-	Pallet, Materials-Handling, Wood (General Construction Requirements).
QQ-S-781	-	Strapping, Steel, Flat and Seals.
PPP-B-566	-	Boxes, Folding, Paperboard.
PPP-B-585	-	Boxes, Wood, Wirebound.
PPP-B-601	-	Boxes, Wood, Cleated-Plywood.
PPP-B-621	-	Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636	-	Boxes, Shipping, Fiberboard.
PPP-B-676	-	Boxes, Setup.
PPP-T-60	-	Tape: Packaging, Waterproof.
PPP-T-76	-	Tape, Pressure-Sensitive Adhesive Paper, (For Carton Sealing).

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MIL-P-116	-	Preservation- Packaging, Methods of
MIL-B-121	-	Barrier Material Greaseproofed, Waterproofed, Flexible.
MIL-B-43014	-	Boxes, Water Resistant Paperboard, Folding, Set-up and Metal-stayed.
MIL-C-45662	-	Calibration System Requirements.

STANDARDS

FEDERAL

FED-STD-141	-	Paint, Varnish, Lacquer, and Related Materials: Methods of Inspection, Sampling, and Testing.
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MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-147	-	Palletized Unit Loads on 40" x 48" Pallets.
MIL-STD-202	-	Test Methods for Electronic and Electrical Component Parts.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer).

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3. REQUIREMENTS

3.1 First article. Stearic acid soldering flux furnished under this specification shall be a product which has passed the first article inspection specified in 4.5.

3.2 Materials. The soldering flux shall be composed of single-pressed stearic acid, free from paraffins, vegetable oils, waxes, and other adulterants or foreign matter, with sufficient oleic acid retained therein to provide the proper adhesion characteristics for the compound when applied to lead surfaces (see 6.3).

3.3 Unit quantity. The soldering flux shall be molded into a cylindrical form with a diameter not greater than 1-3/8 inches nor less than 7/8 inch and of such uniform length as to provide packaged flux sticks weighing 1/4 pound each, unless the unit quantity is specified in the contract or order in pounds or in allowable random lengths with corresponding weights in excess of 1/4 pound.

3.4 Color. The inherent color of the soldering flux shall be white.

3.5 Iodine number. The iodine number of the soldering flux shall not be less than 12 nor more than 20 when tested in accordance with 4.7.2.

3.6 Acid number. The acid number of the soldering flux, as calculated to the acetic acid value, shall not be less than 204 when tested in accordance with 4.7.3.

3.7 Workmanship. The flux shall be uniform in quality and shall be free from apparent foreign matter and debris.

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 supplies and services conform to prescribed requirements.

4.1.1 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality and quantity to permit performance of the required inspection shall be established and maintained by the supplier. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with MIL-C-45662.

4.2 Classification of inspections. The inspections specified herein are classified as follows:

- (a) Materials inspection (see 4.3).
- (b) First article inspection (see 4.5).
- (c) Quality conformance inspection (see 4.6).

4.3 Materials inspection. Materials inspection shall consist of certification supported by verifying data that the materials used in compounding the flux are in accordance with the requirements of 3.2.

4.4 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "General Requirements" of MIL-STD-202.

4.5 First article inspection. First article inspection shall be performed by the supplier, after award of contract and prior to production, at a location acceptable to the Government. First article inspection shall be performed on sample units which have been produced with equipment and procedures normally used in production. First article approval is valid only on the contract or purchase order which it is granted, unless extended by the Government to other contracts or purchase orders.

4.5.1 Sample size. A one-pound sample consisting of at least three packaged units of flux soldering (stearine compound IC-3) shall be subjected to first article inspection.

4.5.2 Inspection routine. The sample shall be subjected to the inspections specified in table I. A detailed report showing results of first article inspection and testing shall be forwarded to the procuring activity for approval prior to production.

TABLE I. First article inspection.

Examination or test	Requirement paragraph	Method paragraph
Visual and dimensional examinations -	3.2, 3.3, 3.4 and 3.7	4.7.1
Iodine number - - - - -	3.5	4.7.2
Acid number - - - - -	3.6	4.7.3

4.5.3 Failures. One or more failures shall be cause for refusal to grant first article approval.

4.5.4 Reference standard. After approval, the unused balance of the first article samples shall be kept intact in the custody of the Government inspector for use as reference standards in the resolution of any differences of opinion regarding the interpretation of specification requirements, until released by him.

4.6 Quality conformance inspection.

4.6.1 Inspection of product of delivery. Inspection of product for delivery shall consist of groups A and B inspection.

4.6.1.1 Inspection lot. An inspection lot, as far as practicable, shall consist of all containers of stearic acid soldering flux produced from the same batch of component materials under essentially the same conditions and offered for inspection at one time.

4.6.1.2 Batch. A batch, as far as practicable, shall consist of that quantity of material which has been subjected as a unit to some chemical or mixing process intended to make the final product substantially uniform.

4.6.1.3 Group A inspection. Group A inspection shall consist of the examination specified in table II.

TABLE II. Group A inspection.

Examination	Requirement paragraph	Method paragraph
Visual and dimensional examination -	3.2, 3.3, 3.4 and 3.7	4.7.1

4.6.1.3.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection level II. The acceptable quality level (AQL) shall be 2.5%.

4.6.1.3.2 Rejected lots. If an inspection lot is rejected, the supplier may rework it to correct the defects, or screen out containers of defective materials, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.1.4 Group B inspection. Group B inspection shall consist of the tests specified in table III, in the order shown, and the sample shall be selected from the inspection lots that have passed group A inspection.

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TABLE III. Group B inspection.

Test	Requirement paragraph	Method paragraph
Iodine number - - -	3.5	4.7.2
Acid number- - - -	3.6	4.7.3

4.6.1.4.1 Sampling plan. Group B inspection shall be performed on a 1-pound sample consisting of at least three packaged units from each batch of the compound, as selected by the Government inspector. If the 1-pound sample fails to meet the requirements of 3.5 or 3.6, the lot shall be rejected.

4.6.1.4.2 Rejected lots. If an inspection lot is rejected, the supplier may rework it to correct the defects, or screen out containers of defective materials, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.1.4.3 Disposition of sample units. Samples which have been subjected to group B inspection shall not be delivered on the contract or purchase order.

4.6.1.4.4 Noncompliance. If a sample fails to pass group B inspection, the supplier shall take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which were manufactured under essentially the same conditions, with essentially the same materials, processes, etc., and which are considered subject to the same failure. Acceptance of the product shall be discontinued until corrective action, acceptable to the Government, has been taken. After the corrective action has been taken, group B inspection shall be repeated on additional sample units (all inspection, or the inspection which the original sample failed, at the option of the Government). Groups A and B inspections may be reinstated; however, final acceptance shall be withheld until the group B reinspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure and corrective action taken shall be furnished to the contracting officer.

4.6.2 Inspection of preparation for delivery. Sample packages and packs and the inspection of the preservation and packaging, packing and marking for shipment and storage shall be in accordance with the requirements of Section 5 and the documents specified therein. The sampling and inspection of the preservation-packaging and interior package marking shall be in accordance with the groups A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification and the marking requirements of MIL-STD-129.

4.7 Methods of examination and test.

4.7.1 Visual and dimensional examination. The flux shall be examined to verify that the materials, color, and workmanship are in accordance with the applicable requirements (see 3.2, 3.4 and 3.7). The units shall be weighed and the dimensions shall be measured with a micrometer or vernier caliper for the applicable requirement (see 3.3).

4.7.2 Iodine number. The iodine number shall be determined in accordance with method 5061 of FED-STD-141.

4.7.3 Acid number. The acid number shall be determined in accordance with method 5071 of FED-STD-141.

5. PREPARATION FOR DELIVERY

5.1 Preservation-packaging. Preservation-packaging shall be level A or C, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning. Soldering flux shall be cleaned in accordance with MIL-P-116, process C-1.

5.1.1.2 Drying. Soldering flux shall be dried, as required, in accordance with MIL-P-116.

5.1.1.3 Preservative application. Preservatives shall not be used.

5.1.1.4 Unit packaging. Soldering flux shall be individually packaged in a close fitting bag conforming to MIL-B-121, type II, grade A, class 1. Unit packaging shall be in accordance with MIL-P-116, method III, insuring compliance with the general requirements paragraph under methods of preservation (unit protection) and the physical protection requirements therein.

5.1.1.5 Intermediate packaging. Soldering flux, packaged as specified in 5.1.1.4, shall be placed in intermediate containers conforming to PPP-B-566 or PPP-B-676. Intermediate containers shall be uniform in size, shape, and quantities, shall be of minimum tare and cube and shall contain multiples of five unit packages, not to exceed 50 unit packages. No intermediate packaging is required when the total quantity shipped to a single destination is less than 50 unit packages or when supplementary containers are used.

5.1.2 Level C. Soldering flux shall be clean, dry, and packaged in a manner that will afford adequate protection against corrosion, deterioration and physical damage during shipment from the supply source to the first receiving activity.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Level A. The packaged soldering flux shall be packed in fiberboard containers conforming to PPP-B-636, class weather resistant, style optional, special requirements. In lieu of the closure and waterproofing requirement in the appendix of PPP-B-636, closure and waterproofing shall be accomplished by sealing all seams, corners and manufacturer's joint with tape, two inches minimum width, conforming to PPP-T-60, class 1 or PPP-T-76. Banding (reinforcement requirements) shall be applied in accordance with the appendix to PPP-B-636 using nonmetallic or tape banding only.

5.2.2 Level B. The packaged soldering flux shall be packed in fiberboard containers conforming to PPP-B-636, class domestic, style optional, special requirements. Closures shall be in accordance with the appendix thereto.

5.2.3 Level C. The packaged soldering flux shall be packed in shipping containers in a manner that will afford adequate protection against damage during direct shipment from the supply source to the first receiving activity. These packs shall conform to the applicable carrier rules and regulations.

5.2.4 Unitized loads. Unitized loads, commensurate with the level of packing specified in the contract or order, shall be used whenever total quantities for shipment to one destination equal 40 cubic feet or more. Quantities less than 40 cubic feet need not be unitized. Unitized loads shall be uniform in size and quantities to the greatest extent practicable.

5.2.4.1 Level A. Soldering flux, packed as specified in 5.2.1, shall be unitized on pallets in conformance with MIL-STD-147, load type I, with a fiberboard cap (storage aid 4) positioned over the load.

5.2.4.2 Level B. Soldering flux, packed as specified in 5.2.2, shall be unitized as specified in 5.2.4.1 except that the fiberboard caps shall be class domestic.

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5.2.4.3 Level C. Soldering flux, packed as specified in 5.2.3, shall be unitized with pallets and caps of the type, size and kind commonly used for the purpose and shall conform to the applicable carrier rules and regulations.

5.3 Marking. In addition to any special marking required by the contract or purchase order (see 6.2), each unit package, intermediate and exterior container and unitized load shall be marked in accordance with MIL-STD-129.

5.4 General. Special requirements for Army procurements are specified in 5.4.2 (see 6.2).

5.4.1 Exterior containers. Exterior containers (see 5.2.1, 5.2.2, and 5.2.3) shall be of a minimum tare and cube consistent with the protection required, and shall contain equal quantities of identical stock numbered items to the greatest extent practicable.

5.4.2 Army procurements.

5.4.2.1 Level A intermediate packaging. All intermediate containers shall either be weather (or water) resistant or overwrapped with waterproof barrier materials. Containers conforming to PPP-B-566 or PPP-B-676 shall be overwrapped with waterproof barrier materials or shall conform to MIL-B-43014 (see 5.1.1.5).

5.4.2.2 Level A and B packing. For level A packing, when quantities per destination are less than a unitized load, the fiberboard containers shall not be banded but shall be placed in a close fitting box conforming to PPP-B-601, overseas type; PPP-B-621, class 2, style 4, or PPP-B-585, class 3, style 2 or 3. Closure and strapping shall be in accordance with applicable container specification except that metal strapping shall conform to QQ-S-781, type I, class B. When the gross weight exceeds 200 pounds or the container length and width is 48 x 24 inches or more and the weight exceeds 100 pounds, 3 x 4 inch skids (laid flat) shall be applied in accordance with the requirements of the container specification. If not described in the container specification, the skids shall be applied in a manner which will adequately support the item and facilitate the use of material handling equipment. For level B packing, fiberboard boxes shall be weather resistant as specified in level A and the containers shall be banded (see 5.2.1 and 5.2.2).

5.4.2.3 Level A and B unitization. For level A and B unitization, the fiberboard caps shall be weather resistant and softwood pallets conforming to NN-P-71, type IV, size 2, shall be used (see 5.2.4.1 and 5.2.4.2).

6. NOTES

6.1 Intended use. The stearine compound covered by this specification is intended for use as a soldering flux for wiping lead joints in telephone cable splicing operations.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Levels of preservation - packaging and packing required (see 5.1, 5.2 and 5.4).
- (c) Special marking, if required (see 5.3).
- (d) Quantity required.
- (e) Unit quantity, if other than 1/4-pound sticks (see 3.3).

6.3 Where the oleic acid content of the compound precludes conformance with the required iodine or acid numbers specified (see 3.5 and 3.6), proper reduction may be effected by repressing the stearic acid, and appropriate increases made by oleic acid additions thereto, as applicable, during compounding procedures.

6.4 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

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Custodians:

Army - EL
Navy - MC
Air Force - 11

Review activities:

Army - WC, GL
Navy -
Air Force - 80
DSA - IP

User activities:

Army - MI
Navy - MC, OS
Air Force - 84

Preparing activity:

Army - EL

Agent:

DSA - ES

(Project 3439-0233)

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 22-R255
<p>INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.</p>		
SPECIFICATION MIL-F-12784B FLUX, SOLDERING (SPEARINE COMPOUND IC-3)		
ORGANIZATION		
CITY AND STATE		CONTRACT NUMBER
MATERIAL PROCURED UNDER A		
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
<p>1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?</p> <p>A. GIVE PARAGRAPH NUMBER AND WORDING.</p>		
<p>B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES</p>		
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
<p>3. IS THE SPECIFICATION RESTRICTIVE?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO (If "yes", in what way?)</p>		
<p>4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)</p>		
SUBMITTED BY (Printed or typed name and activity - Optional)		DATE

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