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MIL-E-8971B
23 October 1991
SUPERSEDING
MIL-E-8971A
18 June 1982

#### MILITARY SPECIFICATION

# ELECTRODES, GRAPHITE, SPECTROSCOPIC GRADE

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

### 1. SCOPE

- 1.1 <u>Scope</u>. This specification covers graphite electrodes for use in spectrometric analysis of metallic elements in used oils and other fluids.
- 1.2 <u>Classification and part number</u>. The electrodes shall be of the following types and part numbers as specified in 3.4:

Electrode type		Part number	
Type I, disc		M8971-1	
Type II, rod		M8971-2 '	

- 2. APPLICABLE DOCUMENTS
- 2.1 Government documents.
- 2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: 2750 Logistics & Operations Group, Electronic Support Division (2750LOG/ESA), Gentile AF Station, Ohio 45444 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A 1 of 16 FSC 5977

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

### SPECIFICATIONS

### **FEDERAL**

Box, Folding, Paperboard. PPP-B-566 Box, Wood, Wireboard. PPP-B-585 Boxes, Wood, Cleated Plywood. PPP-B-601 Box, Wood, Nailed and Lock Corner. PPP-B-621 PPP-B-636 Box, Shipping Fiberboard.

PPP-B-676 Boxes, Setup

QQ-S-781 Strapping, Steel, and Seal

### MILITARY

Preservation, Methods of. MIL-P-116

#### **STANDARDS**

#### FEDERAL

FED-STD-123 - Marking for Shipment.

### MILITARY

Sampling Procedures and Tables for Inspection MIL-STD-105 by Attributes.

Marking for Shipment and Storage. MIL-STD-129 -

MIL-STD-831 -Test Reports, Preparation of.

MIL-STD-1188-Commercial Packaging of Supplies and

Equipment.

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

2.2 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

# American Society for Testing and Materials

ASTM R 504 Selection of Electrode Material Used in Optical Emission Spectroscopy Based on Physical Properties

ASTM C 559 Density in Air of Manufactured Carbon and Graphite Articles by Physical Measurements

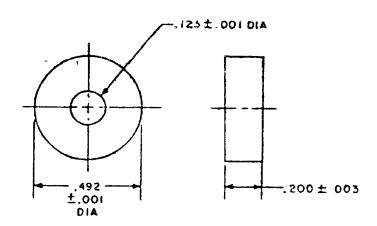
(Application for copies of ASTM publications should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards), the text of this document shall take precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

# 3. REQUIREMENTS

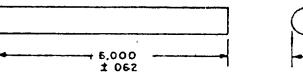
- 3.1 <u>Qualification</u>. The electrodes furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list at the time of award of contract (see 4.1 and 6.3).
- 3.2 Material. The composition of electrodes furnished under this specification shall be high-purity graphite (Spectroscopic Grade), ASTM E 504. The raw materials shall be as free as possible of the elements specified in 3.3.4. The finished product shall conform to the requirements specified herein and a material certification shall be forwarded by the contractor to the qualifying activity and the procuring agent.
- 3.2.1 <u>Breaking Strength</u>. When tested in accordance with 4.8.2.2, the breaking strength of the electrodes shall be between 2,200 and 5,400 psi (15,000 and 37,200 kPa).
- 3.2.2 <u>Density</u>. When tested in accordance with 4.8.2.3, the density of the graphite material shall be 1.56 g/cc minimum to 1.65 g/cc maximum.
- 3.2.3 Resistivity. When tested in accordance with 4.8.2.1, the dc ohmic resistance shall be 220 to 450 microhm-inches (5.5 to 11.4 microhm-meters).
- 3.2.4 Purity (trace metal content). The purity of the electrodes (type I and type II) shall be determined in accordance with 4.8.2.4, and shall meet the requirements for each of the following elements: iron (Fe), silver (Ag), aluminum (Al), chromium (Cr), copper (Cu), magnesium (Mg), sodium (Na), nickel (Ni), lead (Pb), silicon (Si), tin (Sn), titanium (Ti), boron (B), barium (Ba), cadmium (Cd), manganese (Mn), molybdenum (Mo), vanadium (V), and zinc (Zn). The purity of the electrodes shall be:
  - a. 2 ppm maximum allowable spot impurity per element.
  - b. 6 ppm maximum allowable spot impurities for all elements.
    "Spot impurities" are defined such that if all the
    impurities (trace elements) of each electrode were
    concentrated in one spot, the analysis of that one spot
    shall not exceed the maximum allowable stated above.

- 3.2.5 Repeatability and accuracy. Both type I and type II electrodes shall demonstrate, when tested individually at each concentration level of oil standard, a difference in repeatability that is no greater than ± 3% and a difference in accuracy that is no greater than ± 10% when compared with a reference rod or disc electrode (see 4.8.2.5.1) and tested in accordance with 4.8.2.5.
- 3.4 <u>Dimensions</u>. Dimensions of the electrodes shall conform to the following:
  - a. Type I, Disc, part number M8971/1-2



ECCENTRICITY: Eccentricity between the hole and the cutside cylindrical surface of the disc shall not exceed .0005 TIR.

b. Type II, Rod, part number M8971/2-2



242 1,001 DIA

.0005	.013
.001	.03
.003	.08
-005	.13
.062	1.57
.125	3.18
.200	5.08
.242	6.51
.375	9.52
.492	12.50
5.000	152.40

INCHES

<u>STRAIGHTNESS</u>: The bow (from cord to arc) when measured on a surface plate shall not exceed .005 when L = 6.000 inches.

ROUNTRESS: Rods shall be capable of passing freely through a .244 inch diameter hole.

# NOTES:

- 1. Dimensions are in inches.
- Metric equivalents are given for general information only an are based upon 1.00 inches = 25.4 mm.

- 3.5 <u>Design and construction</u>. The electrodes, type I and type II, shall be designed and constructed such that they shall exhibit no evidence of fracturing or spalling as a result of the reshaping, grinding, machining, or processing. Purification shall be performed following all machining operations.
- 3.6 <u>Workmanship</u>. The electrodes shall be uniform in quality and free from all defects (pits, chips, flat spots, cracks) which may affect their serviceability, machining and appearance.
  - 4. QUALITY ASSURANCE PROVISIONS
- 4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor 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 ensure supplies and services conform to prescribed requirements.
- 4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.
- 4.2 <u>Classification of inspections</u>. The inspections specified herein shall be classified as follows:
  - a. Qualification inspection (4.4).
  - b. Quality conformance inspection (4.6).
- 4.3 <u>Sampling lots</u>. For purposes of sampling, a lot is defined as an indefinite quantity of electrodes (type I and type II) subjected to the manufacturer's purification process at any one time. Sample size will be determined as specified in 4.6.1.4.
- 4.4 <u>Oualification inspection</u>. Qualification inspection shall be performed at a laboratory acceptable to the Government (see 6.3) on sample units produced with equipment and procedures normally used in production.
- 4.4.1 <u>Qualification inspection samples</u>. All rods required for the qualification inspection shall be six inches long.

- 4.4.1.1 <u>Discs</u>. The disc sample for qualification shall consist 125 discs and 40 disc rods which have been fabricated from material from the same mix and processed as a single batch and lot.
  - 4.4.1.2 Rods. The rod electrode sample shall consist of 125 rods.
- 4.4.2 <u>Inspection routine</u>. The qualification samples shall be subjected to the inspections shown in TABLE I.
- 4.4.2.1 <u>Failures</u>. One or more failures shall be cause for refusal to grant qualification approval.

Transation	Rod	Disc		Requirement	Method
Inspection		Rod	Finished	paragraph	paragraph
Design, construction, workmanship, and dimensions	40		40	3.4 to 3.6	4.8.1.1
Resistivity	40	40		3.2.3	4.8.2.1
Breaking Strength	20	20	<i>.</i> —	3.2.1	4.8.2.2
Density	20	20		3.2.2	4.8.2.3
Purity	20		20	3.2.4	4.8.2.4
Repeatability and accuracy	75		75	3.2.5	4.8.2.5

TABLE I. Qualification inspection.

- 4.4.3 Retention of qualification. To retain qualification, the contractor shall forward a report at 18 month intervals. The qualifying activity shall establish the initial reporting date. The report shall consist of:
  - a. A summary of the results of the test performed for inspection of product for delivery (group A), indicating as a minimum the number of lots that have passed and the number that have failed, including the number and type of part failures. The results of tests of all reworked lots shall be identified and accounted for.
  - b. By submitting a DD Form 1718 (Certification of Qualified Products) signed by a responsible company official.
- 3.1.1 <u>Requalification</u>. Requalification will be required in the event any change is made in source of manufacture, purity, or composition of the graphite base stock.
- 4.5 Test reports. The qualification and retention of qualification test reports shall be prepared in accordance with MIL-STD-831. One copy of the report with 70 sample rods, 20 sample disc rods, and 270 sample discs, which were not subjected to the destructive tests, shall be forwarded to the Joint Oil Analysis Program Technical Support Center, Bldg. 780, NAS Pensacola, FL 32508. Two copies of the test reports shall be forwarded to the preparing activity (see 6.3).

- 4.6 Quality conformance inspection.
- 4.6.1 <u>Inspection of product for delivery</u>. Inspection of product for delivery shall consist of group A inspection.
- 4.6.1.2 <u>Inspection lot</u>. A lot shall be defined as that quantity of rod or disc electrode material that is subjected to the manufacturer's purification process at any one time.
- 4.6.1.3 Group A inspection. Group A inspection shall consist of the inspections specified in TABLE II. The sample selected for groups I and II (see 4.6.1.4) shall be divided, as near as possible, into two equal subsamples, one subsample shall be subjected to the test specified for group I and the second subsample shall be subjected to the test specified for group II. The sample selected from group III (see 4.6.1.4.b.) shall be subjected to the tests specified for group III.
- 4.6.1.4 <u>Sampling plan</u>. Two samplings from each purification lot shall be selected for group A inspection as follows:
  - a. Groups I and II Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection level I. The acceptable quality level (AQL) shall be as specified for group I and II of TABLE II.
  - b. Group III A random sample of 75 electrodes. Acceptance criteria shall be as specified in 3.2.5.

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Inspection	Inspection Requirement Method paragraph		AQL (percent defective) max. acceptable	
,		baradrafu	Major'	Minor
Group I				
Dimensions	3.4	4.8.1.1		
Design, construction, and workmanship	3.5, 3.6	4.8.1.1	0.65	4.0
Group II				
Purity 1/	3.2.4	4.8.2.4		
Group III				
Repeatability and accuracy	3.2.5	4.8.2.5	75 sampl For acce criteria 3.2.5.	

TABLE II. Group A inspection.

<sup>1/</sup> Purity testing to be performed on finished product (type I and type II electrodes).

- 4.6.2 Rejected lots. If an inspection lot is rejected for a feature that may be corrected or screened the manufacturer may rework it to correct the defects or screen out the defective units and resubmit the lot 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.
- 4.6.3 <u>Disposition of sample units</u>. Sample units which have been subjected to group A inspection shall not be delivered on contract or order.
- 4.6.4 Inspection of packaging. Except when commercial packaging is specified, the sampling and inspection of the preservation and interior package marking shall be in accordance with the group A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification shown in section 5. The inspection of marking for shipment and storage shall be in accordance with MIL-STD-129. The inspection of commercial packaging shall be as specified in the contract (see 6.2)

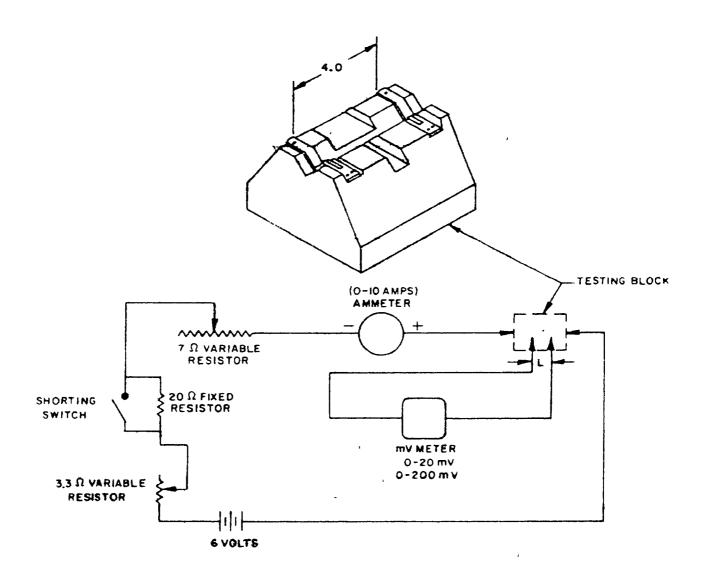
# 4.7 Test conditions.

- 4.7.1 Atmospheric. Unless otherwise specified, all tests shall be performed at a room temperature of 20° to 30° Celsius, 30 to 80 percent relative humidity, and a barometric pressure of 24 to 31 inches of mercury. The test area shall be free from drafts.
  - 4.8 Methods of inspection.

## 4.8.1 Examinations.

- 4.8.1.1 Examination of product. Electrodes shall be carefully examined to determine compliance with this specification and with respect to materials, design and construction, workmanship, and dimensions.
- 4.8.1.2 Electrode discs. Unless otherwise specified, testing shall be performed on the disc rods prior to fabrication of the discs.

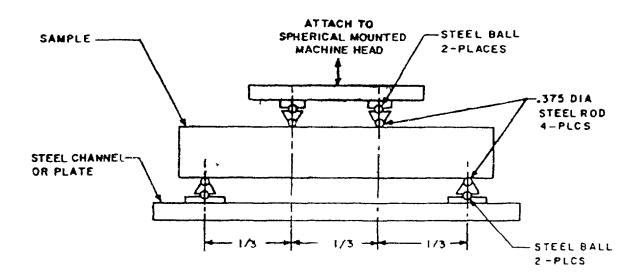
# 4.8.2 <u>Tests</u>.



MEASUREMENTS: Gage length may be measured by any scale that will give an accuracy of ±0.5 percent of the length measured. Cross-sectional measurements shall be made with a micrometer and sufficient measurements shall be made to determine the mean cross-sectional area to within 0.5 percent.

PROCRITER: Place the sample in the "V" contacts of the test block and press down firmly to insure good contact. Adjust amperage by means of the rheostats so that the voltage drop indicated by the millivolt meter will be in the middle 80 percent of its scale. Record amperes and volts.

# FIGURE 1. Resistivity test procedure and test setup.



PROCEDURE: Measure diameter with micrometers. Make sufficient measurements to determine average diameter to within 0.5 percent.

<u>IOAD SPAN</u>: Make sure that bottom span is centered in testing machine. Center the sample on lower span bearing blocks. Align upper span so that bearing edges are at points 1/3 of the bottom span. See FIGURE 1.

NOTE: Proper alignment is facilitated by locating proper contact points with a steel scale and marking the points on the sample with crayon (do not scribe).

APPLICATION OF LOAD: Select a range on the testing machine so that the sample will break above the lower 10 percent of the range and not above 98 percent of the range. For example, on the 0-1200 lb. range the sample should break at a load above 240 lbs. and less than 1175 lbs. The load should be applied at a rate so that the break will occur within one to two minutes. Adjust load pointer to zero and set "maximum load pointer" so that it almost touches load pointer. Apply pressure until a slight load is indicated by pointer. Apply load until sample fractures and record the value indicated by the maximum load pointer.

NOTE: If the fracture occurs outside the middle third of the span length by more than 5 percent of the span length the test shall be discarded.

FIGURE 2. Breaking test procedure and test setup.

4.8.2.1 Resistivity. When tested in accordance with the procedure described on FIGURE 1, the resistance shall be as specified in 3.2.3. The specified resistance shall be calculated using the following formula:

$$R = \frac{E \times A}{I \times L}$$

Where: R = Specific resistance expressed in inches or ohm-inches

'B = Voltage reading in volts

I = Current in amperes

A = Cross-sectional area in square inches

L = Length of electrode between voltmeter contacts in inches

4.8.2.2 Breaking strength. When tested in accordance with the procedure described on FIGURE 2, the breaking strength shall be as specified in 3.2.1. Breaking strength shall be calculated using the following formula:

Breaking strength in psi = 
$$\frac{1.697 \text{ PL}}{D^3}$$

Where: P = Maximum load indicated by testing machine in pounds
L = Length of bottom span in inches

D = Average diameter of sample in inches

4.8.2.3 Density. The density shall be as specified in 3.2.2 when determined in accordance with method ASTM C 559 using the following formula:

Where: Density is expressed in q/cc Weight is expressed in grams Volume is expressed in cubic centimeters

- 4.8.2.4 Purity. Elemental impurity is to be determined by the use of a quartz prism spectrograph, atomic emission, atomic absorption, or equipment with equivalent sensitivity, and shall not exceed the value specified in 3.2.4.
- 4.8.2.5 Repeatability and accuracy. The repeatability and accuracy tests shall be calculated using the following formulas and readings from 15 burns of test sample electrodes and 15 burns of reference electrodes at each concentration level of oil standards (see 4.8.2.5.1b.).

$$R_{\bullet} = \begin{bmatrix} \sqrt{d^2_{m1} + d^2_{m2} + \dots + d^2_{m18}} \\ \sqrt{15-1} \end{bmatrix} - \begin{bmatrix} \sqrt{d^2_{e1} + d^2_{e2} + \dots + d^2_{e15}} \\ \sqrt{15-1} \end{bmatrix}$$

Where: R- = Repeatability difference

d<sub>R</sub> = Difference between the mean and the observed reading
 of the reference electrodes

d. = Difference between the mean and the observed reading of the electrode that is being tested

$$A_{-} = \begin{bmatrix} X_{N1} + X_{N2} + \dots + X_{N15} \\ 15 \end{bmatrix} - \begin{bmatrix} X_{-1} + X_{-2} + \dots + X_{-15} \\ 15 \end{bmatrix}$$

Where: A. = Accuracy difference

XR = Observed reading with the reference electrode

X. = Observed reading with electrode that is being tested

- 4.8.2.5.1 Repeatability and accuracy test method. The following are measurement requirements for the repeatability and accuracy test:
  - a. Emission spectrometer of the rotating disc type with repeatability and accuracy of 2 ppm or 10 percent, whichever is greater.
  - b. JOAP approved oil standards containing 0, 30, 100, 500, and 900 ppm Fe, Ag, Al, Cr, Cu, Mg, Na, Ni, Pb, Si, Sn, Ti, B, Ba, Cd, Mn, Mo, V, and Zn.
  - c. Reference electrodes to be furnished or approved by the preparing activity. (NOTE: At least two boxes of rod electrodes (100 rods) and ten vials of electrode discs (500 discs) from a previously accepted lot shall be reserved as the reference electrodes (rods/discs) for use in the acceptance or rejection of the new lot being offered.)
  - d. After standardization with type I discs and type II rods,
     the paired sampling technique shall be used. (I.E.
     alternating the reference electrode and test electrode of the corresponding type.)

## 5. PACKAGING

5.1 <u>Preservation</u>. Preservation shall be level A or industrial, as specified (see 6.2).

# 5.1.1 Level A.

5.1.1.1 <u>Cleaning</u>. Electrodes cannot be cleaned. Those not maintained in a clean state (in conformance with the purity requirements of 3.2.4) are unacceptable for packaging.

- 5.1.1.2 Drying. Not applicable (see 5.1.1.1).
- 5.1.1.3 Preservation application. Preservatives shall not be used.
- 5.1.1.4 Unit packs. Electrodes (discs or rods, type I or II) shall be unit packed in quantities of 50 in accordance with submethod lA-13 of MIL-P-116. If required to prevent damaging movement within each unit pack, any wrapping and cushioning materials used shall be noncorrosive and shall not crumble, flake, powder, or shed. The unit pack shall consist of a sealed, transparent plastic container designed to minimize excess interior space and be capable of being resealed. The unit container for discs shall be a semirigid cylinder and the unit pack for rods shall be a rigid, rectangular box. The unit container, together with any wrapping or cushioning in contact with the electrodes, must meet the purity requirements of 3.2.4.
- 5.1.1.5 Intermediate packs. When specified in the contract (see 6.2), electrodes 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 packs, not to exceed 100 unit packs. No intermediate packs are required when the total quantity shipped to a single destination is less than 100 unit packs.
- 5.1.2 <u>Industrial</u>. The industrial preservation of electrodes shall be in accordance with the requirements of MIL-STD-1188.
- 5.2 <u>Packing</u>. Packing shall be level A, B, or industrial, as specified (see 6.2)
- 5.2.1 Level A. The packaged electrodes shall be packed in fiberboard containers conforming to PPP-B-636, class weather resistant, style optional, special requirements. The requirements for box closure, waterproofing, and reinforcing shall be in accordance with method V of the PPP-B-636 appendix.
- 5.2.2 Level B. The packaged electrodes shall be packed in fiberboard containers conforming to PPP-B-636, class domestic, style optional, special requirements. Closure shall be in accordance with the appendix thereto.
- 5.2.3 <u>Industrial</u>. The packaged electrodes shall be packed in accordance with the requirements of MIL-STD-1188.

# 5.3 Marking.

5.3.1 Levels A and B. In addition to any additional identification or special marking required by the contract (see 6.2), each unit, intermediate and exterior container shall be marked in accordance with MIL-STD-129. When specified (see 6.2), the marking of domestic shipments for civil agencies shall be in accordance with Federal Standard No. 123. The special marking of each unit container shall consist of the following:

ITEMS SUBJECT TO CONTAMINATION. DO NOT OPEN UNTIL READY FOR USE

5.3.2 <u>Industrial</u>. Industrial marking shall be in accordance with the requirements of MIL-STD-1188.

### 5.4 General.

- 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 <u>Packaging inspection</u>. The inspection of these packaging requirements shall be in accordance with 4.6.4.

# 5.4.3 Army acquisitions.

- 5.4.3.1 <u>Level A unit packs</u>. All unit containers shall be either weather (or water) resistant or overwrapped with waterproof barrier materials (see 5.1.1.4).
- 5.4.3.2 Level A and level B packing. For level A packing 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 finish A. 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).

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 <u>Intended use</u>. The electrodes, rod type II and disc type I, are intended to be utilized as pairs and are further intended for use in a spectrometer specifically designed to analyze oils and fluids.

- 6.2 Acquisition data. Acquisition documents should specify the following:
  - a. Title, number, and date of specification.
  - b. Military part number (see 1.2).
  - it. "Inspection of industrial packaging (see 4.6.4).
  - d. Levels of preservation and packaging required (see 5.1 and 5.2).
  - e. If additional identification or special marking is required (see 5.3.1).
  - f. If Fed. Std. No. 123 is required for civil agency marking (see 5.3.1).
- 6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL No. 8971 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is: 2750 Logistics and Operations Group, Electronic Support Division (2750LOG/ESA), Gentile AFS, Ohio 45444 and information pertaining to qualification of products may be obtained from that activity.
  - 6.4 Subject term (key word) listing.

Electrode disc Electrode rod Optical emmision spectroscopy Spectroscopic

6.5 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Fig. 1

# CONCLUDING MATERIAL

Custodians:

Navy - AS
Air Force - 85

Review Activities:

Army = ER, AR
Air Force - 99
DLA - GS

DLA - GS | Color of the state o

User activities:
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