

MIL-C-538F
5 May 1975
SUPERSEDING
MIL-C-538E
7 July 1969

MILITARY SPECIFICATION

COMPARATOR, COLOR

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

1. SCOPE

1.1 This specification covers a comparator for use with color disks conforming to MIL-D-537.

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

PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-B-621	- Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636	- Boxes, Shipping, Fiberboard.
PPP-B-640	- Boxes, Fiberboard, Corrugated, Triple-Wall.

Military

MIL-D-537	- Disks, Color Standards.
MIL-C-36255	- Cells, Colorimeter.

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STANDARDS

Military

- | | |
|-------------|--|
| MIL-STD-105 | - Sampling Procedures and Tables for Inspection by Attributes. |
| MIL-STD-129 | - Marking for Shipment and Storage. |
| MIL-STD-130 | - Identification Marking of US Military Property. |

DRAWINGS

ME

- | | |
|--------------|---------------------------|
| TAL3200E7400 | - Comparator, Color. |
| TAL3216E9016 | - Case, Color Comparator. |

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

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

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification.

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

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification.

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

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3. REQUIREMENTS

3.1 Description. The comparator shall be made in accordance with TAL3200E7400 and as specified herein. The prism of the eyepiece shall bring the view of the color standard of a disk into juxtaposition with the tube containing the test sample. When specified (see 6.2), the comparator shall be furnished with the following items and in the quantity specified:

- (a) Colorimeter cell conforming to MIL-C-36255.
- (b) Reagent bottle, 1/2-ounce capacity, narrow-mouth, French square, amber-colored glass, provided with a rubber-nipple dropping pipette graduated and numbered with units at both 1/2 ml and 3/4 ml. The bottle shall be of such dimensions as to be suitable for storage in the comparator, and shall be labeled and the bottle caps color coded as follows:

Reagent bottle label	Cap color
Arsenite	Red
Ortho-Tolidine	Yellow
Wide range pH	White

- (c) Chlorine disk conforming to MIL-D-537, Type II, class as specified.
- (d) pH disk conforming to MIL-D-537, Type I, class as specified.
- (e) Carrying case conforming to TAL3216E9016.

3.1.1 Drawings. The drawings forming a part of this specification are engineering design drawings. The supplier is responsible for preparing his own shop drawings. Where tolerances prescribed could cumulatively result in incorrect fits, the supplier shall provide tolerances within those prescribed on the drawings to insure correct fit, assembly, and operation of the comparator. No deviation from the prescribed dimensions or tolerances is permissible without prior approval of the contracting officer.

3.2 Material. Material shall conform to the drawings and as specified herein.

3.2.1 Glass components. Glass components shall be free of cracks, scratches, bubbles, blisters, inclusions, color, or any other defects that will adversely affect use.

3.2.2 Plastic components. Plastic components shall be free of warp, twist, cracks, chipped edges, surface blisters, uneven surfaces, scratches, dents, heat marks, fins, burrs, projection ridges at the dividing line of

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the mold, and unsightly finish caused by chipping, filing, or grinding, of the ridges. Buffing or polishing may be employed if necessary.

3.3 Instructions. Brief operating instructions printed on a waterproof or waterproofed card shall be attached to the inner side of the carrying case cover.

3.4 Identification marking. Comparators shall be identified in accordance with MIL-STD-130.

3.5 Finish. Unless otherwise specified, the comparator shall be finished in accordance with the supplier's standard practice for this type of equipment.

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 Component and material inspection. The supplier is responsible for insuring that components and materials used are manufactured, stored, and tested in accordance with referenced specifications, standards, and drawings, as applicable.

4.1.2 Parts and components. Parts and components detailed on the drawings shall be inspected in accordance with the Supplementary Quality Assurance Provisions (SQAP) shown on the drawings. The drawings specify the characteristics requiring SQAP inspection, the sampling plan, and the basis for acceptance and rejection (see 6.3 and 6.4).

4.2 Classification of inspections. Inspections shall be classified as follows:

- (a) Quality conformance inspection (see 4.3).
- (b) Inspection of preparation for delivery (see 4.5).

4.3 Quality conformance inspection.

4.3.1 Sampling. Sampling for examination and tests shall be in accordance with MIL-STD-105.

4.3.2 Examination. Each sample comparator shall be examined in accordance with 4.4.1. AQL shall be 1.0 percent defective for major defects and 6.5 percent defective for minor defects.

4.3.3 Test. Each sample comparator shall be tested as specified in 4.4.2. AQL shall be 4.0 percent defective.

4.4 Inspection procedure.

4.4.1 Examination. Comparators shall be examined for the following defects:

Major

101. Nonconformance to drawings.
102. Items not as specified.
103. Material not as specified.
104. Instructions missing or incorrect.

Minor

201. Incorrect marking.
202. Finishing not as specified.

4.4.2 Test. With eyepiece attached to the comparator, test for juxtaposition using the colored-standard disk and a liquid test sample. Failure of the eyepiece to bring the view of the colored glass standard of the color disk into juxtaposition with the view of the liquid test sample in the tube shall constitute failure of this test.

4.5 Inspection of preparation for delivery.

4.5.1 Quality conformance inspection of pack.

4.5.1.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

4.5.1.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

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4.5.1.3 **Inspection.** Samples selected in accordance with 4.5.1.2 shall be examined for the following defects. AQL shall be 2.5 percent defective.

105. Materials, methods, and containers not as specified for Level A or B. Each incorrect material, method, or container shall be considered one defect.
106. Comparator and accessories not all contained within the carrying case.
107. Case not packaged as specified for Level A.
108. Gross weight exceeds 200 pounds for Level A.
109. Box closure and strapping not as specified for Level A or B.
110. Gross weight or size exceeds the limitations of the box for Level B.
111. Marking missing, illegible, incorrect, or incomplete.

5. PREPARATION FOR DELIVERY

5.1 **Preservation and packaging.** Preservation and packaging shall be Level A or C as specified (see 6.2).

5.1.1 **Level A.** The comparator and accessories shall be contained in the carrying case, and the case packaged in a close-fitting box conforming to PPP-B-636, W6c. The box shall be closed Method V of the box specification appendix.

5.1.2 **Level C.** The comparator and accessories contained in the carrying case shall be preserved and packaged to afford protection against deterioration and damage from the supplier to the initial destination. The supplier's standard practice may be used when it fulfills the above requirements.

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

5.2.1 **Level A.** The packaged (see 5.1) comparators shall be packed in quantities not to exceed 200 pounds in close-fitting boxes conforming to PPP-B-601, Overseas Type, Grade B or PPP-B-621, Class 2. Box closure and strapping shall be in accordance with the appendix to the applicable box specification.

5.2.2 **Level B.** The packaged (see 5.1) comparators shall be packed in close-fitting fiberboard boxes conforming to PPP-B-640, Class 2, style optional or PPP-B-636, V3c, style optional. The gross weight or size of each box shall not exceed the limitations of the applicable box specification. Boxes shall be waterproof sealed in accordance with the applicable box specification appendix.

5.2.3 **Level C.** The packaged (see 5.1) comparators shall be packed in a manner to assure carrier acceptance and safe delivery to destination at lowest rates in accordance with Uniform Freight Classification rules, or with National Motor Freight Classification rules.

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5.3 Marking. In addition to any special marking required by the contract or order, marking for shipment and storage shall be in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The comparator complete with reagents and carrying case covered by this specification is intended for use with color disks for the determination of pH and chlorine content of water in the field.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Items and quantity to be furnished with comparator (see 3.1).
- (c) Class of disks required (see 3.1).
- (d) When finish other than that specified is required (see 3.5).
- (e) Level of preservation and packaging and level of packing required (see 5.1 and 5.2).

6.3 Supplementary quality assurance provisions (SQAP). The contracting officer should require the supplier to maintain records of all SQAP inspections. A suggested paragraph is as follows:

"The supplier shall maintain complete records of all examinations and tests performed to verify the requirements of classified SQAP characteristics. The records shall include as a minimum, lot size, sample size, drawing requirement, actual measurement, number and type of deficiencies found, quantity approved, quantity rejected, corrective action taken when applicable."

6.4 Definitions.

6.4.1 Supplementary quality assurance provisions (SQAP). A SQAP is a contractual requirement that supplements Section 4 of the specification. SQAP indicates the minimum requirements which must be inspected on the product drawings to verify the design objectives of the product and assure interchangeability of repair parts.

Custodians:

Army - ME
Navy - YD
Air Force - 82

Preparing activity:

Army - ME

Project No. 6630-0179

Review activity:

Army - MD

☆ U S GOVERNMENT PRINTING OFFICE 1975-603-118/4764

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

OMB Approval
No 22-R255

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DOCUMENT IDENTIFIER AND TITLE

MIL-C-538F Comparator, Color

NAME OF ORGANIZATION AND ADDRESS

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

 DIRECT GOVERNMENT CONTRACT SUBCONTRACT

1 HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A GIVE PARAGRAPH NUMBER AND WORDING

B RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2 COMMENTS ON ANY DOCUMENT REQUIREMENT CONSIDERED TOO RIGID

3 IS THE DOCUMENT RESTRICTIVE?

 YES NO (If "Yes", in what way?)

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