INCH-POUND
A-A-50752A
25 September 2001
SUPERSEDING
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31 March 1987

COMMERCIAL ITEM DESCRIPTION

TEST KIT, PENETRANT

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. SCOPE. This commercial item description (CID) establishes government acquisition requirements for a penetrant test kit, which contains the components necessary for testing new and in-use penetrant materials to determine the degree of contamination/degradation of these materials. The process control inspection verifies the performance characteristics of the materials and their suitability for use in the penetrant inspection process.

2. SALIENT CHARACTERISTICS

2.1 Components. The penetrant test kit shall be comprised of the following components:

2.1.1 Graduated mixing cylinder with stopper. The graduated mixing cylinder shall have a capacity of 250 milliliters (ml) with stopper. The mixing cylinder shall be equipped with a bumper that will prevent the cylinder from being broken in the event it is inadvertently tipped. The stopper shall have a closed bottom and ground neck. The graduated cylinder shall be labeled in 20 ml divisions from 10 to 250 ml. Two-ml divisions shall be graduated, but unmarked. The graduated markings shall be accurate within ±0.4 ml. All graduations shall be filled with white to facilitate reading.

2.1.2 Hydrometer. The hydrometer shall have a specific gravity range of 1.000 to 1.220. The hydrometer bulbs and stems shall be chemical resistant.

2.1.3 Fluid container. The bottle shall have a one-gallon (3.8-liter) fluid capacity. The bottle's orifice shall be capable of receiving a 2-hole stopper (see figure 1) as described in 2.1.4.

2.1.4 Stopper. The stopper shall have two 5/16-inch (8.0-mm) diameter holes. The stopper shall fit the orifice of the fluid container described in 2.1.3.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: Defense Supply Center Richmond (DSCR), ATTN: DSCR-VBD, 8000 Jefferson Davis Highway, Richmond, VA 23297-5610.

AMSC N/A FSC 6635

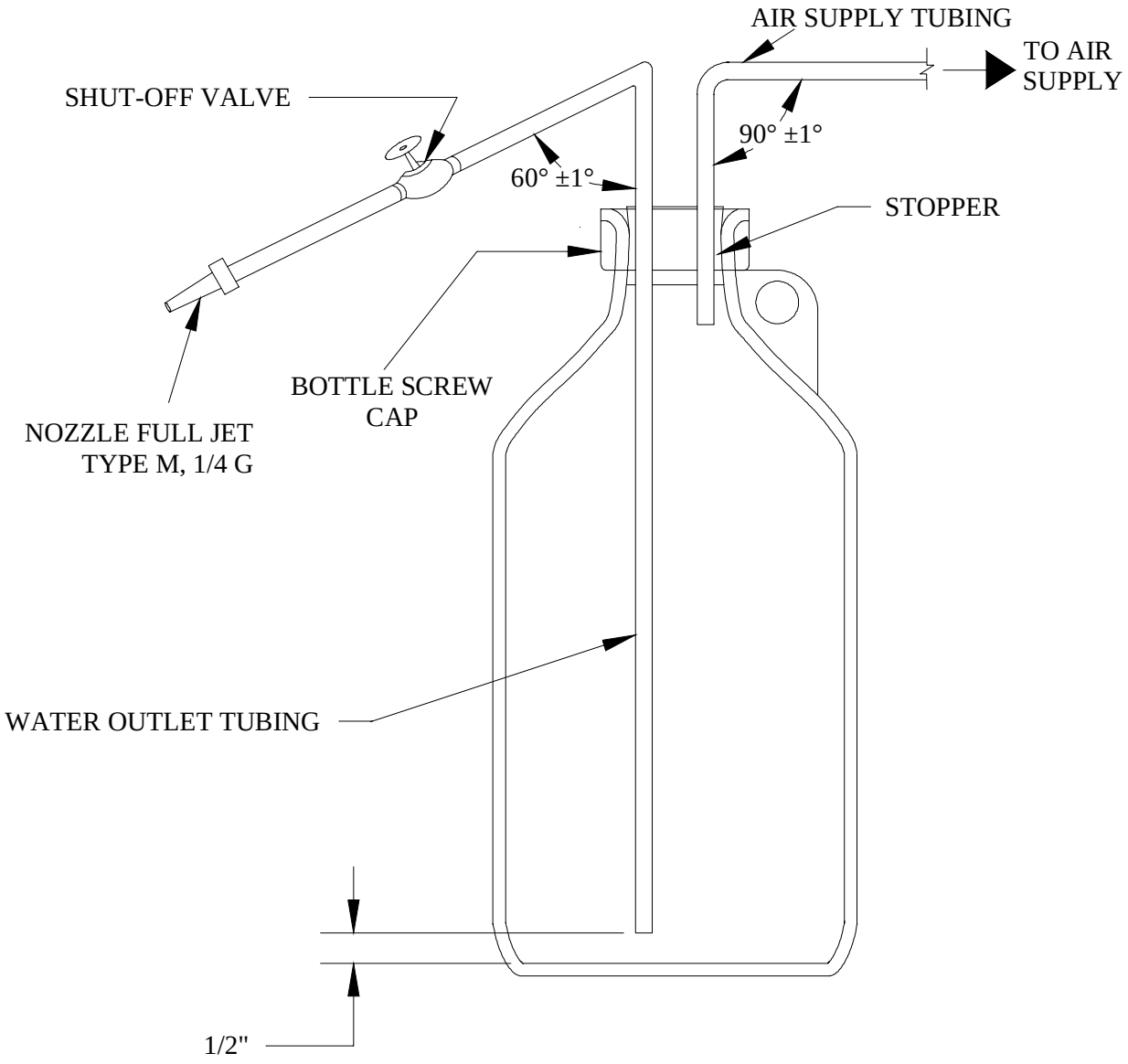

FIGURE 1. Water washing apparatus set-up.

2.1.5 Bottle screw cap. The screw cap shall screw onto the one-gallon fluid container (see 2.1.3). The screw cap shall secure the stopper (see 2.1.4) to the bottle's orifice while providing apertures for two sections of copper tubing inserted through the stopper into the bottle (see figure 1).

2.1.6 Spray nozzle. The spray nozzle shall be a full jet type M, 1/4 G.

2.1.7 Shut-off valve. The valve shall be capable of regulating the supply of water to the spray nozzle (see 2.1.6). The shut-off valve shall be capable of making a watertight connection with 1/4 inch (6.35 mm) inside diameter by 5/16 inch (7.9 mm) outside diameter copper tubing (see figure 1).

2.1.8 Copper tubing. The two sections of copper tubing (1/4 inch inside diameter by 5/16 inch outside diameter) will be used for conveying water from the fluid container to the spray nozzle. Both lengths of copper tubing shall enter the interior of the fluid container through the holes in the stopper. The two ends of copper tubing located at the exterior of the fluid container shall connect to the shut-off valve and an external air supply. The section of copper tubing connected to the air supply shall be capable of extending at least 1 inch (25.4 mm) below the bottom of the 2-hole stopper. The section of copper tubing connected to the shut-off valve shall be capable of extending to within 1/2 inch (12.7 mm) of the bottom of the fluid container. The vertical length of the copper tubing above the container shall be at least 1 inch (25.4 mm) (see figure 1).

2.1.9 Refractometer. A hand-held refractometer shall be capable of measuring the concentration of water soluble industrial fluids. The refractometer shall be capable of checking fluids in a refractive index range of 1.3330 to 1.2860. The readout scale shall be in arbitrary units of 0 to 30 in 0.5 increments. The refractometer shall incorporate automatic temperature compensation over a range of 60 °F to 100 °F. It shall permit direct reading with no correction factor for temperature.

2.1.10 Test panel, stainless steel - 4 each. The sixteen gauge, annealed type 301 or 302 stainless steel panels shall have the dimensions of 2 inches (50.8 mm) by 4 inches (101.6 mm). The panels shall be oxide blasted on both sides using 100 mesh, aluminum oxide grit (not beads), using 60 psig air pressure, with the gun held normal to and approximately 18 inches (45.72 cm) from the panel surface.

2.1.11 Test panel, chrome nickel plated - set of 2. A set of 2 test panels shall be made from one 0.079-inch (2 mm) thick brass plate 3.94 inches (100 mm) long, and when plated approximately 2.80 inches (71 mm) wide. The brass plate is nickel plated to a predetermined thickness and then flashed or plated with a very thin layer of chromium for protection against tarnish. The combined thickness of the plating (nickel and chromium) shall be 20 microns (μ) ±1μ. Fine linear cracks, 1μ wide or less, shall be created across the short dimension of the plating. The cracks shall occur through the entire thickness of the plating, but shall not extend into the brass base material of the panel. After the 2.80-inch (71.12-mm) wide panel is plated and cracked, it shall be cut in half lengthwise. This will produce 2 panels measuring 3.94 inches (100 mm) long and 1.38 inches (35 mm) wide.

2.1.12 Radiometer, digital. A portable, hand-held, battery-operated radiometer shall be used for measuring the intensity of ultraviolet (UV) light in fluorescent penetrant and magnetic particle testing applications. The meter shall be capable of measuring UV radiation in a spectral range of at least 335 to 380 nanometers (nm). The radiometer shall be of the digital type with a direct readout in microwatts per square centimeter ($\mu W/cm^2$). The sensor shall have an accuracy of at least ±5 percent, a linearity of at least ± 1 percent, and a sensitivity range of at least 0-19,990 $\mu W/cm^2$. Calibration of the UV sensor shall be traceable to the National Bureau of Standards (NBS). The radiometer shall incorporate interchangeable sensor heads that are capable of calibration when detached from the meter. Calibration shall be effected by detaching the sensor head from the radiometer and sending it to a calibration laboratory. Each radiometer shall be supplied with two long wave sensor heads, thus enabling sustained use of the radiometer without calibration interruptions. The radiometer shall be supplied with batteries.

2.1.13 Calibration procedures, digital radiometer. Detailed procedures to enable calibration of the radiometer sensor heads described in 2.1.12 shall be provided.

2.1.14 Carrying case for radiometer. The rugged case shall be suitable for the storing and transporting of the digital radiometer described in 2.1.12. The case shall protect the radiometer from moisture, dust, and shock.

2.1.15 Bi-metal thermometer. A stainless steel, bi-metal thermometer, shall be accurate to +1 percent of the scale range. The thermometer shall be capable of measuring temperatures in a range of 0 ºF to 220 ºF in two-degree divisions. The stem shall be of the plain type (non-threaded) and approximately 8 inches in length. The dial shall have an approximate diameter of 2 inches.

2.1.16 Forceps, 2 each. The forceps shall be straight, blunt-pointed with serrated tips. The forceps shall be approximately 4 inches long and shall be fabricated from heavy steel.

2.1.17 Filter paper. A 100-pack of 7.0-centimeter (2.75-inch) diameter Whatman Grade 4 filter paper shall be provided.

2.1.18 Penetrant test kit carrying case. A rugged carrying case is required for storing and transporting the components of the penetrant test kit (see 6.1). The carrying case shall have a hinged cover capable of being securely latched to prevent accidental opening. The case shall incorporate a handle to enable hand carrying by one person. The carrying case shall be equipped with padded inserts that provide shock protection for the kit components. The inserts shall provide cut-outs/indentures to accommodate the individual kit components.

3. REGULATORY REQUIREMENTS

3.1 Recovered materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

4. PRODUCT CONFORMANCE PROVISIONS

4.1 Product conformance. The products provided shall meet the salient characteristics of this commercial item description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The government reserves the right to require proof of such conformance.

4.2 Market acceptability. The product offered must have been previously sold either to the government or on the commercial market.

5. PACKAGING

5.1 Preservation, packing, and marking. Preservation, packing, and marking shall be as specified in the contract or order (see 6.5(b)).

6. NOTES

6.1 Storage of digital radiometer. The digital radiometer should not be stored in the carrying case for the penetrant test kit; rather, it should be stored in the radiometer carrying case described in 2.1.14.

6.2 Part or identification number (PIN). The PIN procedure for this CID is AA50752-1. This is for government purposes and does not constitute a requirement for the contractor.

6.3 Sources of documents.

6.3.1 FAR. Copies of the FAR may be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Electronic copies of FAR documents may be obtained from http://www.arnet.gov/far/.

6.4 Sources of supply. The manufacturers and/or suppliers listed below are known to supply products that meet the salient characteristics requirements of this document. Competition is not limited to the listed firms.

Newco, Inc.
Florence, SC 29502

Magnaflux
A Division of Illinois Tool Works
Glenview, IL 60025

6.5 Ordering data. Acquisition documents shall specify the following information:

a. CID document number, revision, and CID PIN
b. Preservation, packing, and marking requirements (see 5.1)

6.6 Subject term (key word) listing.

bi-metal thermometer
contamination
degradation
filter paper
forceps
graduated mixing cylinder
hydrometer
radiometer
refractometer
stopper
test panel
water washing apparatus

MILITARY INTERESTS:

Custodians:
Army - GL
Navy - AS
Air Force -99

Reviewer:
Air Force - 84

CIVIL AGENCY
COORDINATING ACTIVITY:

GSA - FCGC

Preparing activity:
DLA - GS1

(Project 6635-0198)