

A-A-105A
February 4, 1991
SUPERSEDING
A-A-105
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COMMERCIAL ITEM DESCRIPTION

POLISH, METAL, BRASS

The General Services Administration has authorized the use of this Commercial Item Description in preference to Federal Specification P-P-556 and Military Specification MIL-P-15422.

SCOPE AND CLASSIFICATION

This commercial item description covers two types of combination cleaner-polishers with tarnish preventative for use on brass and related alloys, copper, chrome, or nickel.

Type I - liquid

Type II - paste

Salient Characteristics.

Materials: Polishes shall contain suitable cleaning agents and finely divided abrasives. Type I polish shall be a uniform liquid and shall not contain any sediment that cannot readily be put into suspension by thorough shaking. Type II polish shall be a uniform paste free from lumps and shall not show liquid separation.

Physical requirements	Limits	Test Method
pH at 25°C (Type I undiluted, Type II as 50% dispersion in distilled water)	8.0 - 10.5	ASTM D 1172
Non-volatile matter, percent by weight		
Type I	25 min	ASTM D 2834
Type II	30 min	ASTM D 2834
Abrasive content, percent by weight		1
Type I	18 min	
Type II	25 min	
Passing through 200 mesh sieve	100 min	2
Flash point, °C	60 min	ASTM D 92

Performance requirements	Limits	Test Method
Tarnish removal, percent	75 min	3
Gloss retention, percent	75 min	4
Weight loss, percent of initial panel weight	0.01 max	4

Prohibited ingredients⁵: The manufacturer shall certify that the cleaner-polishers shall not contain benzene, mineral acids, chlorinated hydrocarbon solvents, cyanides, grit, or other ingredients having a detrimental (i.e. corrosive, etc.) effect on metals or personnel.

Certification: The contractor shall certify that the product offered meets the salient characteristics of this description, and that the product conforms to the producer's own drawings, specifications, standards, and quality assurance practices, and is the same product sold in the commercial marketplace. The Government reserves the right to require proof of such conformance prior to first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

Preservation, Packaging, Packing, and Marking: Preservation, packaging, packing, and marking shall be as specified in the contract or purchase order.

Notes: Purchasers should specify type and size.

DISTRIBUTION STATEMENT A: Approved for public release
 Distribution is unlimited.

FSC 7930

A-A-105A

1. Abrasive Content: Accurately weigh 10-12 grams of polish in a tared centrifuge tube. Dilute and disperse polish to 100 mL with hot alcohol or hot distilled water, and then centrifuge at approximately 2000 rpm. for 5 minutes. Decant liquid carefully so as to avoid losing solid matter. Repeat this procedure of diluting, dispersing, centrifuging, and decanting two more times. After the third treatment, place residual solids in an oven maintained at $105^{\circ} \pm 2^{\circ}\text{C}$ for 4 hours. Cool in a desiccator, and weigh residue. Repeat drying process until weight is constant. Calculate percent abrasive matter as follows:

$$\% \text{ abrasives} = (\text{residue weight} \times 100) / (\text{polish weight})$$

2. Sieve Test: Weigh approximately 50 grams of polish and place into an 800 mL beaker. Dilute polish to 500 mL with hot alcohol or hot distilled water; cover with a watch glass; and digest on a steam bath for 1 hour. Vigorously stir to disperse solid matter through a tared No. 200 sieve, and then wash with distilled water. Weigh the sieve after drying for 4 hours at $105^{\circ} \pm 2^{\circ}\text{C}$. Retention of any material on the 200 mesh sieve screen shall constitute failure of the test.

3. Tarnish Removal: Materials and Equipment:

(a) Smooth, half-hard, Copper Alloy UNS No. C26000, unleaded, yellow brass panels, each 4" X 6" (10.2 cm. X 15.24 cm.) and 1/8" (0.32 cm.) thick. The hardness shall be 72-78 on the Rockwell B scale.

(b) A Gardener Washability Machine.

(c) A polishing head, rectangular frame fitted with brackets and pins at each end, so constructed to fit the Gardener Washability Machine.

(d) Wool billiard cloth.

(e) A 60° specular gloss meter.

(f) Solution for tarnishing brass. 20 grams of ammonium chloride and 80 grams of cupric sulfate pentahydrate dissolved in 1,000 mL of distilled water at 38° C. and cooled to 25° C. for use.

(g) A 7 - 8 percent aqueous ammonia solution (by wt.).

Preparation of Panels: A minimum of 5 brass panels shall be cleaned and hand polished until all etchings or other marks have been removed. Measure the 60° specular gloss of each panel in accordance with ASTM D 523.

Tarnish the 5 prepared panels by immersing for 5 minutes in the beaker of tarnishing solution of ammonium chloride and cupric sulfate. Rinse the panels with tap water and wiped dry with a clean, soft cloth or industrial wiping tissue.

Removal of Tarnish: Each brass panel shall be centered on the pan of the Gardener Washability Machine by means of two metal inserts. Fit a clean wool cloth to the polishing head whose weight has been adjusted to 1 pound (454 grams) total weight, and apply 8 mL of liquid or 10 grams of paste polish uniformly to the cloth. Start the machine and continue through 200 cycles. Stop the machine; remove the test panel; rinse under tap water; and wipe dry with a clean, soft cloth in the direction of the polishing strokes. Determine the specular gloss of each brass panel in accordance with ASTM D 523, and average the results.

$$\text{Percent Tarnish Removal} = (\text{average gloss after polishing} \times 100) / (\text{original average gloss})$$

4. Gloss Retention Test: Place the five tarnish-removed panels in a desiccator containing 10 mL of 7-8% ammonium hydroxide solution in an evaporating dish for 30 minutes at room temperature. Remove the five brass panels, and measure the gloss of each. Average the results.

$$\text{Percent Gloss Retention} = (\text{average gloss after 30 min. exposure} \times 100) / \text{average gloss before exposure}$$

$$\text{Percent Weight Loss} = (\text{tarnished wt.} - \text{cleaned wt.}) \times (100) / (\text{tarnished wt.})$$

A-A-105A

5. Cyanide Test: Test a mixture of 5 mL Type I polish or 5 grams Type II polish and 5 mL distilled water with litmus paper. If necessary, add sodium hydroxide solution to make the mixture alkaline. Then add three drops each of ferrous sulfate and ferric chloride (10 percent solutions, w/w); mix and heat to a temperature of 49°C. in a hot water bath. Make the mixture acid to litmus by the addition of 12 M HCl. If cyanides are present a blue precipitate is formed.

Copies of ASTM methods are available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

MILITARY INTERESTS:

Military Coordinating Activities:

Navy - SH
Army - GL
Air Force - 69

Civil Agency Coordinating Activities:

GSA - FSS

Preparing Activity:

GSA - FSS
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