

[INCH-POUND]

A-A-59299  
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SUPERSEDING  
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## COMMERCIAL ITEM DESCRIPTION

### IMPREGNATED WADDING, METAL POLISH

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

1. **SCOPE.** This commercial item description covers a metal polish impregnated wadding intended for polishing heavily oxidized aluminum surfaces.
2. **CLASSIFICATION.** The unit of issue for the impregnated wadding shall conform to the following weights and sizes as shown below:
  - a. A five ounce (142 g) weight measuring three and one half inches (8.9 cm) in both diameter and height with a dimensional tolerance of +0.25 and -0.0 inch (+6.35 and -0.0 mm).
  - b. A two pound (908 g) weight measuring six inches (15.2 cm) in diameter and five inches (12.7 cm) in height with a diameter tolerance of +0.5 and -0 inch (+12.7 and -0.0 mm).

### SALIENT CHARACTERISTICS.

3.1 Composition. The composition of the impregnated wadding shall be optional with the manufacturer, but shall be restricted by the requirements specified herein. The container materials shall not interact physically or chemically so as to alter the strength of the container and purity or quality of the contents for at least one year from the date of the shipment.

3.2 Non-volatile content. The non-volatile content of the impregnated wadding shall be between 35 and 45 percent by weight, when tested as follows. A representative portion of the sample, weighing approximately 10 grams (0.35 ounces), shall be accurately weighed and placed in a

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weighed porcelain crucible. The crucible shall be heated on a steam bath for 45 minutes and then in an oven at 220 °F ±4 °F (104 °C ±2 °C) for 2 hours, cooled, and weighed. The percentage of non-volatile matter shall be calculated as follows:

$$\frac{B}{A} \times 100 = \% \text{ non-volatile matter}$$

A = weight of original

B = weight of sample left in crucible

3.3 Ash content. The ash content of the impregnated wadding shall be between 8 and 12 percent by weight, when tested as follows. The crucible containing the non-volatile matter shall be heated, using only moderate heat until all the organic matter is burned off. The crucible shall then be cooled and weighed. The percentage of ash shall be calculated as follows:

$$\frac{C}{A} \times 100 = \% \text{ ash}$$

A = weight of original (see 3.2)

C = weight of residue left in sample

3.4 Toxicity. The impregnated wadding shall have no adverse effect on the health of personnel when used for its intended purpose.

3.5 Volatility. The volatility of the impregnated wadding shall be equal to or less than that of distilled water when tested as follows. An amount of wadding shall be weighed into a glass evaporating dish. An equivalent weight of distilled water shall be added to a second dish. Both shall be exposed for 30 minutes in a draft free atmosphere having a temperature of 75 °F ±5 °F (24 °C ±3 °C) and a relative humidity of 50 ± 5 percent. At the end of the exposure period, the comparative loss in weights shall be observed.

3.6 Ease of removal and corrosiveness. The polished test panels of aluminum clad alloy, copper, and steel shall show no discoloration or any other evidence of corrosion when tested as follows. The impregnated wadding shall be applied in accordance with the manufacturer's instructions to three 1 by 6 inch (2.5 by 15.2 cm), 7075 Alclad aluminum panels conforming to ASTM-B209. The panel shall then be placed in a horizontal position under an infrared reflector drying lamp (polished face up, and without wiping off the spent polish). The reflector apparatus shall then be adjusted so that a 260 watt drying lamp shall be 12 inches (30.5 cm) above the test panels. The temperature shall be not less than 120 °F (49 °C) at the panel level and shall be not greater than 140 °F (60 °C) during drying of the test panels. After allowing the rays of the drying lamp to act upon the panels for 30 minutes, the lamp shall be turned off. After the panels cool to room temperature, they shall be wiped clean with 100 percent cotton flannel polishing cloth, and the ease with which the dried film is removable shall be observed. The polished surfaces shall be observed. The polished surfaces shall be examined for corrosive attack,

staining, or discoloration. The test shall be repeated using 1 by 6 inch (2.5 by 15.2 cm) copper panels conforming to ASTM-B152 and steel panels conforming to SAE-AMS5046.

3.7 Effect on painted surfaces. The impregnated wadding shall not cause softening, discoloration, or dulling of aircraft lacquers and shall not cause a decrease of surface hardness greater than one pencil hardness when tested as follows.

3.7.1 Test panels. The panels shall be made from 0.020 inch (0.51 mm) thick 2024 aluminum alloy Alclad sheet conforming to ASTM-B209 anodized to conform to SAE-AMS2470. The panels measuring 3 by 6 inches (7.6 by 15.2 cm) shall have corners and edges broken and smoothed.

3.7.2 Surface hardness loss. A brush shall have wadding attached as described in 3.9. With the pad prepared from the impregnated wadding test sample held firmly in place, the brush weighted to 3 lbs (1.3 kg) shall be passed 10 times over the lacquered surface. At the end of this polishing phase the film shall be allowed to dry for ten minutes. The panel shall be wiped clean with a minimum of pressure using a 100 percent cotton flannel polishing cloth, and examined for discoloration and dulling. The pencil hardness effect shall be determined using ASTM-F502.

3.8 Attack on acrylic base plastics. The impregnated wadding shall not cause crazing, cracking, or other attack on acrylic-base plastics under stress when tested using ASTM-F484, type A, acrylic material.

3.9 Abrasive number. The abrasive number shall be not greater than 6 when the impregnated wadding is tested as follows. A weighted 1 by 6 inch (2.5 by 15.2 cm) polished aluminum panel shall be set in the recess of a polishing table. A brush shall be prepared for the test by attaching a portion of impregnated wadding to the bristles of the brush. This portion shall measure 1.5 by 3.5 by 0.25 inches (3.8 by 8.9 by 0.64 cm). With the impregnated wadding sample held firmly in place, the weighted brush (6 pounds (2.7 kg)) shall then be passed 100 times over the test panel. At the end of this polishing phase, the film formed shall be air dried and removed with a piece of 100 percent cotton flannel polishing cloth, restricting the rubbing to a minimum. The weight loss of the panel in milligrams shall be taken as the abrasive number.

3.10 Drying time. The impregnated wadding shall produce a film, on clad aluminum alloy, which dries within 10 minutes when tested as follows. A brush shall be prepared for the test as described in 3.9. With the pad firmly in place, the weighted brush (6 pounds (2.7 kg)) shall be passed 10 times over a 3 by 6 inch (7.6 by 15.2 cm) Alclad aluminum alloy panel surface held in a horizontal position. Careful note shall be made of the time required to produce a dry film (the timing to start immediately after the last pass made by the brush).

3.11 Polishing ability. The impregnated wadding shall produce a reflectance equal to or better than that produced by the control formula product when tested as follows.

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3.11.1 Preparation of panels. The clad aluminum alloy panels used in testing the polishing properties shall be cut from a 0.051 inch (1.30 mm) thick sheet of 7075-T6 Alclad aluminum alloy conforming to ASTM-B209. They shall be approximately 5 inches (12.7 cm) wide by 16 inches (40.6 cm) long with corners and edges broken and smoothed with a 0.62 inch (15.7 mm) hole drilled near each end of each panel.

3.11.2 Selection of panels. The reflectance of each panel shall be measured as specified in 3.11.3. If the reflectance reading is greater than 60, the panel shall be tarnished as specified in 3.11.4 until a reflectance reading of not less than 40 nor greater than 60 is obtained. The panel shall then be used for the polishing procedure described in 3.11.7.

3.11.3 Reflectance measurements. Daytime luminous reflectance readings at 45° shall be determined using a visual or photoelectric reflectometer with CIE illuminant C. The instrument shall be standardized with a polished black glass having a refractive index of 1.52, the instrument being set so that the glass gives a reflectance reading of 15.0. Check settings on the reference standard shall be made at sufficiently brief intervals to insure accuracy of results within 2 percent. Five different portions on the surface of the test panel shall be measured in order to obtain the average reflectance reading.

#### 3.11.4 Tarnishing.

3.11.4.1 Reagents. The reagents shall consist of the following:

- a. Solution 1 - 1600 milliliters of a 5 percent by weight solution of sodium hydroxide in water.
- b. Solution 2 - 800 milliliters of a 1 percent by weight solution of potassium persulphate in water.

3.11.4.2 Procedure. Solution 1 shall be heated to a gentle boil in a flat 18 by 12 by 2.5 inch (45.7 by 30.5 by 6.4 cm) pyrex dish. The flame shall be removed and solution 2 carefully added with gentle stirring. The test panel shall be immersed in the solution with the polished face upward. As soon as bubbles form (2 to 3 seconds maximum immersion) the panel shall be removed, rinsed with cold water, and dried. The tarnished panel should then give a reflectance reading of not less than 40 nor greater than 60.

3.11.5 Polishing apparatus. Polishing shall be done with weighted brushes. The brushes used for the polishing operation shall consist of metal or wooden blocks measuring 0.5 by 1.5 by 3.5 inches (1.3 by 3.8 by 8.9 cm), with brush stock of approximately staggered tufts, each tuft of  $50 \pm 5$  straight .091 inch (2.3 mm) diameter nylon fibers extending 0.62 inch (15.7 mm) beyond the block. The two brushes together shall be weighted with a 6 pound (2.7 kg) weight. A smooth, lined, horizontal polishing table, having a recess 5 by 6 by .05 inches (12.7 by 15.2 by 0.13 cm) to hold the panel, shall be provided.

3.11.6 Control formula product. The control product to be used for judging the performance of the manufacturer's product shall be assembled in strict accordance with the formula specified in table I.

TABLE I. Control formula product.

Ingredient	Composition by weight, grams
Stearic Acid (USP)	20.0
Mineral spirits	225.0
Talc (USP)	25.0
Kaolin (Acid Washed)	25.0
Calcium Carbonate (Precipitated)	25.0
Glycerin (USP)	5.0
Infusorial Earth (White Calcined)	12.5
Jeweler's Rouge	0.5
Absorbent Cotton (Shredded)	10.0

NOTE:

The control formula product shall be prepared by combining the first eight ingredients in a one-pint friction top can and shaking for approximately three minutes using a paint shaking apparatus. The cotton shall be added, the lid replaced, and the shaking shall be continued for approximately ten minutes. Immediately after shaking, the contents of the can shall be transferred to a device in which the impregnated cotton may be subjected to pressure in order to form a circular pad measuring 0.75 inch (19 mm) in thickness and 3 inches (76 mm) in diameter after all of the excess vehicle is removed. The device shall include a perforated cup measuring 3 inches inside diameter by 3 inches in height and shall be provided with a 3 inch disk which may be lowered into the cup, piston fashion, under pressure.

3.11.7 Polishing procedure. The tarnished panel shall be set in the recess of the polishing table. The brushes shall be prepared for the test by attaching a portion of the test sample to the bristles of one brush and similarly attaching a portion of the control formula product on the remaining brush. The portions shall each measure 1.5 by 3.5 by 0.25 inches (3.8 by 8.9 by 0.63 cm). With the impregnated wadding materials held firmly in place, the brushes shall then be passed 15 times over the tarnished panel. At the end of this polishing phase, the film formed shall be allowed to dry for ten minutes and the foregoing procedure shall be repeated except that pieces of 100 percent cotton flannel polishing cloth shall be attached to the bristles of the weighted brushes in place of the impregnated wadding previously used. The parallel polished areas shall be compared visually and by averaged reflectance readings. The polishing procedure shall be performed and reflectance measured on each of three panels. In cases where there may be doubt as to the performance of the materials in actual use, it shall be subjected to the practical polishing

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test (3.11.7.1) and shall show polishing properties equal or superior to the control formula product.

3.11.7.1 Practical polishing test. Comparable heavily oxidized unpainted aluminum aircraft surfaces shall be separately polished with the impregnated wadding sample and the control formula product. The polished areas shall be examined visually for compliance with 3.11.

3.12 Retention of reflectance. A polished test panel shall retain not less than 95 percent of its original reflectance when tested as follows. The polished panel from 3.11.7 shall be allowed to stand 24 hours in a room free of corrosive vapors. The reflectance shall be calculated by the following formula:

$$\text{Percent Retention of Reflectance} = \frac{\text{Reflectance reading after aging} \times 100}{\text{Reflectance reading before aging}}$$

3.13 Stability. The impregnated wadding shall show no evidence or separation of solvent or powder when tested as follows. The test sample of impregnated wadding shall be shelved with the container unopened for 72 hours. At the end of 24 hours the container shall be inverted. This procedure shall be repeated at the end of the second 24 hour period. At the end of the third 24 hour period the container shall be opened and the contents shall be transferred intact to a wide mouth glass jar with screw cap. The interior of the original container shall be examined. Evidence of solvent or powdered sediment separation shall be noted. The glass container shall be shaken for 15 minutes in a mechanically operated sieve shaker which vibrates approximately 950 times per minute and receives two impacts per revolution. A semi-soft rubber disk shall be placed between the bottom of the glass container and the vibrating platform to prevent sharp impact. Separation of solvent or powdered solid shall be noted.

3.14 Flash Point (of solvent ingredient). The flash point of the solvent ingredient shall be not less than 130 °F (54 °C) when tested as specified in ASTM-D56.

3.15 Workmanship. The finished metal polish impregnated wadding shall conform to the quality of product established by this commercial item description and shall function for the purpose intended. No defects affecting appearance or serviceability shall be permitted.

3.16 Measurement system. The values stated in inch-pound units are to be regarded as the standard. The values stated in parenthesis are for information purposes only.

3.17 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, providing they fall within the tolerances specified and all other requirements of this document are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified in the inch-pound units, a request should be made to the contracting officer to determine if the product is acceptable.

#### 4. REGULATORY REQUIREMENTS.

4.1 Regulatory requirements. 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).

#### 5. QUALITY ASSURANCE PROVISIONS.

5.1 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 market. The government reserves the right to require proof of such conformance.

#### 6. PACKAGING.

6.1 Preservation, packing, and marking. Preservation, packing, and marking shall be as specified in the contract or order.

6.1.1 Special marking. In addition to the marking requirements specified in the contract or order, the label on the unit of issue container shall be marked as specified:

##### DIRECTIONS FOR USE

- a. Tear off small portion of wadding and rub in a straight line motion over a small area.
- b. After film dries, wipe with dry wiping cloth until surface has luster finish.
- c. Always replace the lid after removal of desired quantity of wadding.
- d. Caution: Do not use on acrylic plastics.

##### PRECAUTIONS

- a. The impregnated cotton wadding will burn when ignited. Do not use near an open flame.
- b. Moderately toxic - Use gloves or wash hands after using. Continuous contact with the skin will cause irritation.

#### 7. NOTES.

7.1 Copies of SAE documents may be obtained from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

7.2 Copies ASTM documents may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

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### 7.3 Ordering data.

7.3.1 Ordering data. Procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. Quantity desired.
- c. Type and size of container in which wadding is to be furnished.
- d. Preservation, packing, and marking.

7.4 National Stock Numbers (NSNs). The following is a list of NSNs assigned which correspond to this CID. The list may not be indicative of all possible NSNs associated with the CID.

#### NSN

7920-00-823-9817

7920-00-823-9818

#### MILITARY INTERESTS:

Custodians:

Army - GL

Navy - AS

Preparing activity:

Navy - AS

(Project 7920-0277)

Review:

Army - MD

#### CIVIL INTEREST:

GSA-FSS