

MIL-C-47267(MI)
9 August 1974
SUPERSEDING
MIS-13100
6 July 1964

MILITARY SPECIFICATION
CLEANING AND SURFACE PREPARATION,
VAPOR BLAST

This specification is approved for use
by all departments and agencies of the
Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the cleaning and
surface preparation of ferrous, non-ferrous, and non-metallic
materials by the vapor blast process.

2. APPLICABLE DOCUMENTS

2.1 Government documents. 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

Military

MIL-C-744

Cleaning Abrasive, Spark
Plug, Ceramic Insulator

MIL-L-3150

Lubricating-Oil,
Preservative, Medium

FSC-MFFP

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MIL-C-5546

Compound; Engine Cleaning
(Cresol Base)

MIL-T-7003

Trichlorethylene; Stabilized
Degreasing

STANDARDS

Military

MIL-STD-143

Specifications and Standards,
Order of Precedence for the
Selection of

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

3. REQUIREMENTS

3.1 Selection of specifications and standards.

Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with Standard MIL-STD-143.

3.2 Preparation of parts.

3.2.1 Removal of oil and grease. Parts shall be thoroughly cleaned of oil, grease, and other contaminants by vapor or solvent degreasing with trichlorethylene conforming to Specification MIL-T-7003 prior to vapor blasting.

3.2.2 Removal of baked-on carbon deposits. Parts with baked-on carbon deposits shall be cleaned with compound conforming to Specification MIL-C-5546 to soften deposits and aid in their removal.

3.2.3 Masking.

3.2.3.1 Identification markings. Part numbers, serial numbers, and other identification markings shall be protected with masking tape during vapor blasting.

3.2.3.2 Bearing surfaces. Bearing surfaces shall be protected with masking tape during vapor blasting.

3.3 Preparation of slurry.

3.3.1 Mixing. Vapor blasting slurry shall be prepared in the proportions and to the consistency recommended by the equipment manufacturer using fused aluminum oxide cleaning abrasive conforming to Specification M L-T-744, Type III. One ounce of sodium dichromate per gallon of water shall be added to the abrasive-water slurry. The slurry shall be agitated with air or other suitable means until thoroughly mixed.

3.3.2 Abrasive size. The following sizes of abrasive shall be used for the conditions indicated:

- | | |
|---|-----------------|
| a. Light rust or heat-treat oxide removal. | 100 to 140 mesh |
| b. Preparation for plating. | 100 to 140 mesh |
| c. Cleaning of parts with close tolerance dimensions (plus or minus 0.002 inch or less) | 325 mesh |

When more than one of the above conditions apply to a part, the smaller size abrasive shall be used.

3.3.3 Slurry life. Slurries may be used until breakdown makes honing inefficient, or until the slurry becomes contaminated with foreign material. A log shall be maintained so that the materials honed by each slurry is recorded. Unless otherwise specified herein, slurries shall not be considered as corrosively contaminated due to prior non-metallic honing.

3.4 Parts of dissimilar materials. Prior to blast cleaning any part, determination shall be made of the type of material previously processed in the vapor blast machine. In the event the parts previously processed were of a material dissimilar to the parts to be processed, the slurry shall be drained from the reservoir, the reservoir thoroughly rinsed, and a new slurry added. When this is impracticable, a grit previously used on a dissimilar metal may be used when followed

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by a pickle removing approximately 0.001 inch of material, and provided pickling is not prohibited by conditions such as close tolerances on steels which have a tensile strength above 150,000 pounds per square inch. The materials in Table I are grouped according to their similarity. A slurry mixture shall not be used on materials in any group if it has previously been used on a material of another group.

3.5 Operating pressure. Operating pressure range of the vapor blast machine shall be in accordance with the equipment manufacturer's recommendation. To determine the exact pressure setting within the operating pressure range, a test sample shall be dimensionally measured and vapor blasted as specified in 3.6. The test sample shall then be rinsed and remeasured. This procedure shall be repeated as necessary, using a new test sample and adjusting the pressure each time until effective cleaning results are obtained with a material loss within the dimensional tolerance of the part to be vapor blasted. Test samples shall be of the same material group (See Table I) as the part to be vapor blasted.

Table I

Material groups for vapor blasting

Group	Material
A	Carbon and low alloy steels such as 1025, 4130, and 4340.
B	High alloy corrosion- and heat-resistant steels: 300 and 400 series. PH and corrosion-resistant steels: 17-7PH, 17-4PH, PH15-7Mo, AM350, and AM355.
C	Aluminum alloys.

Table I (Continued)

D	Magnesium alloys.
E	Titanium.
F	Copper and brass.

3.6 Vapor blasting. The vapor blast stream shall be directed on the part so that the nozzle is as nearly perpendicular to the surface as practicable.

3.6.1 Dwell time. Dwell time of the blast on any given area of the part shall not exceed 5 seconds.

3.6.2 Close tolerance parts. Parts having close dimensional tolerances (plus or minus 0.002 inch or less) shall have the close tolerance dimensions measured prior and subsequent to vapor blasting. Care shall be taken to avoid removal of more material than is necessary to obtain good results. Close tolerance parts shall not be honed in slurries used for dissimilar metals (see Table I), and shall not be pickled.

3.7 Processing after vapor blasting.

3.7.1 Handling. After vapor blasting, parts shall be handled with rubber gloves.

3.7.2 Rinsing. Vapor blasted parts shall be rinsed by dipping in a water-filled overflow tank or under running tap water. Parts shall be force-dried in oil-free air, or drain-dried. If tank rinsing is used, the water shall be heated to 82.2 plus or minus 5.5 degrees C (180 plus or minus 10 degrees F) to aid in drying the parts.

3.7.3 Corrosion protection. Unless plating, painting, or other processing is to follow immediately after vapor blasting, parts fabricated from materials of group A or B shown in Table I shall be treated for corrosion prevention with lubricating-oil conforming to Specification MIL-L-3150.

4. QUALITY ASSURANCE PROVISIONS

This section not applicable to this specification.

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5. PREPARATION FOR DELIVERY

This section is not applicable to this specification.

6. NOTES

6.1 Intended use. The vapor blast process described in this specification is intended for carbon steels, high alloy steels, corrosion-resistant steels, non-ferrous alloys, and non-metallic materials.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, and date of this specification.

6.3 Supersession data. This specification includes the requirements of Missile Interim Specification MIS-13100, dated 6 July 1964.

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