

Water Repellent, Window and Windshield, Glass and Plastic

FSC 6850

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SAE AS6882

1. SCOPE:

1.1 Scope:

This specification covers the requirements for one type of water repellent compound.

2. APPLICABLE DOCUMENTS:

2.1 Issues of 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

FEDERAL

QQ-A-250/5	- Aluminum Alloy, Alclad 2024, Plate and Sheet
TT-N-95	- Naphtha, Aliphatic
CCC-C-458	- Cloth, Flannel, Cotton
PPP-B-636	- Box, Fiberboard
PPP-C-186	- Containers, Packaging and Packing for Drugs, Chemicals, and Pharmaceuticals

MILITARY

MIL-P-5425	- Plastic, Sheet Acrylic, Heat Resistant
MIL-T-5624	- Turbine Fuel, Aviation, Grades JP-4 and JP-5
MIL-C-22750	- Coating, Epoxy-Polyamide
MIL-P-25690	- Plastic, Sheets and Parts, Modified Acrylic Base, Monolithic, Crack Propagation Resistant
MIL-L-81352	- Lacquer, Acrylic (For Naval Weapons Systems)
MIL-C-81773	- Coating, Polyurethane, Aliphatic, Weather Resistant

STANDARDS

MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	- Marking for Shipment and Storage

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

3. REQUIREMENTS:

3.1 Qualification:

The water repellent furnished under this specification shall be a product which is qualified for listing on the applicable qualified products list at the time of opening of bids (see 4.2.1 and 6.3). In addition, the retention of qualification for the water repellent on the applicable qualified products list shall be dependent on periodic verification of continued compliance with the requirements of this specification (see 4.2.1.2).

3.1.1 Service tests: The water repellent shall perform as well as or better than the control formula product (4.5.6.2) when both are tested on an airplane in flight under rain conditions (see 4.2.1.1).

3.1.2 Changes requiring requalification: Any changes in the formulation of the water repellent compound or its container will require proof of compliance with all applicable requirements of this specification (see 4.2.1.1).

3.2 Materials:

There are no restrictions on the composition of the water repellent compound, other than those imposed by the technical requirements specified herein.

3.2.1 Toxicity: The material shall have no adverse effect on the health of personnel when used for its intended purpose. Questions pertinent to this effect shall be referred by the procuring activity to the appropriate departmental medical service who will act as an advisor to the procuring agency (see 6.4).

3.2.2 Deleterious effects on adjacent surfaces: The water repellent compound, when used in accordance with specified instructions shall have no deleterious effect on the adjacent surfaces (see 4.5.11).

3.3 Coverage:

When the water repellent is applied as specified, it will apply a film on glass or plastic surfaces in a one step operation.

3.4 Resistance to temperature cycling:

The weight and appearance of the water repellent compound and its container shall be unchanged by temperatures varying from 39°F (4°C) to 120°F (49°C) when tested as specified in 4.5.1.

3.5 Application of film:

The water repellent compound shall be capable of being applied and reapplied at 39°F (4°C) and also at 90°F (32°C) as specified in 4.5.2. The resulting film shall be clear, continuous, and free from granular structure.

3.6 Abrasion and staining:

The water repellent compound shall not scratch or stain transparent glass or plastic when applied as specified in 4.5.3.

3.7 Visibility:

After application of the water repellent in accordance with manufacturer's instructions, there shall be no marked decrease in visibility, nor any evidence of distortion, when observations are made as specified in 4.5.4.

3.8 Roll angle:

When determined in accordance with 4.5.5, the roll angle of a drop of water on glass or plastic to which the water repellent has been applied shall be less than 20 degrees.

3.9 Effectiveness and durability:

When the water repellent is tested as specified in 4.5.6, water shall not form a continuous film, but shall be in the form of discrete droplets on the surface of the water repellent film. A single application of water repellent shall be capable of lasting for 6 consecutive hours of simultaneous exposure to wind erosion at 500 ± 10 miles per hour and to 1 inch of rainfall per hour, and visibility shall not be impaired. The reading on the chart of the visibility comparator (during the application of air and water) shall at all times be less than half the initial setting for untreated glass or plastic.

3.9.1 Jet fuel and de-icing fluid resistance: After the water repellent film has been applied in accordance with the manufacturer's directions, the glass shall be wiped with a cloth dampened with JP-4 fuel, and then with a cloth dampened with isopropyl alcohol and tested as specified in 4.5.6.1. The decrease in effectiveness and durability, as measured with the visibility comparator shall be not more than 10 percent.

3.9.2 Control tests: The effectiveness and durability exhibited by the test material shall be at least as good as that exhibited by a control film prepared as specified in 4.5.6.2.

3.10 Light transmission:

The water repellent film shall not decrease the light transmission, as determined in 4.5.7, of the glass or plastic to which it has been applied.

3.11 Refractive index:

There shall be no change in the refractive index, as specified in 4.5.8, when the glass or plastic has been coated with the water repellent.

3.12 Low temperature visibility:

When panels, to which water repellent has been applied, are exposed in accordance with 4.5.9 to a temperature of -65°F (-54°C) for 1 hour, there shall be no marked decrease in visibility when the panel is at -65°F (-54°C) and upon return to room temperature.

3.13 High temperature visibility:

When a panel, to which water repellent has been applied, is exposed in accordance with 4.5.10 to a temperature of 200°F (93°C) for 1 hour, there shall be no marked decrease in visibility when the panel is at 200°F (93°C) and upon return to room temperature.

3.14 Compatibility:

When the water repellent film is applied in accordance with 4.5.11 to coated and non-coated metals, it shall cause no corrosion of the metal, and no softening or discoloration of the coatings. The water repellent shall not cause corrosion of plated or unplated ferrous alloys and standard non-ferrous alloy parts such as fittings and attaching hardware.

3.15 Effect on acrylic plastics:

Acrylic plastic panels coated with water repellent shall show no evidence of crazing when tested as specified in 4.5.12.

3.16 Storage stability:

The packaging of the water repellent shall not show evidence of deterioration when the water repellent is stored for 1 year as specified in 4.5.13. The stored water repellent shall meet all the other requirements of this specification.

3.17 Workmanship:

The water repellent shall, by visual observation, be free from foreign matter (soil, dust, or grease) which impart color or otherwise reduce its effectiveness (see 4.4.1).

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for inspection:

Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of 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.

4.2 Compliance:

Determination of compliance with provisions of this specification shall include the following;

- a. Qualification inspection (see 4.2.1).
- b. Quality conformance inspection (see 4.2.2).

4.2.1 Qualification inspection: The qualification inspection performed by the qualification laboratory shall consist of a review for approval of the submitted manufacturer's report, and subjecting the qualification sample (4.3.1) to examination and testing for all the requirements of this specification except the control test which will only be run when necessary to assure that sample conforms to prescribed requirements.

4.2.1.1 Service tests: The service tests performed by a Naval establishment selected by the activity responsible for qualification shall consist of field evaluation of service test sample (4.3.1.1) under service condition, including conditions of rain, on aircraft selected at random to determine suitability of the product for Military use. The control formula product specified in 4.5.6.2 shall be used as a criterion of effectiveness in these tests.

4.2.1.2 Requalification: Items requiring requalification (see 3.1.1) shall be subjected to examination and tests, as determined by the responsible representative of the procuring activity, whenever the conditions defined in paragraph 3.1.1 occur.

4.2.1.3 Retention of qualification: The retention of qualification of products approved for listing in the Qualified Products List (QPL) shall be maintained by periodic verification to determine compliance of qualified water repellent with the requirements of this specification. Periodic verification may be made by certification unless otherwise specified by the activity responsible for Qualified Products List and shall be at intervals of no more than 2 years.

4.2.2 Quality conformance (lot by lot inspection): The quality conformance inspection shall include examining and testing the quality conformance samples as follows:

- a. Visual examination (4.4.1).
- b. Examination of filled containers (4.4.2).
- c. Application of film (4.5.2).
- d. Abrasion and staining (4.5.3).
- e. Visibility (4.5.4).
- f. Effect on acrylic plastics (4.5.12).