

A-A-52443(AT)  
March 24, 1993  
SUPERSEDING  
MIL-L-3921A(AT)  
5 January 1971

COMMERCIAL ITEM DESCRIPTION

LUBRICANT, MOLD, TIRE, SILICONE  
BASE EMULSION (METRIC)

The General Services Administration has authorized the use of this commercial item description (CID) as a replacement for MIL-L-3921A(AT) which is canceled.

1.0 Abstract. This CID covers one type of silicone-base tire-mold lubricant furnished as a concentrated emulsion for further dilution with 100 or more parts of water. It is furnished in metal containers (with metal screw-top caps) of various sizes (see 2.8). The solution is used for spraying (or otherwise coating) tire molds, recapping or retread molds, tube plates, and the like. When applied, the solution will form a thin, inert film to prevent adhesion of "rubber stocks" and will assure a good surface finish of the cured compound.

2.0 Salient characteristics.

2.1 Materials. The materials used in the manufacture of the tire mold lubricant shall conform to the requirements specified herein. Materials not specifically covered shall be of first commercial quality. The use of recovered materials is acceptable providing that all requirements of this CID are met (see 5.7).

2.1.1 Composition. Tire mold lubricant shall consist of silicone liquid (dimethyl polysiloxane) of 200 to 500 millimeters per second ( $\text{mm}^2/\text{s}$ ) viscosity at 25 degrees Celsius ( $^{\circ}\text{C}$ ) with such emulsifying, inhibiting, and other agents as are necessary to assure satisfaction of the requirements of this CID and satisfactory performance of the lubricant in intended use. The silicone content of the lubricant shall be not less than 34.0 percent by volume.

**Beneficial comments, recommendations, additions, deletions clarifications, etc. and any other data which may improve this document should be sent by letter to: U.S. Army Tank-Automotive Command, ATTN: AMSTA-GDS, Warren, MI 48397-5000.**

AMSC N/A

FSC 2640

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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2.2 Color. Color of the tire mold lubricant shall, unless otherwise specified, be the "milk white" characteristic of water emulsions made from white or colorless ingredients. The color of the lubricant shall not change objectionably at any temperature below 177°C.

2.3 Stability. Undiluted lubricant shall show no creaming within 30 days storage and no phase separation within one year storage. Any creaming after 30 days storage shall redispurse readily by gently shaking or stirring the lubricant. Lubricant diluted to a 70 to 1 ratio with relatively "soft" water shall show no more than slight creaming within 72 hours and no phase separation (oil separation) within two weeks. Lubricant diluted to a 70 to 1 ratio with relatively "hard" water shall show no phase separation within 24 hours and no more than a trace of creaming. When lubricant is diluted with either soft or hard water, creaming shall redispurse readily and gentle shaking or stirring shall restore a smooth homogenous lubricant. For purposes of lubricant dilution, water designated as relatively soft shall contain less than 50 parts per million (ppm) of solids. Water designated as relatively hard shall contain approximately 200 ppm of solids.

2.4 Temperature effects. Undiluted lubricant in sealed containers when subjected to low and high temperatures shall show no evidence of discoloration oil separation, creaming in excess of that permitted under 2.4, or other changes in consistency or appearance after being subjected to the following thermal effects, or equivalent procedure:

a. For low temperature. Subject a 50 milliliter (ml) sample of undiluted lubricant in a sealed container to five thermal cycles. Each cycle shall consist of exposing the sample to a low temperature of minus 40°C (minimum) for at least one hour and gradually warming the sample until it reaches a stabilized temperature at  $25 \pm 4^\circ\text{C}$ .

b. For high temperature. Subject a 50 ml sample of undiluted lubricant in a sealed container to a high temperature of  $65.5 \pm 3^\circ\text{C}$  for at least 24 hours. Allow the sample to gradually cool in still air until the sample stabilizes at  $25 \pm 4^\circ\text{C}$ .

2.5 Alkalinity. The alkalinity of the undiluted lubricant shall be between 7.5 and 9.5 ph (potential hydrogen content) at room temperature and at 93.5°C. This shall be determined by subjecting the sample used in 2.5b (high temperature) to appropriate chemical tests for ph content.

2.6 Odor. When diluted for mold application, the lubricant shall have no objectionable odor when applied to a hot mold.

2.7 Inertness. The tire mold lubricant, diluted or undiluted, shall not affect, or be affected by, the metal containers and mixing or spraying equipment. The lubricant shall show no carbonizing build-up, corrosion, or other unfavorable affect on smooth aluminum, ferrous alloy molds, or compounded rubber stocks when sprayed, brushed, or swabbed onto mold surfaces at any temperature below 177°C (see 5.4 and 5.5).

2.8 Containers. The tire mold lubricant shall be furnished in metal containers with metal screw-caps. The containers shall be of .5 liter, 1 liter, or 5 liter capacity or 1 pint, 1 quart, or 1 gallon capacity as specified in the acquisition document (see 5.2).

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2.8.1 Leakage. Cans shall be subjected to an internal air pressure of 3 pounds per square inch gage in accordance with Method 5009 of Fed. Std. No. 101. Any loss of gage pressure, over a 30-minute period, shall be cause for rejection. When a water-soap solution or immersion is used, evidence of air leakage indicated by soap bubbles increasing in size or being blown away by escaping air, or evidence of a steady stream or a recurring succession of bubbles from any surface shall be cause for rejection. Rejected cans may have the affected area(s) repaired by a method or process equivalent to that used in the original manufacture and retested.

2.8.1.1. Closures. Cans furnished with closures shall be filled with a penetrating oil having a viscosity of 20 and closure secured. The filled can shall be suspended in an inverted position for 4 hours at a temperature of 120°F. Alternatively, the closures may be tested by substitution of the product being packaged for the oil and following the same procedure.

2.9 Instructions for use. The supplier shall furnish with each individual container, an approved label properly affixed, or appropriate printed instructions for the dilution and application of the lubricant and any precautions to assure proper handling and use.

2.10 Identification markings. Identification markings shall be placed on the outside of the lubricant container and shall be permanent and legible and shall include as a minimum, the manufacturer's CAGE code, the contract number, the part identification number (PIN) (see 5.3), and the national stock number (NSN). In addition, the container shall be labeled or marked "shake or stir well before using".

2.11 Workmanship. Workmanship shall be such as to produce a quality product.

### 3.0 Quality assurance provisions.

3.1 Responsibility for inspection. The contractor is responsible for the performance of all inspections (examinations and tests).

3.2 Contractor certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this commercial item description and that the product conforms to the producer's own drawings, specifications, standards, and quality assurance practices. Items with known defects shall not be submitted for Government acceptance. The Government reserves the right to require proof of such conformance prior to the first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

4.0 Preservation, packaging, packing, labeling, and marking. Preservation, packaging, packing, labeling, and marking for the desired level for the Lubricant shall be as specified in the contract (see 5.2).

### 5.0 Notes .

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

#### 5.1 Addresses for obtaining copies of referenced documents.

5.1.1 Government documents. FED-STD-101 "Test Procedures for Packaging Materials" is available from the Navy Publications and Printing Service Office, Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5034.

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- 5.2 Ordering data. Acquisition documents must specify the following.
- Title, number, and date of this commercial item description.
  - Issue of DODISS to be cited in the solicitation.
  - Size (capacity) of container and PIN number (see 2.8 and 5.3).
  - Selection of applicable level and packaging requirements (see 4.0).
- 5.3 Part or identification number (PIN).

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	Container size .5 L (.5 liter) 1 L (1 liter) 5 L (5 liter) PT (1 pint) QT (1 quart) GAL (1 gallon)
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5.4 Effects of water hardness. Mineral content of water used in making the highly dilute lubricant for spraying (or other application) may influence creaming tendency, but deserves consideration from the more important effect on leaving deposits on polished surfaces to which it may be applied as a "release" agent (see 2.8). A few minute droplets, often called "fish-eyes", which occasionally leave a hard-water lubricant, if easy to redisperse, are not to be classified as "phase separation".

5.5 Corrosive action. Experience has shown that the amount of corrosion inhibiting agent adequate to protect containers and equipment against any corrosive action by the undiluted tire mold lubricant (see 2.8) may at times be inadequate for completely affective protection of equipment from diluted lubricants made with water from some local sources. In this case, the addition of proper amounts of sodium nitrite or other inhibitor has proved desirable.

5.6 Cross-reference data. Silicone based tire mold lubricants conforming to this commercial item description are interchangeable/substitutatable with lubricants conforming to MIL-L-3921A(AT).

5.7 Regulatory requirements. The offeror/contractor is encouraged to use recovered materials in accordance with Public Law 94-580 to the maximum extent practicable.

MILITARY INTERESTS:

 CIVIL AGENCY COORDINATING ACTIVITIES:  
 GSA-FSS
Custodian:

Army - AT

PREPARING ACTIVITY:

Army - AT

(Project 2640-0204)