

INCH-POUND

A-A-59719

April 14, 2003

COMMERCIAL ITEM DESCRIPTION

100% POLYURETHANE SPRAYED ON LININGS

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

1. **SCOPE.** This commercial item description (CID) covers a two-component polyurethane lining used in protecting profiled, cleaned and primed (when required) wood, concrete, rigid plastic, fiberglass, elastomeric plastic and metal substrates. The polyurethane coating is intended for protection against abrasion, stone pecking, impact, corrosion, vibration and sound emission.

2. SALIENT CHARACTERISTICS.

2.1 **Materials.** Materials shall be in accordance with the manufacturer's material specifications for sprayable polyurethane lining. The use of recovered material made in compliance with regulatory requirements is acceptable providing that all requirements of this CID are met (see 4).

2.1.1 **Materials deterioration, prevention and control.** The material shall be a sprayable polyurethane, consisting of two liquid components, both of which are 100 percent (%) solids and combine to form a 100% solids lining.

2.1.2 **Polyurethane.** The two liquid components, are 100% solids that cure through an exothermic reaction to form an elastomeric sprayed on polyurethane lining which shall meet the zero volatile organic compound requirement and be compatible with the chemical agent resistant coating (CARC) primers and top coats per Army Drawing 12369000 (see 6.1.6 and 2.1.2.5).

2.1.2.1 **Resin component.** The material shall be polyether-based resin blend.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent by letter to: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/ESA, 6501 E. 11 Mile Road, Warren, MI 48397-5000.

AMSC N/A

FSC 8030

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2.1.2.1.1 Characteristics of the resin component. The characteristics of the polyether-based resin component shall be established by the following:

- a. 100% solids, liquid resin
- b. 8.5 pounds (lb), weight per gallon (gal) (1.02 kilograms (kg) per liter (L))
- c. 750 centipoise @ 77 degrees Fahrenheit (°F), (750 millipascal (mPa) @ 25 degrees Celsius (°C))
- d. Polyether polyol-based

2.1.2.2 Isocyanate component. The material shall be 4,4 diphenylmethane diisocyanate-based.

2.1.2.2.1 Characteristics of the isocyanate component. The characteristics of the diphenylmethane diisocyanate-based isocyanate component shall be established by the following:

- a. 100% solids, liquid isocyanate
- b. 10 lb weight per gal (1.20 kg/L)
- c. 195 centipoise @ 77 °F, (195 mPa @ 25 °C)
- d. 4,4-diphenylmethane diisocyanate

2.1.2.3 Characteristics of the mixed components. The characteristics of the mixed components of 2.1.2.1.1 and 2.1.2.2.1 (tolerance ranges) shall be established by the following (see 6.1.3):

a.	Hardness, Shore A	90 - 95	ASTM D2240
b.	Tensile Strength, pounds per square inch (psi)	2700 - 2900	ASTM D412
c.	Elongation (%)	376 - 400	ASTM D412
d.	Flexural Modulus (psi)	5600 - 6400	ASTM D790
e.	Tabor Abrasion, (mg) of loss/1000 cycles CS17 wheel	10 - 15	ASTM D1044
f.	Tear Resistance, Die C, pound feet per inch (lb-ft/in.)	140 - 150	ASTM D624
g.	Ross Flex, % crack growth /50 000 cycles	0	ASTM D1052
h.	Water Absorption, %	<1.6	ASTM D570
i.	20-25 second tack free time at 77 °F (25 °C)		
j.	Minimum dry film thickness of 1/16 inch (in.) (0.1587 centimeter (cm))		
k.	Maximum dry film thickness is unlimited		
l.	Mixed cured components classified as inert, no danger to the environment		

2.1.2.4 Optional additives. The sprayed on polyurethane shall allow for the addition of sand, garnet, quartz, slags, rubber granules and other aggregates for non-skid performance broadcast throughout the profile of the lining or limited to the top surface.

2.1.2.5 Color. The sprayed on polyurethane lining shall be able to be pigmented to any color requested as defined by FED-STD-595 (see 2.1.2 and 6.1.2).

2.1.2.6 Flame resistance. The sprayed on polyurethane lining shall pass the Federal Motor Vehicle Safety Standards and Regulations (FMVSSR), Standard No. 302, motor vehicle burn test with self-extinguishing (SE) rating (see 6.1.7).

2.2 Configuration. The coating composition shall be applied by spraying and be compatible with CARC primers and top coats per Army Drawing 12369000 (see 6.1.6).

2.3 Performance. Unless otherwise specified (see 6.3), the performance of the sprayed on polyurethane lining shall be verified by the following.

2.3.1 Adhesion. The pull-off adhesion after ultra violet (UV) exposure, shall be greater than 4079 psi (286.5 kg per square centimeter (cm²)) (see ASTM D4541). UV exposure shall not be detrimental to the basic coating material. Cross-cut adhesion shall have a rating of 5 over steel and aluminum as measured in accordance with ASTM D3359, Methods A and B.

2.3.2 Flexibility. The flexural modulus shall meet 5600 - 6400 psi (393.7 - 450 kg/cm²) when tested in accordance with ASTM D790. The elongation shall meet 376 - 400% when tested in accordance with ASTM D412.

2.3.3 GM9540P Accelerated Corrosion Testing. Testing shall be conducted for a period of more than 40 cycles, with 8 cycles being equivalent to one year of "real world" exposure in this environment. After 40 cycles, the coating shall have a corrosion rating of 10 when applied to steel and a corrosion rating of 10 when applied to aluminum (see 6.1.5).

2.3.4 Appearance. The cured coating shall have uniform texture, free of sags, pits, holidays or blisters.

2.3.5 Operational temperature range. The operational temperature range required shall be -40 to +180 °F (-40 to +82.2 °C) for continual exposure and shall exhibit the typical physical properties (see 2.1.2.3). An operational range of -55 to +220 °F (-48.3 to +104.4 °C) for short, spike, intermittent exposures of 60 seconds shall be acceptable.

2.3.6 Dimensional stability (maximum shrinkage). The maximum shrinkage shall be < 1% in total.

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2.3.7 Chip resistance. Using the SAE J400 test method, the coating shall not evidence any penetration to aluminum or steel substrates (see 6.1.4).

2.3.8 Chemical resistance. The coating composition of sprayed polyurethane shall meet the following chemical resistance levels with questionable descriptions of excellent and moderate to meet Contracting Officer's approval:

a.	Acetic Acid to 10%	Excellent
b.	Ammonia to 5%	Excellent
c.	Caustic Soda Lye to 50%	Excellent
d.	Formic Acid to 5%	Excellent
e.	Hydrogen Peroxide to 10%	Excellent
f.	Nitric Acid to 10%	Excellent
g.	Oils	Excellent
h.	Potash Lye to 20%	Excellent
i.	Solvents	Moderate
j.	Sulfuric Acid to 25%	Excellent
k.	Tannic Acid to 20%	Excellent

2.3.9 Toxicity. The sprayed on polyurethane lining shall contain no volatile organic compounds or chlorinated solvents or solvents of any type. The sprayed on polyurethane lining shall have no adverse effects on the health of personnel when used for the intended purpose (see 6.2).

2.4 Identification marking. Identification markings shall be in the form of a label affixed to the unit container and shall be legible and shall include the manufacturer's name, manufacturer's address, manufacturer's lot number, manufacturer's part number, contents verification and safety warning.

2.5 Unit container sizes. The sprayed on polyurethane two primary components shall be available in the following unit container sizes:

- a. 5-gal (20 L) hedpacks, net weight of 40 lbs resin (18.2 kg) or net weight of 45 lbs isocyanate (20.5 L).
- b. 55-gal (208 L) drums, net weight of 450 lbs resin (204.5 kg) or net weight of 500 lbs isocyanate (227.3 kg).

3. **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) (see 6.1.1).

4. 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 practice, and be the same product offered for sale in the commercial market place. The Government reserves the right to require proof of such conformance (see 2.3 and 6.3).

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

5. PACKAGING. Preservation, packing, and marking shall be specified in the contract or order (see 6.3).

6. NOTES.

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

6.1 Source of documents.

6.1.1 Code of Federal Regulations (CFR) is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 or website: www.access.gpo.gov.

6.1.2 FED-STD-595, "Colors Used in Government Procurement" is available from Defense Automation and Production Service, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094 or website: <http://assist2.daps.dla.mil/quicksearch>

6.1.3 ASTM D412, "Standards Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension", (DoD adopted); ASTM D570, "Standard Test Method for Water Absorption of Plastics", (DoD adopted); ASTM D624, "Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers", (DoD adopted); ASTM D790, "Standard Test Method for Flexural Properties of Unreinforced and Reinforced and Electrical Insulating Materials", (DoD adopted); ASTM D1044, "Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion", (DoD adopted); ASTM D1052, "Standard Test Method for Measuring Rubber Deterioration-Cut Growth Using Ross Flexing Apparatus", (DoD adopted); ASTM D2240, "Standard Test Method for Rubber Property-Durometer Hardness", (DoD adopted); ASTM D3359, "Standard Test Methods for Measuring Adhesion by Tape Test", (DoD adopted); ASTM D4541, "Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers", (DoD adopted) are available from ASTM International, PO Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 15096-2959 or website: www.astm.org

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6.1.4 SAE J400, “Test for Chip Resistance of Surface Coat”, is available from the Society of Automotive Engineers Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001 or website: www.sae.org

6.1.5 GM9540P, “Acceleration Corrosion Test”, is available from General Motors Corporation c/o Global Engineering Documents, 15 Inverness Way East, Inglewood, CO 80112.

6.1.6 Army Drawing 12369000, “Painting System Index” is available from the Contracting Officer, U.S. Army Tank-automotive and Armaments Command, 6501 E. 11 Mile Road, Warren, MI 48397-5000.

6.1.7 Standard No. 302, “Flammability of Interior Materials” is available from the Federal Motor Vehicle Safety Standards and Regulations (FMVSSR), U.S. Department of Transportation, 400 7th Street SW, Room 6111, mail code: NSA-30, Washington, DC 20590 or website: <http://www.nhtsa.dot.gov/cars/rules/import/FMVSS/>

6.2 Toxicity. If a Material Safety Data Sheet (MSDS) is required by law, it is to be shipped with the container (see 2.3.9). Contracting officers will identify those activities requiring copies of completed MSDSs prepared in accordance with FED-STD-313. The pertinent Government mailing addresses for submission of data are listed in FED-STD-313; and 29 CFR 1910.1200 requires that the MSDS for each hazardous chemical used in an operation must be readily available to personnel using the material. Contracting officers will identify the activities requiring copies of the MSDS.

6.3 Ordering data. The contract or order shall specify the following:

- a. CID document number and revision.
- b. Product conformance provisions (see 2.3 and 4).
- c. Packing requirements (see 5).

6.4 Key words.

Abrasion protection
Corrosion protection
Corrosion resistance
Impact protection
Chip resistant
Stone pecking
Sound emission
Vibration absorption

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MILITARY INTERESTS:

Custodians:

Army - AT
Navy - SH
Air Force - 99

Review Activities:

Army - MR
Navy - AS, CG
Air Force - 03, 84

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

Preparing Activity:

Army - AT

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