METRIC
A-A-59745
October 9, 2002

COMMERCIAL ITEM DESCRIPTION

ZINC-RICH COATINGS

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 coatings used in the corrosion protection of steel structures. These coatings use zinc-rich particles that make up part of the pigment content to provide sacrificial cathodic protection to steel substrates.

2. SALIENT CHARACTERISTICS.

2.1 Materials. Unless specified herein, materials shall be in accordance with the manufacturer's material specifications. The use of recovered material made in compliance with regulatory requirements is acceptable providing that all requirements of this CID are met (see 4.1).

2.1.1 Zinc particles. The minimum (min) percentage (%) of zinc particles by dry film thickness (DFT) weight shall be 90%.

2.2. Configuration. The coating composition, where zinc particles make up part of the pigment content of the zinc-rich paints, shall be capable of being applied by spraying or brushing and be compatible with CARC primers and topcoats per Army Drawing 12369000 (see 6.1.4 and 6.2).

2.3. Performance. The zinc-rich paints shall meet the following tests requirements and sample preconditioning requirements of table I:

a. Accelerated corrosion (cyclic)
b. Adhesion pull-off
c. Adhesion cross-cut
d. Mandrel bend

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 8010

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

2.3.1 Accelerated corrosion test. The General Motors GM9540P "Accelerated Corrosion Test" (see 6.1.6) demonstrates the procedures to be used in cyclic corrosion testing for establishing acceptable levels of rust, blistering and cutback. NOTE: For statistical analysis, a min of three (3) samples per performance test requirements shall be evaluated (min of 15 samples total).

2.3.1.1 Sample preparation. Sample preparation shall be performed in accordance with (IAW) the manufacturer's recommendations and/or the system requirements by an operator experienced in the application of zinc-rich paints and CARC coatings. The following application and recommended curing samples will be preconditioned prior to testing. Table I shows the precondition methods for each performance requirement listed under section 2.3.

TABLE I. Sample preconditioning requirements.

Performance requirements	Precondition method 1	Precondition method 2
Accelerated corrosion test	Scribe (IAW ASTM D1645)	Chipped (IAW SAE J400)
Adhesion pull-off	N/A	
Adhesion cross-cut	N/A	
Mandrel bend	N/A	

Note: Only one precondition method is to be performed per sample.

2.3.1.2 Rust. The zinc-rich paint test sample shall show no more than a maximum (max) presence of corrosion (red rust) over less than 5% of the surface area (stage 2) after 120 cycles of corrosion testing. The inspection rust rating shall be 2 as measured in accordance with the TACOM "Corrosion Rating System" (see 6.1.5). No sample shall exhibit any stage 3 or 4 corrosion during or after 120 cycles of testing.

2.3.1.3 Blistering. The zinc-rich paint test sample shall have no more than a max composite blister rating of 5.3 after 120 cycles as tested when evaluated in accordance with ASTM D714 and converted using table II. Table II defines the size and density of the blisters.

TABLE II. Composite blister index.

Size	Density			
	Few (F)	Medium (M)	Medium Dense (MD)	Dense (D)
10	10.0	10.0	10.0	10.0
9	9.22	8.75	8.00	4.80
8	8.44	7.50	6.00	3.50
7	7.67	6.25	4.60	1.60
6	6.89	5.00	3.70	1.10
5	6.11	4.40	3.00	0.90
4	5.33	3.80	2.50	0.75
3	4.56	3.20	2.10	0.55
2	3.78	2.60	1.65	0.35

TABLE II. Composite blister index - Continued.

Size	Density			
	Few (F)	Medium (M)	Medium Dense (MD)	Dense (D)
1	3.00	2.00	1.00	0.00
0	0.00	0.00	0.00	0.00

NOTE: Number (NO.) 10 size represents no blistering and NO. 8 size represents the smallest size blister easily seen by the unaided eye.

2.3.1.4 Cutback test. The zinc-rich paint test sample shall have a max scribed cutback of no greater than 3.7 millimeters (mm) (0.15 inch (in.)) and show no signs of underfilm corrosion initiating from the intentional scribe prior to the completion of the 120 cycles.

2.3.2 Adhesion pull-off test. The zinc-rich paint test sample shall have a min acceptable adhesion strength of 27.1 kilograms per square centimeter (kg/cm^2) (385 pounds per square inch (psi)) with failure to the substrate allowed after 120 cycles of corrosion testing and as measured in accordance with ASTM D4541.

2.3.3 Adhesion cross-cut test. The zinc-rich paint test sample shall have a min acceptable cross-cut adhesion strength rating of 1.65 after the completion of 120 cycles of corrosion testing and as measured in accordance with ASTM D3359. Use method A (X-cut) for systems having a total system thickness greater than 0.127 mm (0.005 in.) or method B (cross-hatch) for systems having a total system thickness less than 0.127 mm.

2.3.4 Mandrel bend test. The zinc-rich paint test sample shall have a max acceptable crack length of 140 mm (5.5 in.) after the 120 cycles of accelerated corrosion testing and as measured in accordance with ASTM D522, testing over a conical mandrel.

2.4 Identification and markings. Identification and markings shall be permanent, legible and shall include, as a minimum, the Commercial and Government Entity (CAGE) code, contract number and part number.

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 CID, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The Government reserves the right to require proof of such conformance (see 6.2).

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 as specified in the contract or order (see 6.2).

6. NOTES.

6.1 Source of documents.

6.1.1 The Code of Federal Regulations (CFR) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

6.1.2 ASTM International ASTM D522, "Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings"; ASTM D714, "Standard Test Method for Evaluating Degree of Blistering of Paints"; ASTM D3359, "Standard Test Methods for Measuring Adhesion by Tape Test" and ASTM D4541, "Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers" are available from ASTM International, PO Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or website: www.astm.org

6.1.3 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

6.1.4 Army Drawing 12369000, "Paint Systems Index" is available from the Contracting Officer, U.S. Army Tank-automotive and Armaments Command, 6501 E. 11 Mile Road, Warren, MI 48397-5000.

6.1.5 "TACOM Corrosion Rating System" is available from the Contracting Officer, U.S. Army Tank-automotive and Armaments Command, 6501 E. 11 Mile Road, Warren, MI 48397-5000.

6.1.6 GM9540P,"Accelerated Corrosion Test" is available from General Motors Corporation, c/o Global Engineering Documents, 15 Inverness Way East, Inglewood, CO 80112.

6.2 Ordering data. The contract or order should specify the following:

a. CID document number and revision.
b. Color of paint if required (see 2.2).
c. Product conformance provisions (see 4).
d. Packaging requirements (see 5).

6.3 Key words.

Corrosion protection
Corrosion resistance
Paints
Pigments

MILITARY INTERESTS:

Custodians:
Army - AT
Navy - SH

Review Activities:
Army - MI, MR
Navy - AS, CG

CIVIL AGENCY COORDINATING ACTIVITY:
GSA-FSS

Preparing Activity:
Army - AT

(Project 8010-0178)