Designation: F 1136 – 88 (Reapproved 1998)ε1

Standard Specification for Chromium/Zinc Corrosion Protective Coatings for Fasteners[1]

This standard is issued under the fixed designation F 1136; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

ε[1] NOTE—Section 2 was editorially updated in October 1998.

1. Scope

1.1 This specification covers the basic requirements for three grades of chromium/zinc inorganic coatings for threaded fasteners.

1.2 These coatings are applied by conventional dip-spin or dip-drain methods.

1.3 The coating process does not induce hydrogen embrittlement providing that the fasteners have not been pretreated with an acid.

2. Referenced Documents

2.1 *ASTM Standards:*

B 117 Test Method of Salt Spray (Fog) Testing[2]

D 1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications[3]

D 2247 Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity[4]

F 1470 Guide for Fastener Sampling for Specified Mechanical Properties and Performance Inspection[5]

3. Classification

3.1 These coatings are classified into three grades according to the requirements in Table 1.

4. Ordering Information

4.1 Orders for material under this specification shall include the following information:

4.1.1 Quantity of parts.

4.1.2 Grade of coating.

4.1.3 Any additions to the specification as agreed upon by the purchaser and the supplier.

TABLE 1 Classification of Coatings

Grade No.	Chromium/Zinc Coating Weight, g/m^2	Supplemental Coating	Thickness, µm Average	Salt Spray, h
1	14.0–17.2	No	5.0–6.0	144
2	20.4–23.6	No	6.0–13.0	240
3	20.4–27.0	clear sealer	7.0–13.0	400

5. Requirements

5.1 *Appearance*—The coating shall have a uniform appearance free from tears and other discontinuities which may affect the appearance or performance, or both, of the coating.

5.2 *Adhesion*—The coating shall show no evidence of blistering or other changes in appearance after exposure to humidity testing for a minimum of 96 h. In addition there shall be no more than 3.0 mm peel-back from the intersection of scribed lines that are taped tested immediately following a 10 min recovery period from the humidity test and there shall be no other peeling under tape (see 6.3 and 6.4).

5.3 *Corrosion*—These coatings shall be capable of withstanding neutral salt spray testing for the minimum h specified in Table 1. Unless otherwise defined, acceptable corrosion resistance shall be where there is no base metal corrosion on significant surfaces.

5.3.1 Significant surfaces are defined as the exposed surfaces of the fastener when it is installed in a normal manner. Surfaces on which a controlled deposit ordinarily cannot be obtained, such as holes, recesses, bases of angles, and similar areas are normally exempt from the requirements of significant surfaces.

5.4 *Blisters*—There shall be no signs of blisters after testing in accordance with 6.1 and 6.3.

5.5 *Thread Fit*—The coating shall not have an adverse affect on normal installation and removal practices as determined by the proper GO thread gauge. Excessive coating on the threaded surface may be acceptable only when the fastener passes the torque test outlined in 7.2.3.

5.5.1 The thickness of the coating is limited by the basic thread size. Where greater thickness is necessary the internal threads may be produced oversized (before coating) providing

[1] This specification is under the jurisdiction of ASTM Committee F-16 on Fasteners and is the direct responsibility of Subcommittee F16.03 on Metal Coatings on Threaded Fasteners.

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[2] *Annual Book of ASTM Standards*, Vol 03.02.

[3] *Annual Book of ASTM Standards*, Vol 10.01.

[4] *Annual Book of ASTM Standards*, Vol 06.01.

[5] *Annual Book of ASTM Standards*, Vol 14.02.