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Standard Specification for Poly(Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence¹

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1. Scope

1.1 This specification covers ~~poly(vinyl chloride)PVC~~ and other conforming organic polymer-coated steel tension wire for use with chain link fence. ~~Poly(vinyl chloride)PVC~~ and other organic polymer coatings hereinafter will be designated as polymer coating.

1.2 Tension wire, produced from three classes of wire coatings, is covered as follows:

1.2.1 *Class 1*, consisting of a polymer coating extruded over zinc-coated or aluminum-coated or zinc-5 % aluminum-mischmetal alloy-coated steel wire;

1.2.2 *Class 2a*, consisting of a polymer coating extruded and adhered to zinc-coated or aluminum-coated or zinc-5 % aluminum-mischmetal alloy-coated steel wire; and

1.2.3 *Class 2b*, consisting of a polymer coating fused and adhered to zinc-coated or aluminum-coated or zinc-5 % aluminum-mischmetal alloy-coated steel wire.

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards*:²

A 90/A 90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products

A 428/A 428M Test Method for Weight [Mass] of Coating on Aluminum-Coated Iron or Steel Articles

~~D 1499 Practice for Operating Light and Water Exposure Apparatus (Carbon-Arc Type) for Exposure of Plastics~~ Practice for Filtered Open-Flame Carbon-Arc Exposures of Plastics

F 552 Terminology Relating to Chain Link Fencing ASTM F1664-08

F 934 Specification for ~~Standard~~ Colors for Polymer-Coated Chain Link Fence Materials 6ac54aaf/astm-f1664-08

~~G23 Practice for Operating Light Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials~~ 152 Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

~~G26 Practice for Operating Light Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials~~⁵ 153 Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

3. Terminology

3.1 ~~Definitions~~ Definitions—~~For~~ For definitions of terms such as fabric (chain-link fence), tension wire, PVC, and polymer coating, see Terminology F 552.

4. Ordering Information

4.1 Orders for tension wire purchased in accordance with this specification shall include the following information:

4.1.1 Quantity (expressed in number of coils);

4.1.2 Class of coating to be applied to metallic-coated steel wire;

4.1.3 Color of coating;

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards*, Vol 01.06, volume information, refer to the standard's Document Summary page on the ASTM website.

4.1.4 Selection of type of metallic coating on the steel wire substrate, which shall be the choice of the producer unless otherwise specified;

4.1.5 Core diameter of wire or minimum wire breaking strength, or both;

4.1.6 Packaging requirements; and

4.1.7 Certification, if required.

4.2 Any tests required other than those covered specifically in this specification must be stipulated by the purchaser in the order or contract.

NOTE 1—A typical ordering description is as follows: 20 coils polymer-coated steel tension wire, Class 2b coating, olive green color, 7-gage (0.177-in. [4.50 mm]) core wire, in 1000-ft (305-m) coils, certified to ASTM F1664, this specification.

5. Materials

5.1 *Base Metal*—The base metal shall be steel of such quality and purity that, when drawn to the size of wire specified and coated with an organic polymer, the finished wire shall be of uniform quality and have properties and characteristics as prescribed in this specification.

5.2 Wire used for the manufacture of tension wire shall meet the requirements of this specification. The polymer coating shall be formulated and produced properly to conform to the requirements of this specification.

6. Manufacture

6.1 Class 1 polymer-coated wire shall have the coating extruded onto wire that conforms to the requirements as given in Table 1.

6.2 Class 2a polymer-coated wire shall have the coating extruded and adhered to wire that conforms to the requirements as given in Table 1.

6.3 Class 2b polymer-coated wire shall have the coating fused and adhered to wire that conforms to the requirements as given in Table 1.

7. Size of Wire

7.1 The permissible variation from the specified diameter of the core wire, 0.177 in. (4.50 mm) 7 gage or 0.148 in. (3.76 mm) 9 gage, shall be ± 0.005 in. (0.13 mm).

8. Breaking Strength

8.1 Tension wire shall meet the minimum breaking strength indicated in Table 2 when tested in accordance with Test Methods and Definitions A 370.

8.2 Specimens to establish conformance with this requirement shall comprise individual pieces from a coil of the tension wire. The specimens shall be of sufficient length so as to be gripped firmly in the testing machine. The polymer coating may be removed from the sample by chemical or mechanical means before testing.

9. Weight of Metallic Coatings

9.1 The weight of the metallic coating shall conform to Table 1.

9.2 The weight of the coating shall be determined on an individual piece of wire over 12 in. (305 mm).

9.3 ~~The weight of the zinc or zinc-5% aluminum mischmetal alloy coating shall be determined by the method contained in Test Method A90/A90M after stripping the polymer coating as outlined in Section 10.~~

~~9.4 The weight of the aluminum coating shall be determined by the method contained in Test Method A428~~

~~9.3 The weight of the zinc or zinc-5% aluminum mischmetal alloy coating shall be determined by the method contained in Test Method A 90/A 90M after stripping the polymer coating as outlined in Section 10.~~

~~9.4 The weight of the aluminum coating shall be determined by the method contained in Test Method A 428/A 428M after stripping the polymer coating as outlined in Section 10.~~

10. Thickness of PVC Coating

10.1 The thickness of the coating shall be in accordance with Table 3.

10.2 The thickness of the coating shall be determined on an individual piece of wire. This specimen may be any length of wire over 12 in. (305 mm).

TABLE 1 Breaking Strength of Metallic-Coated Core Wire

Specified Diameter of Core Wire, in. (mm)	Minimum Breaking Strength, lbf (N)
0.177 (4.50)	1950 (8670)
0.148 (3.76)	1290 (5740)