Designation: A 1023/A 1023M – 02

Standard Specification for Stranded Carbon Steel Wire Ropes for General Purposes[1]

This standard is issued under the fixed designation A 1023/A 1023M; 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.

1. Scope

1.1 This specification covers the general requirements for the more common types of stranded steel wire ropes. Included in this specification are wire ropes in various grades and constructions from ¼ in. (6 mm) to 2⅜ in. (60 mm) manufactured from uncoated or metallic coated wire. Also included are cord products from 1⁄32 in. (0.8 mm) to ⅜ in. (10 mm) manufactured from metallic coated wire. For specific applications, additional or alternative requirements may apply.

1.2 The values stated in either inch-pounds or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

2. Referenced Documents

2.1 *ASTM Standards:*

A 931 Test Methods for Tension Testing of Wire Ropes and Strand[2]

A 1007 Specification for Carbon Steel Wire for Wire Rope[2]

2.2 *ISO Standards:*

ISO 2232 Round Drawn Wire for General-Purpose Non-alloy Steel Wire Ropes

ISO 3108 Steel Wire Ropes for General Purposes—Determination of Actual Breaking

3. Terminology

Description of Terms Specific to this Specification

3.1 *inserts, n*—fiber or solid polymer so positioned as to separate adjacent strands or wires in the same or overlying layers or to fill interstices of the rope.

3.2 *Lubrication*:

3.2.1 *impregnating compound, n*—material used in the manufacture of natural fiber cores, covers, or inserts for the purpose of providing protection against rotting and decay of the fiber material.

3.2.2 *preservation compound, n*—material, usually containing some form of blocking agent, applied during, after, or both during and after manufacture of the rope to fiber inserts, fillers, and coverings for the purpose of providing protection against corrosion.

3.2.3 *rope lubricant, n*—general term used to signify material applied during the manufacture of a strand, core, or rope for the purpose of reducing internal friction, providing protection against corrosion, or both.

3.3 *rope cores, n*—central element, usually of fiber or steel (but may be a combination of both), of a round rope around which are laid helically the strands of a stranded rope or the unit ropes of a cable-laid rope (Fig. 1).

3.3.1 *fiber core (FC), n*—an element made from either natural or synthetic fibers.

3.3.2 *solid polymer core, n*—a single element of solid polymer material that is either cylindrical or shaped (grooved). It may also include an element or elements of wire or fiber.

3.3.3 *steel core, n*—a stranded rope (IWRC), or a round strand (WSC) construction. The round strand or the stranded rope core or its outer strands, or both, may also be covered or filled with either fiber or solid polymer. Steel cores are normally made as a separate independent element, the exception being rope with a stranded rope core closed parallel with the outer strands.

3.4 *strand, n*—an element of rope normally consisting of an assembly of wires of appropriate shape and dimensions laid helically in one or more layers around a center. The center may consist of one round or shaped wire, of several round wires forming a built-up center, or of fiber or some other material. If multiple wires are used in a strand center, they may be counted as one wire.

3.4.1 *Cross-Section Shape*:

3.4.1.1 *compacted strand, n*—a strand that has been subjected to a compacting process such as drawing, rolling, or swaging (Fig. 2).

3.4.1.2 *round strand, n*—strand having a perpendicular cross-section that is approximately the shape of a circle (Fig. 3).

3.4.1.3 *triangular strand, n*—strand having a perpendicular cross-section that is approximately the shape of a triangle (formerly referred to as flattened strand) (Fig. 4).

(a) Style B—Solid center wire

[1] This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.03 on Steel Rod and Wire.

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[2] *Annual Book of ASTM Standards*, Vol 01.03.

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