Designation: G 56 – 82 (Reapproved 2000)ε1

Standard Test Method for Abrasiveness of Ink-Impregnated Fabric Printer Ribbons[1]

This standard is issued under the fixed designation G 56; 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—Editorial corrections were made throughout in May 2000.

1. Scope

1.1 This test method covers the determination of the abrasiveness of ink-impregnated fabric printer ribbons by means of a sliding wear test.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

G 40 Terminology Relating to Wear and Erosion

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *abrasive wear coefficient (for a ribbon)*— a measure of the ability of the ribbon to wear surfaces with which it comes in contact. The larger the value, the greater the ability to cause wear. The abrasive wear coefficient determined by this method is directly proportional to the volume of material removed from the steel sphere in the test.

3.2 For additional terms pertinent to this test method, see Terminology G 40.

4. Summary of Test Method

4.1 A ribbon specimen is wrapped around the cylindrical surface of a drum. A hardened steel sphere is pressed against the ribbon surface. While the drum rotates about its axis, the steel sphere is slowly moved in an axial direction across the surface of the ribbon (Note 1). After a specified amount of sliding has occurred, the test is stopped and the volume of material removed from the steel sphere is determined. This volume is then used to compute an abrasive wear coefficient for the ribbon specimen.

NOTE 1—These two motions ensure that the unused ribbon is continually supplied to the contact area of the wear specimen; however, the contact region usually contains a mixture of unused and used ribbon surface.

5. Significance and Use [2]

5.1 This test method differentiates between ribbons on the basis of their ability to cause wear on surfaces with which they come in contact.

6. Apparatus [3]

6.1 *Ribbon Support Surface*—The overall shape of this member is that of a cylindrical drum 48 ± 1 in. (1220± 25 mm) in diameter, concentric to within 0.0005 in. (0.013 mm) total run-out, and 8.25 + 0.25 – 0 in. (210 + 6 – 0 mm) wide (see Fig. 1). The support surface is the cylindrical surface. This surface shall be rigid, made of metal (Note 2), and have a slot no greater than 0.020 in. (0.5 mm) in it so that the ends of the ribbon may be fed through into the interior. The interior shall contain a mechanism to uniformly provide tension to the ribbon specimen. This member shall be able to rotate about its axis and provide a linear velocity at the surface of the ribbon of 321 ± 6 in./s (8150 ± 150 mm/s).

NOTE 2—2024 aluminum with a minimum thickness of 0.25 in. (6.35 mm) is adequate. The roughness of this surface should not exceed 20 µin. (0.5 µm), CLA.

6.2 *Wear Specimen Support*—This member shall be able to press a rigidly mounted 0.25-in. (6.35-mm) diameter spherical wear specimen against the ribbon surface and advance the specimen across the surface of the ribbon specimen in an axial direction at a rate of 0.001 ± 0.0001 in. (0.254 ± 0.025 mm) per drum revolution (see Fig. 2). The mounting shall be of such a construction that continual contact with the ribbon surface is maintained with a normal load of 0.22 lb (this corresponds to the dead-weight load produced by a 100-g mass) between the wear specimen and ribbon surface and sufficiently rigid so that no rotation occurs.

[1] This test method is under the jurisdiction of ASTM Committee G-2 on Erosion and Wear, and is the direct responsibility of Subcommittee G02.30 on Wear.

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[2] A discussion of the wear process and the influence of various parameters on the wear can be found in Bayer, R. G., "Wear by Paper and Ribbon" *Wear*, Vol 49, 1978, pp. 147–168 and Bayer, R. G.," Mechanism of Wear by Ribbon and Paper," *IBM Journal of Research and Development*, Vol 22, No. 6, November 1978, pp. 668–674

[3] An implementation of the apparatus required is discussed in" Testing Machine for the Evaluation of Wear by Paper," available from ASTM Headquarters as RR: G02-1000.