



Standard Test Method for Determining the Erasability of Inked Ribbons¹

This standard is issued under the fixed designation F362/F362M; 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.

^{e1} NOTE—Units information was editorially revised in December 2010.

1. Scope

1.1 This test method covers the determination of the erasability of inked ribbons.

1.2 Results are expressed in visual ranking order or in comparison to a control.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.4 *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:*²

D725 Method for Identification of Wire Side of Paper; Reinstated 1990 as D 5039 (Withdrawn 1979)³

F221 Terminology Relating to Carbon Paper and Inked Ribbon Products and Images Made Therefrom

F497 Practice for Use of the Electric and Electronic Typewriter as a Test Instrument

2.2 *TAPPI Standard:*

T 476 Abrasion Loss of Paper and Paperboard⁴

¹ This test method is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.02 on Inked Transfer Imaging Products.

Current edition approved Oct. 1, 2010. Published December 2010. Originally approved in 1972. Last previous edition approved in 2005 as F362 – 91 (2005). DOI: 10.1520/F0362_F0362M-91R10E01.

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* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from Technical Association of the Pulp and Paper Industry, Technological Park/Atlanta, PO Box 105113, Atlanta, GA 30348.

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms applicable to this test method, refer to Terminology **F221**.

4. Summary of Test Method

4.1 This test method subjects a printed pattern to a controlled abrasive action similar to erasing and provides a comparative measure of image removal.

5. Significance and Use

5.1 This test method is used to compare the relative erasability of similar ribbons having approximately the same amount (degree) of ink (inking) transfer capability. It is suitable for compiling rankings for comparative testing against a control ribbon for service evaluation and quality control (research).

6. Interferences

6.1 The degree of image removal can and will vary due to the differences and variations in paper, machines, inks, types of ink, and ribbon application.

6.2 The use of (the) control ribbons is recommended (since it is impossible to match all possible causes of variation).

7. Apparatus and Materials

7.1 *Typewriter*, or other device for preparing a uniform printed pattern. Special type for creating grid patterns is available from several typewriter manufacturers. Care must be exercised to assure the same typing conditions and paper are used for all samples. Refer to Practice **F497**.

7.2 Ribbon of known quality used as a control.

7.3 *Abrasion Tester*—The Taber abraser Model 174, or its equivalent shall be used.

7.4 *Abrasive Wheels*—The grade of Calibrase wheels designated as CS-10F shall be used.

7.5 *Auxiliary Weights*, 500-g.

7.6 *Specimen Holder*, grade E100-125.

7.7 *Specimen Mounting Cards*, grade S-36.

7.8 *Paper*—In normal use in facility where tests are conducted, the felt side of the paper shall be used for all tests, if the felt side can be identified (see Method **D725**). If it can not be identified, use same side for all tests.

8. Test Specimen

8.1 The test specimen shall be a printed pattern created using the test ribbon and control ribbon. Care should be taken that an unused portion of the ribbon is tested.

9. Calibration and Standardization

9.1 Adjust the typewriter to produce a uniform pattern similar in print darkness to typical printing. Maintain this adjustment throughout the test series. See Practice **F497**.

9.2 Adjust the abrasion tester according to the instructions found in TAPPI Method T 476.

10. Procedure

10.1 Conduct the test in an environment with stable conditions of temperature and relative humidity. If available, standard conditions 50.0 ± 2.0 % relative humidity and $23.0 \pm 1.0^\circ\text{C}$ [$73.4 \pm 3.6^\circ\text{F}$] should be used.

10.2 Create a uniform printed pattern approximately 0.6 by 4.0 in. [15 by 102 mm] with each ribbon to be evaluated, and mount the patterns on the specimen mounting cards. Several patterns may be grouped together on one piece of paper and mounted on one card.

10.3 Subject each pattern to the abrasion test using the wheels with auxiliary 500-g weights. The duration of the test should be the same for each pattern; 200 cycles has proved satisfactory for fabric ribbons and bond paper.

10.4 The number of cycles may be adjusted depending upon the degree of abrasion required to make an effective evaluation. Once the number of cycles is established, all tests shall be run at that number.

10.5 Run a sufficient number of replicate patterns from each ribbon to satisfy the precision requirements of the test. For fabric ribbons printed on bond paper, a minimum of five replicates is suggested.

11. Results

11.1 Visually examine and compare the abraded specimens. Establish a ranking order and compare to the control, that is “better than,” “equal to,” or “poorer than.”

12. Report

12.1 The report shall include the following:

12.1.1 All test and instrument parameters (such as, type of paper used number of abrasion cycles per test, temperature, relative humidity, etc.),

12.2 Report a visual ranking order or comparison to the control.

13. Precision and Bias

13.1 A repeatable ranking order can be established based on the results of an evaluation performed by a single operator. Comparison of results with different operators may be effected due to judgment differences in evaluation of the images. Bias is unknown.

14. Keywords

14.1 abrasion; erasability; inked ribbons; typewriter; typewriter ribbons

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the ASTM website (www.astm.org/COPYRIGHT/).