



Designation: D 6688 – 01

Standard Test Method for Relative Resistance of Printed Matter to Liquid Chemicals by a Sandwich Method¹

This standard is issued under the fixed designation D 6688; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This test method covers the evaluation of the relative resistance of printed matter to liquid chemicals, as evidenced by lack of discoloration, bleeding, or loss of gloss.

1.2 This test method utilizes a sandwich procedure similar in principle to ISO/TC 130 N 589. Spotting or immersion procedures are covered in Test Methods D 1308, D 1647, and D 2248.

1.3 This test method is applicable to prints on any flat substrate including paper, paperboard, metallic foil, metal plate, and plastic films, and produced by any printing process including letterpress, offset lithography, flexography, gravure, silk screen, and non-impact.

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.* For specific hazard statements, see Section 7.

2. Referenced Documents

2.1 ASTM Standards:

D 1308 Test Method for the Effect of Household Chemicals on Clear and Pigmented Organic Finishes²

D 1647 Test Method for Resistance of Dried Films of Varnishes to Water and Alkali²

D 2248 Test Method for Detergent Resistance of Organic Finishes²

2.2 Other Standards:

ISO/TC 130 N 589 Graphic Technology-Prints and Printing Inks-Assessment of Resistance to Various Agents³

3. Summary of Test Method

3.1 Prints of the test and reference printing inks are each sandwiched between filter paper, which has been saturated with

the specified liquid. After the agreed upon contact times, the prints and filter paper are dried and then examined for objectionable changes such as discoloration, bleeding, or loss in gloss. The test print is then rated as better, equal, or worse than the reference print.

4. Significance and Use

4.1 Many types of printed matter, notably container labels, packaging materials, magazine and book covers, must be resistant to liquid materials that may contact them advertently or inadvertently. This test method permits an assessment of resistance of printed matter to several types of liquids.

4.2 The requirement that a reference print be run at the same time as the test print minimizes effects of atmospheric conditions (humidity and temperature) and other variations which may develop.

4.3 This test method can be used to determine whether new formulations are suitable for the end-use purpose and for specification acceptance between producer and user.

5. Apparatus

5.1 *Glass Plates*, 60 by 90 mm, two for each printed specimen (minimum four per test).

5.2 *Petri Dish*, at least 100 mm in diameter.

5.3 *Weight*, 1 kg.

5.4 *Timer*, calibrated in minutes up to 24 h.

5.5 *Oven*, capable of maintaining 50°C.

6. Materials

6.1 *Reference Print*, of known resistance to the specified test liquid, cut to 20 × 50 mm and marked with *R*.

6.2 *Filter Paper*, white neutral for qualitative analysis, with a very smooth and soft surface, cut to 60 by 90 mm. Minimum eight pieces per test. Mark four pieces with a *R* and four pieces with a *T*, for each test.

6.3 *Soft, Pliable Nonporous Film*, such as food wrap.

6.4 *Test Liquid*, as agreed upon between the producer and user. See examples in Table 1.

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.56 on Printing Inks.

Current edition approved June 10, 2001. Published August 2001.

² *Annual Book of ASTM Standards*, Vol 06.01.

³ Available from American National Standards Institute, 25 West 43rd St., 4th Floor, New York, NY 10036.