Designation: D 6038 – 96

Standard Test Method for Determining the Compatibility of Resin/Solvent Mixtures by Precipitation Temperature[1]

This standard is issued under the fixed designation D 6038; 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 test method covers the procedure for testing the compatibility of lithographic ink resins in high boiling ink solvents by precipitation temperature.

1.2 This test method uses laboratory equipment generally available in a normal, well-equipped laboratory.

1.3 This test method is for use with ink resins intended mainly for oil-based offset and letterpress inks. The type of resins are typically, but not limited to C_9 aromatic hydrocarbon resins, modified dicyclopentadiene resins, rosin pentaerythritol or glycerine esters, phenolic modified rosin esters, maleic anhydride modified-rosin esters, and naturally occurring resins such as gilsonite.

1.4 The typical high boiling solvents to be used are C_{12} to C_{16} petroleum distillates.

1.5 To avoid fire or injury to the operator, or both, this test method should not be used with low flash point solvents such as toluene or xylene. The minimum flash point of the solvents used should be 60°C (140°F) as determined by Test Method D 56.

NOTE 1—Users of this test method should be aware that the flash point of many solvents used for this test (as defined in Test Methods D 56 and D 1310) is exceeded in the heating cycle of this test method. Safety precautions should be taken since there is the potential for vapor ignition. The method outlined should be done in a shielded exhaust hood, where there is access to a fire extinguisher if needed.

1.6 *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:*

D 56 Test Method for Flash Point by Tag Closed Tester[2]

D 1310 Test Method for Flash Point and Fire Point of Liquids by Tag Open-Cup Apparatus[3]

E 1 Specifications for ASTM Thermometers[4]

E 180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial Chemicals[5]

3. Terminology

3.1 *Definitions:*

3.1.1 *cloud point*—the point at which precipitation causes a resin/solvent mixture to become cloudy and opaque.

3.1.2 *compatibility*—resin and solvent mixture forms a clear, homogeneous, and stable solution.

3.1.3 *incompatibility*—resin and solvent mixture is not compatible, an opaque or two-phase mixture results.

3.1.4 *precipitation*—resin separates from the resin/solvent mixture.

3.1.5 *precipitation temperature*—the temperature at which resin precipitation causes a cloud point.

3.1.6 *solubility*—the degree of resin compatibility, is solution compatible at all levels of resin and solvent.

4. Summary of Test Method

4.1 A 10 % by weight mixture of the resin to be tested in the reference solvent (or vice versa) is prepared in a test tube with heat and stirred until a clear solution is obtained.

4.2 The solution is allowed to cool. The end point is the lowest temperature that can be read on a thermometer, positioned at the back wall of the test tube, before the solution gets cloudy.

4.3 If the solution remains clear at room temperature, the test tube is cooled (cold water, ice water, or dry ice/acetone bath) until the cloud point can be recorded.

5. Significance and Use

5.1 This test method provides a means of determining the compatibility of a resin, at low concentrations, in a high boiling ink solvent.

[1] This test method is under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.37 on Ink Vehicles.

Current edition approved Nov. 10, 1996. Published January 1997.

[2] *Annual Book of ASTM Standards*, Vol 05.01.

[3] *Annual Book of ASTM Standards*, Vol 06.01.

[4] *Annual Book of ASTM Standards*, Vol 14.03.

[5] *Annual Book of ASTM Standards*, Vol 15.05.