



Standard Practice for Estimating the Performance of a Fuser Oil in an Electrostatic Copier or Printer¹

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1. Scope

1.1 This practice covers a procedure for estimating the performance of fuser oil in an electrostatic copier or printer.

1.2 This practice describes a procedure for determining fuser oil-related changes in the print quality measured during testing at specific intervals.

1.3 Properties evaluated for all systems include odor emission, paper jam rate, paper wrap rate, paper crinkle rate, and fuser roller life.

1.4 Properties evaluated for recirculating systems include changes in viscosity, volatile matter content, and surface tension.

1.5 This practice describes a procedure for comparing the performance of a subject fuser oil with that of a control fuser oil.

1.6 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.7 *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 a specific precautionary statement, see 8.3.1.

2. Referenced Documents

2.1 ASTM Standards:²

D445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)

¹ This practice is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.04 on Electrostatic Imaging Products.

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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.

D1331 Test Methods for Surface and Interfacial Tension of Solutions of Paints, Solvents, Solutions of Surface-Active Agents, and Related Materials

D4559 Test Method for Volatile Matter in Silicone Fluid

D4741 Test Method for Measuring Viscosity at High Temperature and High Shear Rate by Tapered-Plug Viscometer

F335 Terminology Relating to Electrostatic Imaging

F995 Practice for Estimating Toner Usage in Copiers Utilizing Dry Two-Component Developer

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *fuser agent*—a specialized fuser oil designed to withstand the higher temperatures encountered in certain high-speed copying machines.

3.1.2 *fuser cleaning unit*—a mechanical assembly in a copier or printer used to clean the fuser rollers.

3.1.3 *fuser oil*—a specifically formulated fluid, based on polyorgano siloxane or equivalent, used in a fuser unit to prevent offsetting during the toner fixing process.

3.1.4 *fuser roll*—a heated roller that contacts the paper and toner directly and is part of the fuser unit.

3.1.5 *fuser unit*—a mechanical assembly in a copier or printer used to fix the toner to the paper. The fuser unit can include an associated fuser oil applicator.

3.1.6 *non-recirculating system*—a fuser oil application system in which none of the fuser oil that has been removed from the reservoir is returned.

3.1.7 *recirculating system*—a fuser oil application system that removes the oil from a sump, applies a portion of the oil to the fuser unit, and returns the excess fuser oil to the sump.

3.2 For definitions of other terms, refer to Terminology **F335**.

4. Summary of Practice

4.1 A copier or printer is set up to standard operating parameters and operated in a controlled job stream and environment.