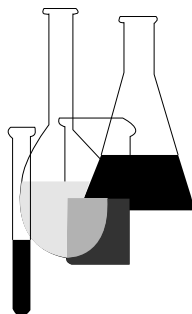




Product Properties Test Guidelines

OPPTS 830.7200 Melting Point/Melting Range



INTRODUCTION

This guideline is one of a series of test guidelines that have been developed by the Office of Prevention, Pesticides and Toxic Substances, United States Environmental Protection Agency for use in the testing of pesticides and toxic substances, and the development of test data that must be submitted to the Agency for review under Federal regulations.

The Office of Prevention, Pesticides and Toxic Substances (OPPTS) has developed this guideline through a process of harmonization that blended the testing guidance and requirements that existed in the Office of Pollution Prevention and Toxics (OPPT) and appeared in Title 40, Chapter I, Subchapter R of the Code of Federal Regulations (CFR), the Office of Pesticide Programs (OPP) which appeared in publications of the National Technical Information Service (NTIS) and the guidelines published by the Organization for Economic Cooperation and Development (OECD).

The purpose of harmonizing these guidelines into a single set of OPPTS guidelines is to minimize variations among the testing procedures that must be performed to meet the data requirements of the U. S. Environmental Protection Agency under the Toxic Substances Control Act (15 U.S.C. 2601) and the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136, *et seq.*).

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OPPTS 830.7200 Melting point/melting range.

(a) **Scope**—(1) **Applicability.** This guideline is intended to meet testing requirements of both the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. 136, *et seq.*) and the Toxic Substances Control Act (TSCA) (15 U.S.C. 2601).

(2) **Background.** The source materials used in developing this harmonized OPPTS test guideline are the OPPT guideline under 40 CFR Part 796 Melting Point/Melting Range, OPP guideline 63–5 Melting Point (Pesticide Assessment Guidelines, Subdivision O: Product Chemistry, EPA Report 540/9–82–018, October 1982) and OECD guideline 102 Melting Point/Melting Range.

(b) **Introduction.** This test guideline references methodology to develop data on the melting temperature or melting temperature range of chemical substances and mixtures. The data may be used to assess the potential for movement of materials in the environment, to determine the physical state of the substance under environmental conditions and to evaluate possible health and environmental effects.

(c) **Test procedures.** Examples of methods for determining the melting temperature or melting temperature range of chemical substances or mixtures are listed in Table 1, “Standard Melting Temperature Techniques Referenced in this Guideline” and in OECD Guideline No. 102 (OECD 1995), “Melting Point/Melting Range.” The codes to standardized bodies listed in table 1 are:

ANSI—American National Standards Institute; ASTM—American Society for Testing and Materials; TAPPI—Technical Association for the Pulp and Paper Industry; FTS—Federal Test Standards; BSI—British Standards Institution; IP—Institute of Petroleum; CIPAC—Collaborative International Pesticides Analytical Council; OECD—Organization for Economic Cooperation and Development.

These standards are available for purchase as follows:

(1) ANSI and BSI standards are available from: Sales Department, American National Standards Institute, 1430 Broadway, New York, NY 10018.

(2) ASTM standards are available from: American Society for Testing and Materials, 1916 Race St., Philadelphia PA 19103.

(3) CIPAC standards are available from: National Agricultural Chemicals Association, 1155 Fifteenth Street, NW., Washington, DC 20005 (1970).

(4) FTS standards are identical to the corresponding ASTM standards and should be obtained from the same source as ASTM standards.

(5) IP standards are available from: Hayden and Son Ltd., Spectrum House, Alderton Cres., London NW4 3XX U.K.

(6) OECD methods are available from: OECD Publications and Information Center, suite 1205, 2750 Pennsylvania Ave., NW., Washington, DC 20006.

(7) TAPPI standards are available from: TAPPI Press, Technical Association of the Pulp and Paper Industry, One Dunwoody Park, Atlanta GA 30338.

Table 1.—Standard Melting Temperature Techniques Referenced in this Guideline

Technique	Standardizing Body ¹						
	ANSI/ASTM ²³	TAPPI	FST ⁴	BSI	IP	CIPAC	OECD
Thiele tube	E 324–79 [30] D 1519–68 ⁵ (1974) [37]					MT2	
Cooling curve	D87–77 [23] [20]	T630–os–71	791B×1402.5	4695	55	MT1	
Fisher-Johns	D 789–78a [36] D 1457–78 [36] D 2116–79 [36] D 2133–78 [36]						
Microscope hot stage	D 2117–64 (1978) [35]						102
Kofler hot bench	D 3451–76 [27]						102
Drop melting point	D 127–63 (1977) [23] [20]	T634–os–70	791B×1401.4	5090	133		
Pour point	D 97–66 (1978) [23] [40]		791B×201.9	4452	15		102
Congealling point	D938–71 (1976) [23]			5088	76		
Capillary/liquid bath	E324–69			4634			102
Capillary/metal block							102
Differential thermal analysis and differential scanning calorimetry.	E537–76						102
Freezing temperature				4695			102

¹ Names of standardizing bodies are given in text.

² Joint standard unless otherwise specified.

³ In brackets by ASTM Test Standard number is the volume number in which the standard appeared in the 1979 or 1980 Annual Book of ASTM Standards. Numbers in parentheses indicate the year of last reappraisal.

⁴ Identical to ANSI/ASTM standard.

⁵ ASTM only.

(d) **References.** The following references should be consulted for additional background material on this test guideline.

(1) ANSI. American National Standards Institute. Book of Standards (latest edition).

(2) ASTM. American Society for Testing and Materials. Annual Book of ASTM Standards (latest edition).

(3) BSI. British Standards Institution. Book of British Standards (latest edition).

(4) CIPAC. Collaborative International Pesticides Analytical Council. CIPAC Handbook, vol. I., Analysis of Technical and Formulated Pesticides (1970).

(5) FTS. Federal Test Standards. Book of Standards (latest edition).

(6) IP. Institute of Petroleum. Book of Standards (latest edition).

(7) *Organization for Economic Cooperation and Development, Guidelines for The Testing of Chemicals, OECD 102, Melting Point/Melting Range, OECD, Paris, France.*

(8) TAPPI. Technical Association of the Pulp and Paper Industry. Book of Standards (1971).