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Analytical Products

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Melting Point Standards

Melting point (MP) is defined as the temperature at which a chemical substance changes from solid to the liquid state. Melting point determination is widely used for the characterization of pure chemicals and pharmaceutical drugs. It is also used in R & D labs for chemical quality control (QC), and quality assurance (QA) to identify solid crystalline substances and to check their purity. Analytical laboratories involved in QC/QA need to calibrate their melting point instrumentation regularly to ensure that their instruments are in accordance with the specific requirements defined by their local, national, and international standards laboratories. Standards used in the calibration of melting point instrumentation are called melting point standards.

We offer melting point standards ranging from Phenyl salicylate, melting point 41.2-43.2 °C to Sodium methanesulfonate, melting point 353.1-355.1 °C.

Technical Benefits:

- Traceable to primary standards (LGC, London)
- Grade: Analytical Standard
- Shelf Life: 2 years
- Provided with Certificates of Analysis and Safety Data Sheet
- Two modes for melting point evaluation:
  - **The Pharmacopeia mode:** neglects that the furnace temperature is different (higher) during the heating process than the sample temperature, meaning that the furnace temperature is measured rather than the sample temperature. Therefore, the pharmacopeia melting point depends strongly on the heating rate.
  - **The Thermodynamic mode:** The thermodynamic melting point is the physically correct melting point. This value does not depend on heating rate or other parameters.

Melting Point Determination as per European Pharmacopeia's (2.2.14.) Requirements:

The melting point is determined by Capillary method as described in European Pharmacopeia 10.5 (2.2.14.). The pharmacopeia's requirements for melting point determination are listed:

- Use capillaries with outer diameters ranging from 1.3–1.5 mm and wall thicknesses from 0.1–0.3 mm.
- Apply a constant heating rate of 1 °C/min.
- The recorded temperature represents the temperature of the heating stand, which can be an oil bath or a metal block, in which the thermocouple is positioned.

METTLER TOLEDO Melting Point Standards

METTLER TOLEDO standards are provided with melting points specific to METTLER TOLEDO instrument measured in Thermodynamic mode and Pharmacopeia modes. Also, these standards are useful for the calibration of METTLER TOLEDO melting point instruments. The value for the melting point is an average of 6 to 12 measurements with a METTLER TOLEDO MP 90 and MP 70 excellence melting point instrument (the measuring range is from ambient temperature up to 400 °C) that is calibrated with primary standards.

Table 1: METTLER TOLEDO Calibration substances

Cat. No.	Description	Composition	Melting Point	Pack size
44770	METTLER TOLEDO Calibration substance ME 30034252, Phenyl salicylate	Phenyl salicylate	41.2 °C (Standard Deviation = 0.2 °C) (For measurements in thermodynamic mode)	5g
			42.3 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO thermosystem FP in pharmacopeia mode at 1.0 °C /min heating rate)	
			43.2 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	
73664	METTLER TOLEDO Calibration substance ME 18870, Benzophenone	Benzophenone	47.4 °C (Standard Deviation = 0.2 °C) (For measurements in thermodynamic mode at 0.2 °C /min heating rate)	5g
			48.5 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO thermosystem FP900 in pharmacopeia mode at 1.0 °C /min heating rate)	
			49.4 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	
77634	METTLER TOLEDO Calibration substance ME 51143093, Vanillin	Vanillin	80.9 °C (Standard Deviation = 0.2 °C) (For measurements in thermodynamic mode)	5g
			82.0 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO thermosystem FP in pharmacopeia mode at 1.0 °C /min heating rate)	
			82.9 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	
73983	METTLER TOLEDO Calibration substance ME 18555, Benzoic acid	Benzoic acid	121.9 °C (Standard Deviation = 0.2 °C) (For measurements in thermodynamic mode)	5g
			123.0 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO thermosystem FP in pharmacopeia mode at 1.0 °C /min heating rate)	
			123.9 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	

Table 1: METTLER TOLEDO Calibration substances (continued).

Cat. No.	Description	Composition	Melting Point	Pack size
15809	METTLER TOLEDO Calibration substance ME 30130597, p-Toluamide,	p-Toluamide	159.2 °C (Standard Deviation = 0.3 °C) (For measurements in thermodynamic mode)	5g
			160.2 °C (Standard Deviation = 0.3 °C (For measurements with a METTLER TOLEDO thermosystem FP in pharmacopeia mode at 1.0 °C /min heating rate)	
			161.2 °C (Standard Deviation = 0.3 °C) (For Measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	
41131	METTLER TOLEDO Calibration substance ME 51143091, Saccharin	Saccharin	228.3 °C (Standard Deviation = 0.3 °C) (For measurements in thermodynamic mode)	5g
			229.3 °C (Standard Deviation = 0.3 °C) (For measurements with a METTLER TOLEDO thermosystem FP in pharmacopeia mode at 1.0 °C /min heating rate)	
			230.3 °C (Standard Deviation = 0.3 °C) (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	
94993	METTLER TOLEDO Calibration substance ME 30130598, Methyltriphenylphosphoniumbromide	Methyltriphenylphosphoniumbromide	232.6 °C (Standard Deviation = 0.3 °C) (For measurements in thermodynamic mode)	5g
			233.7 °C (Standard Deviation = 0.3 °C) (For measurements with a METTLER TOLEDO thermosystem FP900 in pharmacopeia mode at 1.0 °C /min heating rate)	
			234.6 °C (Standard Deviation = 0.3 °C) (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	
75035	METTLER TOLEDO Calibration substance ME 18872, Caffeine	Caffeine	236.2 °C (Standard Deviation = 0.2 °C) (For measurements in thermodynamic mode)	5g
			237.3 °C (Standard Deviation = 0.2 °C) (For measurements with a METTLER TOLEDO thermosystem FP in pharmacopeia mode at 1.0 °C /min heating rate)	
			238.2 °C (Standard Deviation = 0.2 °C (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	
42123	METTLER TOLEDO Calibration substance ME 30130599, Sodium acetate anhydrous	Sodium acetate anhydrous	329.1 °C (Standard Deviation = 0.4 °C) (For measurements in thermodynamic mode)	5g
			330.1 °C (standard deviation = 0.4 °C) (For measurements with a METTLER TOLEDO thermosystem FP in pharmacopeia mode at 1.0 °C /min heating rate)	
			331.1 °C (Standard Deviation = 0.4 °C) (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	

Table 1: METTLER-TOLEDO Calibration substances (continued).

Cat. No.	Description	Composition	Melting Point	Pack size
49143	METTLER TOLEDO Calibration substance ME 51143095, Potassium nitrate	Potassium nitrate	333.2 °C (Standard Deviation = 0.5 °C) (For measurements in thermodynamic mode)	5g
			334.3 °C (Standard Deviation = 0.5 °C) (For measurements with a METTLER TOLEDO thermosystem FP in pharmacopeia mode at 1.0 °C /min heating rate)	
			335.2 °C (Standard Deviation = 0.5 °C) (For measurements with a METTLER TOLEDO MP melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	
04229	METTLER TOLEDO Calibration substance ME 30130610, Sodium methanesulfonate	Sodium methanesulfonate	353.1 °C (Standard Deviation = 0.4 °C) (For measurements in thermodynamic mode)	5g
			354.2 °C (Standard Deviation = 0.4 °C) (For measurements with a METTLER TOLEDO thermosystem FP900 in pharmacopeia mode at 1.0 °C /min heating rate)	
			355.1 °C (Standard Deviation = 0.4 °C) (For measurements with a METTLER TOLEDO mp melting point system in pharmacopeia mode at 1.0 °C /min heating rate)	

Table 2. Melting point standards: The melting point is measured with an average of 6 - 12 measurements with a Buechi B-545 instrument that is calibrated with primary standard

Cat. No.	Description	Composition	Melting Point	Pack size
50296	Melting point standard 47-49 °C	Benzophenone	47.87 °C (±0.3 °C) (Thermodynamic Mode)	1 g 5 g
77402	Melting Point Standard 69-71 °C	1-Heptadecanecarboxylic acid	69.2 °C (±0.3 °C) (Thermodynamic Mode)	1 g 5 g
01422	Melting point standard 79-81 °C	Naphthalene	80.0 °C (±0.3 °C) (Thermodynamic Mode)	1 g
76170	Melting point standard 121-123 °C	Benzoic acid	122.0 °C (±0.3 °C) (Thermodynamic Mode)	5 g
42183	Melting point standard 182-184 °C	4-Methoxybenzoic acid	183.2 °C (±0.3 °C) (Thermodynamic Mode)	250 mg 1 g
41019	Melting point standard 235-237 °C	1,3,7-Trimethylxanthine	236.0 °C (±0.3 °C) (Thermodynamic Mode)	1 g 5 g
67372	Melting point standard 283-286 °C	Anthraquinone	284.4 °C (±0.3 °C) (Thermodynamic Mode)	250 mg 1 g

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MilliporeSigma
400 Summit Drive
Burlington, MA 01803

EMDMillipore.com

MS_FL8678EN Ver. 1.0 37036 01/2022