TORONTECH

MELTING POINT APPARATUS – TORONMPA™ 400

Melting Point Apparatus – ToronMPA™ 400

Melting Point Apparatus ToronMPA™ 400 is a fully automatic, video-based system designed to measure melting behavior with consistent, traceable results. It runs four samples per batch and captures the melting process with HD video instead of traditional microscope viewing.

The system automatically records initial melt and final melt points, helping standardize results across different operators. Built-in data integrity functions, including audit trail and electronic signatures, support controlled documentation for regulated labs.

ToronMPA™ 400 combines high-precision temperature control with an HD camera to deliver stable melting point and melting range measurements. It supports a room temperature to 400 °C operating range with 0.01 °C resolution for fine control during critical transitions. The instrument displays the melting process in real time and stores large volumes of results for long-term traceability.

Method setup is designed for repeatability, with PID-controlled heating and multi-segment programs that can match different material behaviors. Up to 10 programmable gradient segments help labs align ramp profiles to internal SOPs and pharmacopeial expectations. Results can be exported to common report formats such as PDF and Excel and transferred through multiple interfaces, including Wi-Fi and Ethernet.

APPLICATIONS

Melting Point Apparatus – ToronMPA™ 400 Applications

- Pharmaceutical QC and R&D: Melting point data helps verify identity, monitor purity shifts, and support lot-to-lot consistency checks for APIs and excipients. The video record also helps with investigations when results fall outside

limits.

- Chemical manufacturing and incoming inspection: Melting behavior is a fast screen for changes in crystalline raw materials, intermediates, and finished compounds. It supports release decisions when paired with defined methods and calibration practices.
- Food, flavors, and fragrance solids: Many organic solids used in formulation show characteristic melting transitions that affect processing and handling. Consistent ramp control helps compare batches under the same conditions.
- Dyes and other organic crystalline substances: Dyes, pigments, and specialty organics often rely on melting range trends to flag composition changes. A recorded melt profile can support documentation needs across production and lab teams.

Standards

- 21 CFR Part 11: U.S. regulatory requirements for electronic records and electronic signatures when applicable.

FEATURES

Melting Point Apparatus – ToronMPA™ 400 Key Features

- Automated parameter setup support designed to simplify routine method configuration and reduce operator variation.
- Four-sample batch testing to increase throughput without sacrificing comparability across samples.
- HD video observation that replaces microsces a clear recorded melt profile.
- Automatic melt event recording for initial melt and final melt points,ing.
- Direct reporting workflow with support for exporting results in PDF and Excel formats. ta integrity toolset
- Including audit trail, electronic signature, method locking, and export verification
- Flexible connectivity via USB, RS232, SD, Wi-Fi, and RJ45, with optional PC software for upload
- QR-code sample ID input using a supported scanning gun to reduce manual entry steps

THEORY & METHOD

Theory and Method

Melting point testing measures the temperature range where a solid transitions into a liquid under controlled heating. A prepared sample is loaded into a capillary tube and heated at a defined ramp rate to observe the onset of melting and the

clear point. ASTM and pharmacopeial methods emphasize consistent sample preparation, ramp control, and routine verification with reference materials.

ToronMPA™ 400 uses HD video observation to capture the full melt process while the temperature system maintains a programmed heating profile. The instrument automatically detects and records melt events, then stores results with method and user controls for traceability. A segmented program approach helps match different materials, since heating rate and method settings can influence observed melting ranges.

TECHNICAL SPECIFICATIONS

Melting Point Apparatus – ToronMPA™ 400 Technical Specification

Specification	ToronMPA™ 400
Temperature range	Room temperature to 400 °C
Detection method	Automatic (manual mode available)
Sample capacity	4 samples per batch
Temperature resolution	0.01 °C
Linear heating rate error	±5%
Heating rate	0.1 °C to 20 °C (adjustable)
Temperature control	PID precise control, closed furnace design
Program segments	Up to 10 programmable gradient segments
Accuracy (reported)	±0.2 °C (≤200 °C); ±0.4 °C (>200 °C)
Repeatability (reported)	±0.1 °C at 0.1 °C ramp

Specification	ToronMPA™ 400
Magnification	Standard 9× (other settings available)
Display	10.4-inch TFT color touch screen
Data storage	128 GB
Result storage	Up to 50,000 groups
Method library	Up to 200 methods
Method locking	Yes
User management	Four-level authority management
Audit trail	Yes
Electronic signature	Yes
Export verification	MD5 verification supported
Export formats	PDF, Excel
Interfaces	USB, RS232, SD, Wi-Fi, RJ45, U-disk
Barcode/QR input	Scanning gun supported
Capillary size	OD 1.3 mm, ID 1.1 mm
Packing size	430 × 320 × 370 mm
Voltage	110–230 V, 50/60 Hz, 120 W
Gross weight	6.50 kg

Optional Accessories

- Melting point reference material: Naphthalene (GBW(E) 13234)

- Melting point reference material: Adipic acid / 1,6-hexanedioic acid (GBW(E) 130236)
- Melting point reference material: Anthraquinone (GBW 13238)
- Melting point capillary tubes: Standard capillaries
- Agate mortar and pestle (for sample grinding and preparation)
- Thermal printer (for direct result printouts)
- Needle-type printer (impact-style printing option)

TORONTECH.com

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Torontech Inc.
251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC
601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE
Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE

Phone: +971 488 19252
Email: me@torontech.com

USA | Canada | EU | UAE | GCC | KSA | India | Africa | Latin America | Asia