TORONTECH

PETROLEUM WAX TESTING EQUIPMENT

Petroleum Wax Testing Equipment

Petroleum waxes — including paraffin wax, microcrystalline wax, slack wax, and petrolatum — are refined petroleum products derived from crude oil distillation and dewaxing processes. Their unique physical properties — solid at room temperature with precisely controlled melting and congealing points, controlled hardness and penetration, low oil content, and high chemical stability — make them indispensable materials in packaging, food-contact applications, cosmetics, pharmaceuticals, candles, coatings, and rubber processing.

The quality of petroleum waxes is defined by a set of specific physical and compositional parameters that must be precisely controlled to meet product specifications and end-use requirements. Torontech's wax testing equipment portfolio provides a complete suite of instruments for melting and congealing point determination, penetration and hardness testing, oil content analysis, color, water content, and thermal characterization by Differential Scanning Calorimetry (DSC) — covering all major ASTM, IP, and ISO wax testing standards.

APPLICATIONS

Application

Torontech's wax testing instruments are used across the full range of petroleum wax production and application industries:

- Paraffin wax production and grading: Melting point (ASTM D87, TT-87/TT-87Z), congealing point (ASTM D938, TT-938), and oil content (ASTM D721, TT-721) testing are the primary quality parameters for grading paraffin waxes from light paraffinic grades (mp ~50°C) to fully refined fully hydrogenated food-grade paraffin.
- Microcrystalline wax characterization: Needle penetration (ASTM D1321, TT-1321Z) and melting point by drop point method (ASTM D127, TT-127) provide the key quality parameters for microcrystalline waxes used in adhesives, cosmetics, and pharmaceutical barrier coatings.
- Food-contact and cosmetic wax qualification: Oil content (TT-721), water content (TT-6304), sulfur content (TT-4294), and color (TT-1500) testing verify that petroleum waxes meet the purity and safety requirements for food-contact and cosmetic applications.
- Candle wax quality control: Melting point, congealing point, and oil content testing ensure candle wax grades provide the correct solidification profile for candle manufacturing and appropriate hardness and burn characteristics in the finished product.
- Petrolatum and pharmaceutical waxes: The full Torontech wax testing range is applicable to petrolatum quality control, with particular relevance of penetration testing (TT-217/TT-217Z) and melting point (TT-127) for characterizing USP petrolatum grade consistency.
- Wax blending and formulation: Differential Scanning Calorimetry (TT-4419, DSC) provides detailed thermal characterization of wax blends and complex multi-component wax formulations, mapping crystallization behavior, melting transitions, and heat of fusion — data not obtainable from conventional melting point methods.
- Rubber and polymer processing waxes: Penetration, melting point, and oil content testing characterize process wax quality for use in rubber compounding, where precise wax crystal size and melting behavior affect blooming protection and processing aid effectiveness.

FEATURES

Why Choose Torontech's Series for Your Petroleum Wax Testing

Torontech's wax testing equipment portfolio provides unmatched coverage for petroleum wax quality laboratories:

- Multiple Melting and Congealing Point Methods: Torontech covers three distinct ASTM wax melting/congealing point test methods: ASTM D87 cooling curve method (both manual TT-87 and automatic TT-87Z), ASTM D938 congealing point of petroleum waxes (TT-938), and ASTM D127 drop melting point (TT-127) — enabling laboratories to perform whichever method is specified for their particular wax grade or customer requirement.
- Dedicated Wax Penetration Testing: The automatic needle penetration tester for wax (TT-1321Z, ASTM D1321) is a purpose-built instrument for the specific geometry and penetration depth used in wax hardness testing — providing more accurate and reproducible results than adapting a general cone penetrometer for needle penetration of wax.
- DSC Thermal Analysis Capability: The low-temperature differential scanning calorimeter (TT-4419) provides the most detailed thermal characterization of petroleum wax crystallization and melting behavior available, enabling advanced formulation work and performance characterization of blended wax systems that cannot be achieved with conventional melting point instruments.
- Oil Content Analysis: The petroleum wax oil content analyzer (TT-721, ASTM D721) provides the critical oil content measurement that determines whether a paraffin wax meets the specification for its grade — a particularly important parameter for food-grade and pharmaceutical-grade wax applications where maximum oil content limits are tightly controlled.
- Comprehensive Purity Testing: Water content (TT-6304), sulfur content (TT-4294), and color (TT-1500) instruments complete the wax quality picture by addressing purity parameters that are critical for food-contact, cosmetic, and pharmaceutical wax applications, where trace contaminants can cause regulatory non-compliance.

TECHNICAL SPECIFICATIONS

How to Choose: Petroleum Wax Testing Instrument Comparison

Use the table below to identify the Torontech instruments relevant to your petroleum wax testing requirements:

Instrument	Model	Standard

Coulometric Karl-Fischer Titration Tester	TT-6304	ASTM D6304
X-ray Fluorescence Sulfur Content Apparatus	TT-4294	ASTM D4294
Automatic Petroleum Wax Melting Point Apparatus (Cooling Curve)	TT-87Z	ASTM D87
Manual Cone Penetration for Petroleum Products	TT-217	ASTM D217
Automatic Penetration Tester	TT-217Z	ASTM D217
Automatic Needle Penetration for Wax	TT-1321Z	ASTM D1321
Low Temperature Differential Scanning Calorimeter	TT-4419	ISO 11357
Colorimeter for Petroleum Products	TT-1500	ASTM D1500
Petroleum Wax Melting Point Apparatus (Cooling Curve)	TT-87	ASTM D87
Congealing Point of Petroleum Waxes and Petrolatum	TT-938	ASTM D938
Petroleum Wax Melting Point Tester	TT-127	ASTM D127
Petroleum Wax Oil Content Analyzer	TT-721	ASTM D721

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