



BIOFUEL TESTING EQUIPMENT

Biofuel Testing Equipment

Biofuel — including fatty acid methyl esters (FAME / biodiesel), hydrogenated vegetable oil (HVO), bioethanol, bio-kerosene, and sustainable aviation fuel (SAF) — are playing an increasingly critical role in the global energy transition. Unlike conventional petroleum fuels, biofuels have unique chemical characteristics that create distinct testing challenges: FAME is significantly more susceptible to oxidation than mineral diesel, water content is a critical quality indicator for ester-based fuels, cold-flow properties of bio-origin materials vary dramatically with feedstock, and inorganic contaminants (alkali metals, phosphorus) from the transesterification process must be tightly controlled to protect diesel engine components and aftertreatment systems.

Torontech's Biofuels Testing Equipment portfolio is specifically curated to address the full quality parameter set required by EN 14214 (FAME/biodiesel), ASTM D6751, EN 15940 (HVO/paraffinic diesel), EN 228 (ethanol-blended gasoline), and emerging SAF standards — providing laboratories with the complete instrument solution needed to verify compliance, protect equipment, and demonstrate sustainability credentials for renewable fuel products.

APPLICATIONS

Applications

Biofuel quality testing is required across the entire biofuel production and distribution chain:

- FAME/biodiesel production plants: Release testing of B100 against EN 14214 or ASTM D6751 specifications including oxidation stability (Rancimat), FAME content, ester composition (GC), water content, cold filter plugging point, and alkali metal content by ICP.

- Biodiesel blending terminals: Quality verification of B5, B7, B10, B20, and higher biodiesel blends to confirm blended product meets EN 590 or ASTM D7467 specifications for commercial diesel.
- HVO / paraffinic diesel production: Testing of hydrogenated vegetable oil for density, viscosity, flash point, cloud point, and sulfur content to confirm compliance with EN 15940 and ASTM D975.
- Bioethanol and ethanol-blended gasoline: Flash point, vapor pressure (RVP), conductivity, and water content testing for E5, E10, E15, E85, and fuel-grade ethanol compliance with EN 228, EN 15376, and ASTM D4806.
- Sustainable Aviation Fuel (SAF) and bio-kerosene: Flash point, freezing point, smoke point, JFTOT thermal oxidation stability, and sulfur content testing for SAF certification under ASTM D7566 and D1655.
- Feedstock quality control: Vegetable oils, animal fats, and waste cooking oil used as biodiesel feedstock are characterized for water content, density, and free fatty acid content prior to processing.
- Third-party inspection and trade certification: Independent testing laboratories certifying biofuel cargoes, blends, and B100 deliveries for traders, distributors, and regulatory authorities.
- Research and development: Screening of novel bio-feedstocks, catalyst systems, and biofuel formulations for quality compliance, stability performance, and cold-weather operability.

FEATURES

Why Choose Torontech Biofuel Testing Series for Your Quality Program?

- Purpose-built for biofuel specifications: Torontech's biofuels testing portfolio is mapped directly to EN 14214, ASTM D6751, EN 15940, and SAF standards — not simply adapted from conventional fuel testing. Each instrument is configured for the specific sample characteristics and test conditions that biofuels demand.
- Oxidation stability — the critical FAME parameter: The TT-14112A Full Automatic Biodiesel Oxidation Stability Tester implements the EN 14112 Rancimat method with precise temperature control, continuous conductivity monitoring, and automated induction period calculation — the most important single quality test for FAME/biodiesel storage stability.
- ICP metals analysis for B100: The TT-14538 ICP for Biodiesel (B100) is specifically configured for the alkali metal (Na, K, Ca, Mg) and phosphorus analysis required by EN 14214 and ASTM D6751 — critical parameters for exhaust

aftertreatment system protection.

- GC for FAME content and ester composition: The Biodiesel GC Plus Gas Chromatograph implements EN 14103 and EN 14105 methods for FAME content and individual ester composition measurement — the definitive tests for biodiesel identity and purity.
- Cold-flow property coverage: The fully automatic pour and cloud point tester provides fast, reliable cold-flow property data essential for winter-grade biodiesel compliance and blending decisions.
- Water content — both Karl Fischer and Dean-Stark: Torontech offers both the coulometric Karl Fischer (TT-6304, EN 14111) and the classical Dean-Stark distillation (TT-95) methods for water content determination, giving laboratories flexibility to match the measurement range and sample compatibility requirements of their specific biofuel products.
- Full sulfur analysis capability: Both the UV fluorescence sulfur tester (for ultra-low sulfur FAME and HVO blends) and the XRF sulfur apparatus are available, covering the full concentration range from trace levels in HVO to higher concentrations in waste-derived FAME feedstocks.
- SAF-ready instruments: The Toron™ JFTOT, automatic freezing point apparatus, smoke point apparatus, and digital conductivity meter are validated for SAF testing, ensuring your laboratory is equipped for the growing sustainable aviation fuel certification market.
- Streamlined procurement and support: A single supplier relationship with Torontech covers your entire biofuels testing instrument portfolio — reducing procurement complexity, simplifying calibration scheduling, and providing unified technical support from application specialists with deep biofuel testing expertise.

TECHNICAL SPECIFICATIONS

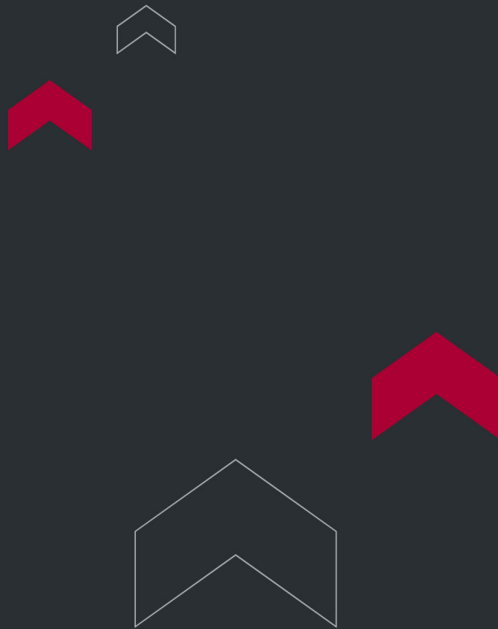
How to Choose — Biofuel Testing Equipment Comparison

Use the table below to match the right Torontech instrument to your biofuel type, quality parameter, and automation requirement:

Product	Test Method	Parameter Tested	Automation	Fuel Grade
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Manual Pensky-Martens Closed-Cup Flash Point Tester TT-93	ASTM D93 / EN ISO 2719	Flash Point	Manual	B5–B100, Biodiesel
Automatic Pensky-Martens Closed-Cup Flash Point Tester TT-93Z	ASTM D93 / EN ISO 2719	Flash Point	Auto	B5–B100, Biodiesel
Abel Closed Cup Flash Point Tester TT-170	IP 170 / EN ISO 13736	Flash Point (Low FP)	Auto	Bioethanol Blends
Double Tubes Distillation Apparatus TT-86A	ASTM D86 / EN ISO 3405	Distillation	Semi	Biodiesel, HVO, B5–B20
Coulometric Karl-Fischer Titration Tester TT-6304	EN 14111 / ASTM D6304	Water Content	Auto	FAME, B100
Automatic Distillation Apparatus TT-86Z	ASTM D86 / EN ISO 3405	Distillation	Full Auto	Biodiesel, HVO
Dean Stark Distillation Water Content TT-95	ASTM D95 / ISO 9029	Water Content	Manual	FAME, Biodiesel
Volumetric Karl Fischer Moisture Titrator TT-203	EN 14111	Water Content	Auto	FAME, B100, B5–B20
Manual Kinematic Viscosity Bath TT-445	ASTM D445 / EN ISO 3104	Kinematic Viscosity	Manual	FAME, Biodiesel Blends
Semi Automatic Kinematic Viscosity Apparatus TT-445BZ	ASTM D445 / EN ISO 3104	Kinematic Viscosity	Semi	FAME, HVO, Blends
Jet Fuel Thermal Oxidation Stability Tester Toron™ JFTOT	ASTM D3241	Thermal Oxidation Stability	Full Auto	SAF Blends
Automatic Kinematic Viscosity Apparatus TT-445W	ASTM D445 / EN ISO 3104	Kinematic Viscosity	Full Auto	FAME, HVO, B100
Low Temperature Kinematic Viscosity Tester TT-445L	ASTM D445 / EN ISO 3104	Kinematic Viscosity (Low T)	Auto	Winter-grade FAME
Full Automatic Biodiesel Oxidation Stability TT-14112A	EN 14112 / EN 15751	Oxidation Stability (Rancimat)	Full Auto	FAME, B100, Blends
Fully Automatic Pour and Cloud Point Tester TT-9725	ASTM D97 / D2500 / EN 23015	Pour Point & Cloud Point	Full Auto	FAME, HVO, B5–B100
X-ray Fluorescence Sulfur Content Apparatus TT-4294	ASTM D4294 / EN ISO 20884	Total Sulfur	Full Auto	B5–B100, HVO
Density Test by API Hydrometer TT-1298	ASTM D1298 / EN ISO 3675	Density	Manual	FAME, Biodiesel Blends

Micro Carbon Residue Apparatus TT-4530	ASTM D4530 / EN ISO 10370	Carbon Residue	Auto	B100, FAME
Ramsbottom Carbon Residue Apparatus TT-524	ASTM D524 / IP 14	Carbon Residue	Auto	B100, Biodiesel
Smoke Point Apparatus for Kerosene TT-1322	ASTM D1322 / IP 57	Smoke Point	Manual	Bio-kerosene, SAF
Automatic Reid Vapor Pressure Bath TT-323Z	ASTM D323 / EN 13016	Vapor Pressure (RVP)	Full Auto	Ethanol Blends, E10-E85
Oil Test Centrifuge TT-1796	ASTM D1796 / IP 374	Water & Sediment	Manual	FAME, Biodiesel Blends
Digital Conductivity Meter TT-2624	ASTM D2624 / IP 274	Electrical Conductivity	Auto	SAF, Biodiesel
Colorimeter for Petroleum Products TT-1500	ASTM D1500 / ISO 2049	ASTM Color	Auto	FAME, HVO
Ultraviolet Fluorescence Sulfur Tester TT-5453	ASTM D5453 / ISO 20846	Ultra-Low Sulfur	Auto	B5-B100, HVO
ICP for Biodiesel (B100) TT-14538	EN 14538 / ASTM D6751	Ca, Mg, Na, K Metals	Full Auto	B100, FAME
Biodiesel GC Plus Gas Chromatograph	EN 14103 / EN 14105	FAME Composition & Ester Content	Full Auto	FAME, B100



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