TORONTECH

MARINE LUBE TESTING EQUIPMENT

Marine Lube Testing Equipment

Marine fuels and lubricants operate under the most demanding conditions of any petroleum product category — high loads, extreme temperatures, corrosive seawater environments, and stringent international regulatory requirements. Bunker fuel quality is governed by the ISO 8217 marine fuel standard, while the IMO 2020 global sulfur cap has added new complexity to marine fuel testing requirements. Marine lubricants used in large two-stroke and four-stroke diesel engines must meet exacting specifications for viscosity, base number, water content, and contamination resistance.

Torontech's marine oils testing equipment portfolio is designed to address the full scope of ISO 8217 bunker fuel quality parameters and marine lubricant analysis requirements. With 33 instruments covering flash point, sulfur content (multiple technologies), kinematic viscosity at multiple temperatures, water content, sediment, carbon residue, ash content, calorific value, trace metal ICP analysis, and rust protection testing, Torontech provides a complete marine petroleum testing solution aligned with IMO, ISO, and ASTM standards.

APPLICATIONS

Application

Torontech's marine oils testing instruments support quality assurance across all marine fuel and lubricant categories:

- ISO 8217 bunker fuel compliance: Flash point, viscosity, water content, sediment, sulfur content, carbon residue, ash, and density testing per ISO 8217 Table 1 and 2 parameters for distillate and residual marine fuels.
- IMO 2020 sulfur cap compliance: XRF sulfur testing (TT-4294) provides the rapid, non-destructive ASTM D4294 analysis needed for 0.5% sulfur cap compliance verification at bunkering ports worldwide.
- Marine residual fuel quality: Total sediment (TT-4870), carbon residue (TT-524, TT-4530), and viscosity at 100°C (TT-445, TT-445BZ, TT-445W) are core quality parameters for HFO and VLSFO bunker fuels.

- SECA (Sulfur Emission Control Area) fuels: Multiple sulfur analysis instruments enable accurate sulfur content verification for <0.10% SECA zone compliance using distillate marine gas oil (MGO) and marine diesel oil (MDO).
- Marine lubricant analysis: Kinematic viscosity, rust protection (TT-665), and water content testing of cylinder oils, system oils, and crankcase lubricants used in marine diesel engines.
- Calorific value for fuel management: Gross calorific value by automatic calorimeter (TT-5865) supports fuel consumption monitoring and performance optimization on commercial vessels.
- Trace element contamination: AAS (TT-AAS) and ICP (TT-5708) detection of vanadium, sodium, aluminum, silicon, and catalyst fines in bunker fuels — critical for preventing fuel injector and turbocharger damage.

FEATURES

Why Choose Torontech's Series for Your Marine Oils Testing?

Torontech's marine testing portfolio is specifically designed to address the multi-layered quality requirements of the maritime fuel and lubricant industry:

- IMO 2020 Ready: Torontech's XRF sulfur tester (TT-4294, ASTM D4294) and additional sulfur analysis technologies provide the flexibility to verify sulfur compliance from 3.5% MARPOL Annex VI limits down to 0.10% SECA zone specifications.
- Full Viscosity Range: Three kinematic viscosity instruments (manual TT-445, semi-automatic TT-445BZ, automatic TT-445W) cover the full viscosity measurement range required for marine distillate and residual fuel characterization at 40°C and 50°C as specified by ISO 8217.
- Residual Fuel Specialization: Total sediment by hot filtration (TT-4870), Ramsbottom carbon residue (TT-524), and oil test centrifuge BS&W (TT-1796) are the core quality tests for heavy residual marine fuels — all available in Torontech's portfolio.
- Multi-Method Sulfur Coverage: With five sulfur analysis instruments (quartz tube, lamp method, micro coulometric, XRF, and mercaptan titration), Torontech covers every sulfur species and concentration range relevant to marine fuel

quality.

- Rust and Corrosion Testing: The ASTM D665 rust characteristics tester (TT-665) is specifically relevant for marine lubricant quality control in high-moisture, salt-spray operational environments typical of marine engine applications.

TECHNICAL SPECIFICATIONS

How to Choose: Marine Oils Testing Instrument Comparison

Use the table below to identify the Torontech instruments suited to your specific marine fuel or lubricant testing requirement:

Instrument	Model	Standard
Manual Cleveland Open Cup Flash Point Tester	TT-92	ASTM D92
Automatic Cleveland Open Cup Flash Point Tester	TT-92Z	ASTM D92
Manual Pensky-Martens Closed-Cup Flash Point Tester	TT-93	ASTM D93
Automatic Pensky-Martens Closed Cup Flash Point Tester	TT-93Z	ASTM D93
Double Tubes Distillation Apparatus	TT-86A	ASTM D86
Vacuum Distillation Apparatus	TT-1160	ASTM D1160
Water in Crude Oil Apparatus (Distillation Method)	TT-4006A	ASTM D4006
Coulometric Karl-Fischer Titration Tester	TT-6304	ASTM D6304
Volumetric Karl Fischer Moisture Titrator	TT-203	ASTM D1533
Manual Kinematic Viscosity Bath	TT-445	ASTM D445
Semi Automatic Kinematic Viscosity Apparatus	TT-445BZ	ASTM D445

Instrument	Model	Standard
Automatic Kinematic Viscosity Apparatus	TT-445W	ASTM D445
Quartz Tube Sulfur Apparatus	TT-1551	ASTM D1551
Sulfur Lamp Method Unit	TT-1266	ASTM D1266
Sulfur and Chlorine Micro Coulometric Titrator	TT-4929	ASTM D4929
X-ray Fluorescence Sulfur Content Apparatus	TT-4294	ASTM D4294
Mercaptan Sulfur Content (Potentiometric Titration)	TT-3227	ASTM D3227
Fully Automatic Pour and Cloud Point Tester	TT-9725	ASTM D97/D2500
Oxidation Stability Tester for Distillate (Accel.)	TT-2274Z	ASTM D2274
Density Test by API Hydrometer	TT-1298	ASTM D1298
Micro Carbon Residue Apparatus	TT-4530	ASTM D4530
Ramsbottom Carbon Residue Apparatus	TT-524	ASTM D524
Smoke Point Apparatus for Kerosene	TT-1322	ASTM D1322
Ash Content for Petroleum Product	TT-482	ASTM D482
Sediment Extraction in Crude Oil and Fuel Oil	TT-473	ASTM D473
Total Sediment in Residual Fuels	TT-4870	ASTM D4870
Oil Test Centrifuge	TT-1796	ASTM D1796
Automatic Calorimeter	TT-5865	ASTM D5865
Salt Content of Crude Oil Tester	TT-3230	ASTM D3230
ICP for Crude Oils and Residual Fuels	TT-5708	ASTM D5708
Colorimeter for Petroleum Products	TT-1500	ASTM D1500

Instrument	Model	Standard
Rusting Characteristics of Oils	TT-665	ASTM D665
Flame Furnace Atomic Absorption Spectrophotometer	TT-AAS	ASTM D3120

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