

TRIBOLOGY & WEAR TESTING EQUIPMENT FOR PETROCHEMICAL PRODUCTS



Tribology & Wear Testing Equipment for Petrochemical Products

Lubricant performance under real-world contact conditions — wear, friction, extreme pressure, fretting, and load-carrying capacity — cannot be predicted from physical property measurements alone. Tribological testing simulates the actual contact mechanics of lubricated interfaces, generating the experimental performance data that defines whether a lubricant will protect equipment reliably in service.

Torontech's Lubrication & Tribology testing portfolio provides the most comprehensive range of tribological test instruments available from a single petroleum testing equipment specialist. Spanning core four-ball tribology testers, universal friction and wear testing machines, specialized fretting wear equipment, and Timken load-carrying capacity testers, Torontech's lubrication testing range addresses every major standardized tribological test method required in lubricant development, formulation, quality control, and specification compliance programs.

APPLICATIONS

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Application

Torontech's Lubrication & Tribology instruments serve a wide range of lubricant testing and tribological evaluation applications:

- Lubricant formulation and development: Four-ball, Timken, and universal friction and wear testing provide the tribological performance data needed to optimize additive packages, base oil selection, and lubricant viscosity for specific application requirements.
- Industrial gear oil and grease QC: Routine four-ball EP, wear, and Timken OK load testing ensures each production batch of industrial lubricant meets its specification limits before release.

- OEM lubricant approval programs: Torontech's tribology instruments are used to generate the ASTM-compliant performance data required for automotive and industrial OEM lubricant approval and certification processes.
- Additive package performance screening: Rapid four-ball and Timken testing enables efficient ranking of EP, anti-wear, and friction modifier additive candidates during lubricant development.
- Bearing and component grease selection: Four-ball wear and fretting wear testing data supports lubricant selection for rolling element bearings, plain bearings, and oscillating contact applications.
- Surface coating and treatment qualification: Universal friction and wear testing evaluates the tribological benefit of PVD, CVD, DLC, and other surface engineering treatments for metal components.
- Research and academic tribology: Torontech's automatic tribometers and fretting tester provide the measurement precision and data acquisition capability required for fundamental tribological research programs.

FEATURES

Why Choose Torontech's Tribology & Wear Testing Equipment for Petrochemical Products Series?

Torontech's integrated approach to lubrication and tribology testing delivers unique advantages for petroleum and lubricant laboratories:

- Most Complete Tribology Portfolio: Four-ball testers, universal wear machines, fretting tribometers, and Timken testers under one specialist supplier — no other petroleum testing equipment company offers broader tribological test coverage.
- Scalable Four-Ball Capability: From the manual Torontech4BT-1000 to the fully automatic Torontech4B10A tribometer with real-time friction data, plus the Torontech4BGS grinding spot measurement system — the four-ball portfolio alone is unmatched in its range of automation and measurement capability.
- Fretting Specialization: Very few equipment suppliers offer dedicated ASTM D4170-compliant fretting wear testing capability. Torontech's TT-4170 fretting tester addresses a real gap in most petroleum laboratory tribological test

portfolios.

- **Standards Coverage Across All Methods:** ASTM D2783, D4172, D2266, D2596, D2509, D2782, D4170, G99, G77, IP 239 — Torontech's lubrication testing instruments cover every major tribological test standard applied in petroleum and lubricant testing.
- **Dedicated Technical Support:** Torontech's tribology specialists provide instrument selection guidance, test method support, calibration services, and operator training across the entire Lubrication & Tribology testing portfolio.

TECHNICAL SPECIFICATIONS

Categories & Products Covered

1. Four-Ball Tribology Testers (Core Lubrication Testing)

The industry's most complete four-ball tribology tester portfolio — covering manual and fully automatic configurations for ASTM D2783, D4172, D2266, D2596, and IP 239 extreme pressure and wear testing of oils and greases.

2. Friction & Wear Testing Machines

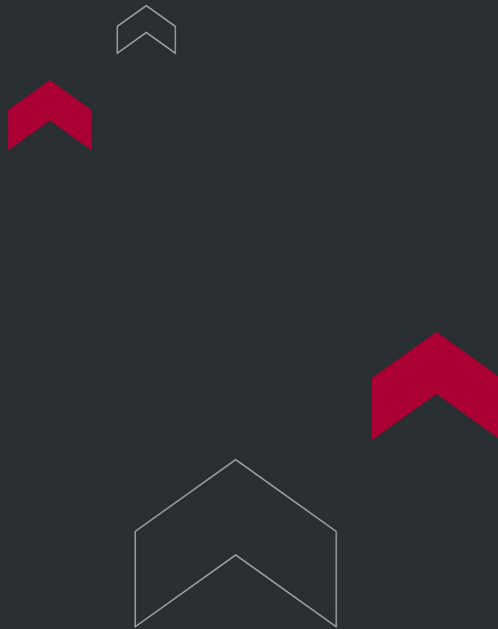
A versatile multi-geometry tribological testing platform for pin-on-disc, block-on-ring, and reciprocating wear testing of lubricants, coatings, and materials — supporting ASTM G99, G77, and related standards.

3. Fretting & Oscillation Wear Testing

A dedicated fretting tribology instrument for ASTM D4170 bearing grease fretting wear evaluation and advanced research into small-amplitude oscillatory wear mechanisms.

4. Load-Carrying Capacity Testers

Timken OK load determination per ASTM D2782 (lubricating oils) and ASTM D2509 (greases) — essential load-carrying capacity data for industrial lubricant specification compliance and OEM approval programs.



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

