Crude Oil Laboratory Package  
VP and BS&W Determination

Petrolab Company has the largest, most comprehensive selection of petrochemical and chemical test instrumentation and accessories in the world. The MINIVAP analyzers are the worldwide accepted standard for determination of the vapor pressure (VP) of petroleum. L-K Industries developed its first crude oil centrifuge in 1957, which became the basis for current ASTM standards. L-K has continued to be a lead manufacturer of petroleum centrifuges and related testing equipment, namely the Benchmark Centrifuge Series. A common focal point in petroleum measurement is determining VP and basic sediment and water (BS&W) content. The Crude Oil Laboratory Package is appropriate for refineries, terminals or crude oil quality laboratories. This package enables precise measurement of VP and BS&W and can result in significant economic consequence annually in crude oil quality control.

MINIVAP VP VISION & VPXpert Testers

- Portable, multi-purpose analyzer for crude oil, refined fuels and chemicals
- Easy-to-use, floating, stainless steel piston cylinder for collecting and mixing samples (250 ml)
- Built-in mechanical stirrer
- Compact pressure gauge to monitor pressure inside cylinder
- Eliminates risk of light hydrocarbon evaporation

Benchmark Laboratory Centrifuge Series

- The Benchmark S is designed for robust BS&W testing of crude oil on laboratory benchtops
- Variable speed motor with LCD Display and electronic braking
- Manual temperature control, integrated timer, emergency stop button and lid lock
- The Benchmark C is the first Class I, Division 2 oil centrifuge; high speed capability (2300 RPM) with programmable controls and safety lockout circuitry

Sample Heating Systems

- All laboratory sample heaters are Class I, Division 2 (Groups A, B, C & D, Temp T3C)
- Digital, programmable temperature control with resistive heating element
- Criterion Water Bath has fully-insulated stainless steel tub
- Trademark & Corrosion Test Heaters have aluminum dry block
- Test Cylinders available for ASTM & NGPA silver and copper strip tests
- Temperature range of 72°F to 250°F (22 to 121°C) for most models

Centrifuge Tubes & Other Glassware

- Centrifuge tubes & thermometers manufactured in-house in strict compliance with API & ASTM standards
- Certified glassware available
- Mercury and non-mercury options available

Calibration Services

- In-house, ISO/IEC 17025 accredited laboratory
- Scope includes: volumetric, gravimetric, temperature and RPM certification
- ASTM Fellow on staff as Laboratory Technical Manager
Sample MINIVAP Crude Oil Packages

<table>
<thead>
<tr>
<th>VPV-SUB021: VP VISION</th>
<th>VPX-CRude-PACKAGE: VPXpert</th>
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</thead>
<tbody>
<tr>
<td>• Floating Piston Cylinder</td>
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<tr>
<td>• Stainless Steel Filling Tube</td>
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<tr>
<td>• Coupling</td>
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<tr>
<td>• Floating Piston Cylinder</td>
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<tr>
<td>• Stainless Steel Filling Tube (7000 kPa)</td>
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<tr>
<td>• PTFE Filling Tube (2000 kPa)</td>
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<td>• PTFE Calibration Tube</td>
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<td>• Filters for FPC 250</td>
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<td>• Pressure Regulator</td>
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<td>• Coupling</td>
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Sample BS&W Laboratory Package

<table>
<thead>
<tr>
<th>Benchmark S Centrifuge</th>
<th>Criterion Water Bath System</th>
<th>12 Long Cone Tubes</th>
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<tbody>
<tr>
<td>Model #: LBS-C120</td>
<td>Model #: WB-T14C-110</td>
<td>Model #: S10DTHDFV15</td>
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Applicable Testing Standards

<table>
<thead>
<tr>
<th>VL VISION &amp; VPXpert</th>
<th>BENCHMARK C &amp; S CENTRIFUGES</th>
<th>CRITERION WATER BATH</th>
<th>TRADEMARK &amp; CORROSION TEST HEATERS**</th>
<th>CENTRIFUGE TUBES**</th>
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<tbody>
<tr>
<td>ASTM D6378</td>
<td>ASTM D4007/API MPMS Ch. 10.3</td>
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<td>ASTM D130</td>
<td>API 2542</td>
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<td>ASTM D91</td>
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<td>API MPMS Ch. 10.4 (withdrawn ASTM D96)</td>
<td>ANSI/ISA 12.12.01</td>
<td>ASTM D7671-10</td>
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<td>ASTM D1838</td>
<td>ASTM D2709</td>
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<td>IP 394, 409 &amp; 481</td>
<td>ASTM D893</td>
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<td>JIS K2258-2, SHT 0769, GOST R 52340</td>
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*Applies to Benchmark C unit only.
**Applicable standard depends on selected configuration.