

eravap

# VAPOR PRESSURE TESTING AT ITS BEST

## Standards

ASTM D5188, D5191, D6377, D6378,  
D6897, EN 13016-1, EN 13016-2,  
EN 13016-3

## Fuel specifications

ASTM D910, D1655, D1835,  
D4814, D6227, EN 228

EPA, CCQTA reference instrument  
CARB, NATO, US Military approved

Built-in shaker  
for crude oil measurements



eravap  
 combines  
 unmatched  
 precision  
 with solid  
 durability

## The Piston-based Measurement Principle

This leading-edge measurement principle in vapor pressure testing renders the external vacuum pump obsolete. The built-in piston draws in the sample at the beginning of the measurement. The piston then creates a vacuum by expanding the headspace above the sample to the predefined vapor to liquid (V/L) ratio. The instrument then heats up the measurement cell to the measurement temperature and records the vapor pressure.

## ASTM D5191 vs. ASTM D6378

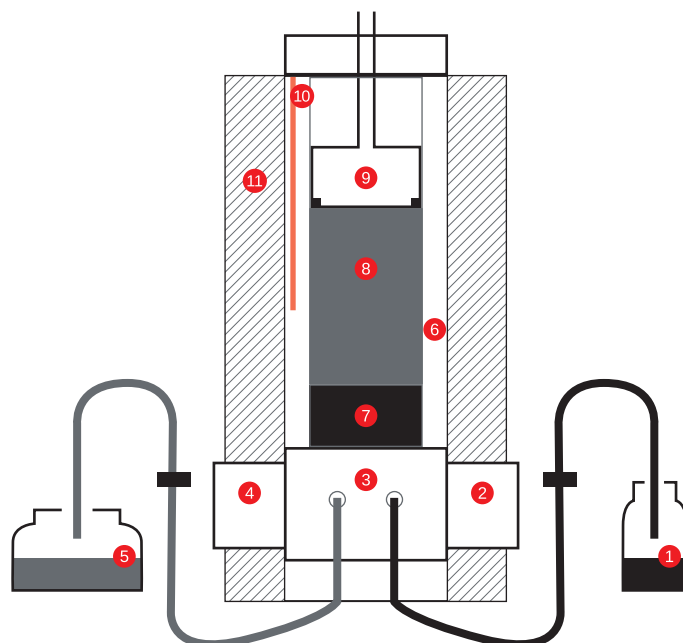
Using the conventional ASTM D5191, the sample is cooled and manually air saturated prior to the actual measurement which is performed in one single expansion step. ASTM D6378 on the contrary expands the sample in three steps to the same vapor to liquid ratio as ASTM D5191. The recorded pressures at the three steps are then used to calculate the contribution of dissolved gases to the vapor pressure, with the additional benefit that their contribution is reported independently from the vapor pressure of the liquid. This removes any possible operator bias due to the air saturation step needed for ASTM D5191.

## Unmatched Performance

Powerful Peltier elements make **ERAVAP** the only vapor pressure tester on the market that covers a temperature range from -20 °C–120 °C (4 °F–248 °F).

**ERAVAP**'s patented Pure Sampling™ valve technology minimizes any cross-contaminations. Its high precision 10 bar pressure sensor allows repeatabilities of  $r \leq 0.15$  kPa for pure substances clearly outperforming the standard methods.

- |                   |                               |
|-------------------|-------------------------------|
| ① sample          | ⑦ liquid phase                |
| ② inlet valve     | ⑧ gas phase                   |
| ③ manifold        | ⑨ piston with pressure sensor |
| ④ outlet valve    | ⑩ temperature sensor          |
| ⑤ waste container | ⑪ insulation                  |
| ⑥ measuring cell  |                               |



## Crude Oil Testing

**ERAVAP** measures the vapor pressure of crude oil following the versatile ASTM D6377 standard. It can be used to measure dead crudes or pressurized live crudes that still contain volatile compounds. Temperature as well as V/L ratio curve measurements allow determining the behavior of crude oil under various storage conditions. This helps to judge the vapor pressure trend with rising temperature – an important parameter when transporting crude oil across different climate zones.

Eralytics closely cooperates with the Canadian Crude Quality Technical Association (CCQTA) as well as the American Crude Oil Quality Association (COQA) to continuously improve the measurement procedures, maximizing safety in crude oil transportation.

The True Vapor Pressure (TVP) of crude oil – the highest vapor pressure possible – is reached at a V/L ratio = 0 where no headspace is present. **ERAVAP** accurately determines the TVP value from a series of automated measurements at different V/L ratios.

## Built-in Quality Control

**ERAVAP** fully complies with ASTM D6299, displaying up to eight control charts of different quality control samples directly on its full color touchscreen. If a QC measurement falls outside a predefined warning level, the analyzer automatically alerts the operator. This helps to ensure that strictest quality standards are met at any time.

## Applications

**ERAVAP**'s applications range from routine vapor pressure testing of gasoline, aviation fuel, crude oil and liquified petroleum gas (LPG) to any other organic or aqueous solvent. It is the ideal solution for R&D applications due to its versatile configurability. **ERAVAP** is used in laboratories around the world and is field-proven by many installations in mobile laboratories.



## Standard Model

### EV10 ERAVAP

Pressure range: 0 kPa–1 000 kPa (0 psi–145 psi)

Temperature range: 0 °C–120 °C (32 °F–248 °F)

## Low Temperature Extension

### EV01-Cool for EV10

Temperature range: -20 °C–120 °C (-4 °F–248 °F)

## Low Vapor Pressure Extension

### EV01-VPL for EV10

Repeatability  $r = 0.1$  kPa for decane at 37.8 °C (100 °F)

## High Viscosity Extension

### EV01-Visc for EV10

Heated inlet and outlet for highly viscous samples

## High Pressure Model

### EV20 ERAVAP LPG

Pressure range: 0 kPa–2 000 kPa (0 psi–290 psi)

Temperature range: 0 °C–120 °C (32 °F–248 °F)

## Autosampler

Directly attached optional  
10-position autosampler



# Technical Specifications of eravap

|                        |   |
|------------------------|---|
| Available Test Methods | ASTM D5188, D5191, D6377, D6378, D6897; EN 13016-1, EN 13016-2, EN 13016-3; IP 394, IP 409, IP 481; JIS K2258-2; SHT 0769, SHT 0794; SNT 2932; GOST 52340; freely programmable methods EPA / CARB / CCQTA / US Military and NATO reference methods, TVP measurement VP-V/L Speed Test™ – Combined T(V/L) and vapor pressure measurement |
| Correlation to         | ASTM D323, D1267, D2533, D4953, D5190, D5482, D2879 (optional low vapor pressure extension)   |
| Fuel Specifications    | ASTM D910, D1655, D1835, D4814, D6227; EN 228   |
| Hardware Features      | Built-in shaker for crude oil and accelerated V/L measurements<br>Patented Pure Sampling™ valve technology for minimized cross-contaminations   |
| Temperature Range      | 0 °C – 120 °C (32 °F – 248 °F) with Peltier technology – No external cooling required<br>Optional extension EV01-COOL: -20 °C – 120 °C (-4 °F – 248 °F) – External cooling required<br>Extrapolated range: -100 °C – 300 °C (-148 °F – 572 °F)  |
| Temperature Stability  | 0.01 °C (0.02 °F)   |
| Pressure Range         | EV10 ERAVAP: 0 kPa – 1 000 kPa (0 psi – 145 psi) – High precision pressure transducer<br>EV20 ERAVAP LPG: 0 kPa – 2 000 kPa (0 psi – 290 psi) – Extended range pressure transducer  |
| Pressure Resolution    | 0.01 kPa (0.0014 psi)   |
| Vapor / Liquid Ratio   | Variable from 0.02/1 – 100/1 – Single-point, multi-point and curve measurements   |
| Precision              | Repeatability: $r \leq 0.15$ kPa (0.022 psi) measured with EV10 and cyclopentane at 37.8 °C<br>Reproducibility: $R \leq 0.5$ kPa (0.073 psi)  |
| Sample Introduction    | Automated via built-in piston – No external vacuum pump required; 80 µm reusable filter   |
| Sample Volume          | 1 mL (2.2 mL per rinsing cycle)   |
| Measurement Time       | 5 minutes for a standard measurement  |
| Interfaces             | Built-in PC with Ethernet, front and rear USB and RS232 interfaces<br>Direct LIMS connectivity via LAN, output to printer or PC and export as CSV or PDF<br>Optional input by external keyboard, mouse and barcode reader   |
| Remote Control         | Remote service capability via Ethernet interface  |
| PC Software            | ERASOFT RCS – remote control Windows® software for multi-instrument remote control, convenient data transfer and result analysis  |
| Result Database        | Over 100 000 detailed test reports stored in internal memory  |
| Alarm Tracking         | All alarm messages are stored in the database together with the result  |
| Power Requirements     | Auto-switching 85 – 264 V AC, 47 – 63 Hz, max. 150 W (multi-voltage power supply)<br>Field application: 12 V DC (vehicle battery) adapter available   |
| Dimensions / Weight    | 29 x 35 x 34 cm (11.4 x 13.8 x 13.4 in) / 9.7 kg (21.4 lb)  |

Due to continuing product development, specifications are subject to change.

All eralytics products are manufactured under ISO 9001 regulations and are CE, ROHS and UL/CSA compliant.

