MINIVAP VPS and VPSH

The Standard for Vapor Pressure Testing of Gasonline and Crude Oil

Vapor pressure is an important physical property of volatile liquids especially of spark-ignition engine fuels. It provides an indication of how a fuel will perform under different operating conditions. For example, vapor pressure is a factor in determining, whether a fuel will cause vapor locks at high ambient temperature or at high altitude, or will provide easy starting at low ambient temperatures. Petroleum product specifications are regulated by various governmental agencies. Maximum vapor pressure limits for gasoline are legally mandated in many areas as a measure of air pollution control.

! WHAT CUSTOMERS SAY ABOUT THE MINIVAP

»Grab a Grabner VPS, it´s worth the value. We have two!«

Masroni Sabini, Laboratory Technologist, Shell Eastern Petroleum (Pte) Ltd., Singapore

From "REID" to "GRABNER"

In 1927, the German chemist Reid developed a method for vapor pressure determination of gasoline. In 1930 the ASTM published this procedure for vapor pressure of gasoline, crude oil, and other volatile petroleum products as ASTM D323. In response to a need for a method suitable for oxygenated and non-oxygenated gasoline a new test method termed ASTM D4953 (dry method) was developed by the ASTM based on the D323 standard. Advanced measuring technology facilitated the development of next generation vapor pressure instrumentation resulting in ASTM D5191 in 1992, which is equivalent to EN 13016-1.

The real milestone in vapor pressure determination of gasoline and crude oil was set within the ASTM in December 1998, when two new methods, developed and written by Dr. Grabner, passed the committee. Based on the precision data of a large inter-laboratory test of more than 3000 samples the new standard test method for measuring the partial pressure of the dissolved air in gasoline by double injection or triple expansion – ASTM D6378 – was published. This new method makes life much easier in the laboratory and on-site. The gasoline sample is just brought to the tester and either injected immediately with the syringe or, even easier, the inlet tubing is put into the sample and RUN is pressed. Five minutes later the result is displayed or printed. **No cooling and no air saturation is necessary anymore!**

In addition to the new method for gasoline, ASTM D 6377 – The New Standard for Vapor Pressure of Crude Oil, was published.

Today more than 20 years of experience in developing and manufacturing Vapor Pressure Testing equipment made Grabner Instruments "the vapor pressure company" – and the MINIVAP the most thoroughly tested equipment with the broadest market penetration worldwide.

Key Features

- VPS: ASTM D5191, D6378, ASTM D6377, IP394, IP481, EN 13016-1
- Excellent correlation to ASTM D4953 ("dry Reid" – US EPA) and ASTM D323 (Crude Oil and "wet Reid")
- VPSH additionally complies with EN 13016-2, IP 409
- Precision better than ASTM D6378:
  - Repeatability: ± 0.50 kPa (0.07 psi) or better
  - Reproducibility: ± 1.63 kPa (0.22 psi) or better
- US EPA Referee Highest Accuracy
- No vacuum pump required
- Built in Peltier temperature control
- Fully automated, fast measurement
- Easy cleaning with solvent using an automated cleaning procedure
- Very low waste
- Laboratory and field applications (portable)
- RS232 interface
- MINIWIN software (for PC)

Your benefits

No Vacuum pump

The unique measuring principle with the integrated piston for automatic sample introduction and expansion offers high accuracy and easy operation and eliminates the use of a vacuum pump.

Easy operation

Since MINIVAP is a fully automatic vapor pressure tester, a possible operator bias is eliminated. The measuring cell is rinsed and filled sample automatically. No further equipment is necessary to start with testing.

No chilling and air saturation necessary – ASTM D6378 (Grabner method)

The new ASTM standard D6378 constitutes a real milestone in the history of vapor pressure determination. Due to the outstanding measuring principle of the MINIVAP sample preparation prior to the measurement is not necessary. You save expensive labor time and achieve significantly better precision, as a possible operator bias is eliminated.

Vapor pressure of Gasoline – ASTM D6378 (Grabner method)

ASTM D6378 is the new Triple Expansion Method for the determination of the dissolved air in the sample. It was developed by Grabner Instruments and replaces ASTM D5191, D4953 and D323. Official correlation formulas are mentioned in D6378 and are pre-programmed in MINIVAP VPS/VPSH. Chilling and air saturation is not required!

DVPE of Gasoline Mini Method – ASTM D5191 + EN 13016-1+2

ASTM D5191, the standard of the Mini method: Only 1ml sample volume is measured against vacuum for the determination of the DVPE of gasoline. Both versions of the vapour pressure tester – the MINIVAP VPS and the MINIVAP VPSH – are capable to test gasolines according to this standard, too.

Vapor pressure of Crude Oil – ASTM D6377 (Grabner Crude Oil method)

The new Single Expansion Method for Vapor Pressure of Crude Oil was developed by Grabner Instruments. The precision of this method is significantly better than the conventional ASTM D323 method. Crude Oil is collected in a pressurized floating piston cylinder (distributed by Grabner Instruments) to keep the volatiles inside the Crude Oil. No light end losses occur during the complete test.

RVPE of Crude Oil – ASTM D323 (old REID method)

Both versions of the vapor pressure tester – the MINIVAP VPS and the MINIVAP VPSH – can correlate to the RVPE (Reid Vapor pressure equivalent) with a pre-programmed correlation formula.

US EPA approved

As early as 1993 the US Environmental Protection Agency EPA chose the innovative Grabner instrument MINIVAP VPS as the official reference instrument for the USA.

MINIWIN Software – Easy remote control application for integration of VPS and VPSH into your LIMS

Wide range of applications

MINIVAP testers are utilized in most major oil and pipeline companies as well as in independent test laboratories worldwide. Applications include the compliance control of vapor pressure of gasoline-oxygenate blends and crude oil in the laboratory and the production plant in addition to testing directly in the field. MINIVAP VPSH further allows volatility studies at elevated temperatures and the vapor pressure determination of crude oil at very low vapor liquid ratios.

Multiple Autosampler

MINIVAP VPS and VPSH can be additionally equipped with an automated multiple sampler providing 6 inlets for 6 different samples instead of one single inlet. This sampler is mounted on the right side of the instrument where 6 different samples can be applied at the same time and can be programmed with different measuring programs and parameters for different needs.