

## APPLICATION NOTE – MEASURING AND ANALYZING PETROLEUM & CRUDE OIL

**Application Need:** It is difficult to analyze the components of crude oil due to its highly complex chemical mixture. Among the standard physical analyses, such as flash point, vapor pressure, viscosity, etc., the density (or specific gravity) measurement is the preferred characterization procedure. Tests for density have historically been performed using equipment such as pycnometers or hydrometers, but such tests are time-consuming and complicated.

**Solution:** Use the Reichert Density4 density meter to determine API (American Petroleum Institute) gravity in crude oil.

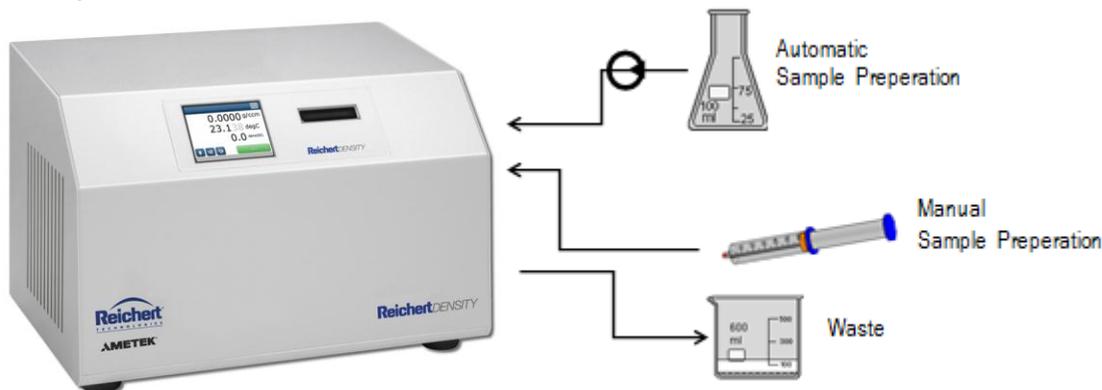
### Overview

With the Reichert Density4 density meter, the API Gravity of crude oil mixtures can be measured digitally using a minimal sample volume; results are precise and fast. With the highly-accurate temperature control unit, the Density4 is able, quickly and reliably, to adjust the temperature range of the measurement cell according to the International Standard Methods. Additionally, with integrated moisture and air pressure sensors, comparisons can be made between tests at various temperatures, while holding ambient conditions constant.

### The Process

The Density4 requires only a few milliliters of sample to measure. Measurements are very fast, usually finishing within 2 to 3 minutes per sample. With the temperature control option, the Density4 can automatically perform the API gravity measurement at various temperature levels, and the results are highly accurate. The results can be printed or saved to your computer.

### Density4



### Summary

Cleaning the Density4 is easy. You can use either standard or customized cleaning procedures to clean the measurement chamber, and it requires only a minimal amount of solvents. The Density4 also has a robust and user-friendly touchscreen display. These products contain chemically inert wetted parts to prevent corrosion from solvents and oil. The Density4 is ideal for the unique, stringent requirements of the petroleum industry.

*The petroleum industry uses the following standards for measuring product density, and these procedures require the use of a density meter.*

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| <b>ASTM D4052-96</b>    | Standard Test Method for Density and Relative Density of Liquids by Digital Density                              |
| <b>ASTM D5002-94</b>    | Standard Test Method for Density and Relative Density of Crude Oils by Digital Density Analyzer                  |
| <b>ASTM D1250</b>       | Standard Guide for Petroleum Measurement Tables  |
| <b>ASTM D5931</b>       | Density and Relative Density of Engine Coolant Concentrates and Aqueous Engine Coolants by Digital Density Meter |
| <b>DIN 51 757</b>       | Testing of Mineral Oils and Related Materials: Determination of Density  |
| <b>DIN ISO EN 12185</b> | Petroleum Products – Determination of Density – Digital Density Meter Method                                     |

### **Product Recommendations:**

**Reichert Density4** Density Meter Reichert Cat # 14004000

