

Application Note

Industry	Petroleum
Instrument	Density/Specific gravity meter + Auto Sampler
Measurement method	Resonant frequency oscillation
Standards	ASTM D4052

1. Scope

ASTM D4052 prescribes a method for measuring the density, relative density and API gravity of petroleum products (liquid samples) by a digital density meter. The KEM density/specific gravity meter used in this measurement conforms to this standard and can be used to make measurements automatically in combination with an Auto Sampler.

This application shows an example of the measurement of density (specific gravity) / API of lubricating oil using an Auto Sampler (Note 1).

2. Precautions

The correct values will not be obtained if there are bubbles in the sample. Remove any bubbles by heating the sample or using ultrasonic cleaning equipment before placing the sample in Auto Sampler.

3. Apparatus

Equipment	Density/Specific gravity meter
Option	Auto Sampler

4. Reagents

Rinse liquid 1	Toluene
Rinse liquid 2	Acetone

Using toluene as Rinse liquid 1 increases the rinsing efficiency by dissolving any lubricating oil adhering to the cell.

5. Procedure

- Calibration -

Place a sample vial containing pure water in Auto Sampler and perform the calibration.

- Measurement -

Place a sample vial containing the sample in Auto Sampler, and perform the measurement.

To perform calibration followed by sample measurement automatically, set both the pure water for calibration and the sample.

The Auto Sampler can also automatically sampling, measurement (calibration), rinse and dry the cell.

Parameter

The measurement parameters are set by the customer (see the table below).

Measurement parameter

The density and specific gravity of lubricating oil can be measured stably by the combination of density/specific gravity meter and Auto Sampler according to ASTM D4052 (Note 2).

Note 1) Oscillating type density/specific gravity