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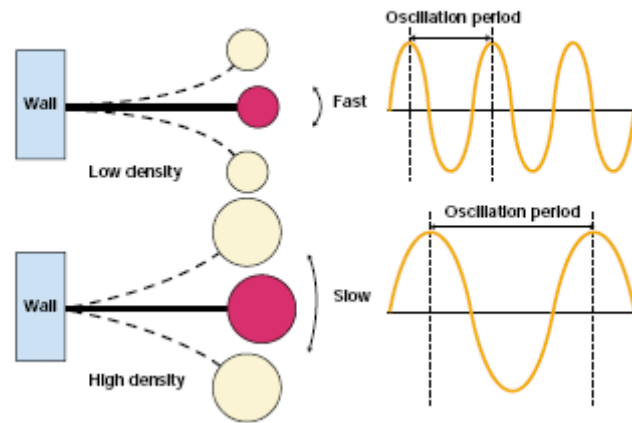
## Measurement principle

Just imagine the model where a weight is attached to a bar at the end and a bar is fixed on a wall as shown in the right figures.

And when you hit the weight by a finger, the weight starts vibrating.

Now you will find that the heavier the weight becomes, the slower it vibrates and vice versa. This is because the weight will vibrate on the oscillation period specific to a substance in proportion to the mass of a weight.

This means that one can determine the density of a substance by measuring its oscillation period since density becomes proportional to the mass when the volume is constant, i.e. a fixed tube.



## Density/Specific Gravity Meter DA-100

### Features

- Temperature can be selected in the range from 15 deg. C to 40 deg. C by 0.1 deg. C step. Also setting in deg.F(59°F ~104°F, 1°F step) is available.
- Can convert density/specific gravity to concentration value and display the result. Conversion Equation is linear and display is in 12 different units. It enables more efficient and effective routine measurement than conventional measurement with hydrometer for API degree, Baume degree and others.
- Can output data of density, specific gravity, concentration values, date and time, etc through RS-232C and can be connected to an external computer or an optional printer.(External computer and printer cannot be connected at the same time.)
- Parameter setting and operating is designed user-friendly, easy to use, being guided by dialogue message on display.
- Purge pump is equipped as standard to desiccate the measuring cell.
- Easy factor calibration of measuring cell can be performed using air and pure water. No complicated calculation is required.

Specification : See page 8

The DA-100 has built-in thermostat to enable stable temperature control, and density/specific gravity is measured quickly and precisely.

Accuracy of measurement is  $\pm 0.001\text{g/cm}^3$  by measuring resonant frequency.



Option: Auto sampling Unit ASU-100, and Printer IDP-100 are available.

|                           |  |   |
|---------------------------|--|---|
| Type and Model name       | DA-100 Density/<br>Specific gravity meter  |   |
| Measuring method          | Resonant frequency detection   |   |
| Measuring range           | 0 ~ 3g/cm <sup>3</sup>   |   |
| Measuring temperature     | 15 ~ 40°C ; 59 ~ 104°F   |   |
| Accuracy                  | Density  | ± 0.001g/cm <sup>3</sup><br>When calibrated by pure water and dry air |
|                           | Refractive index   | N/A   |
|                           | Temperature  | ± 0.5°C   |
| Minimum sample required   | 2 mL   |   |
| Auto viscosity correction | Not available  |   |
| Measuring time            | 1 ~ 4 minutes by manual  |   |
| Display                   | LCD with back light  |   |
| Sampling                  | Manual by syringe<br>Auto by ASU-100 (option)  |   |
| Calibration               | Air & Water  |   |
| Auto statistical data     | N/A  |   |
| Recalculation             | N/A  |   |
| Printout                  | IDP-100 impact dot printer(Optional)   |   |
| Data I/O                  | N/A  |   |
| External control          | RS-232C (1 channel)  |   |
| Power source              | AC100 ~ 115V or<br>AC220~240V ; 50/60Hz  |   |
| Power consumption         | Approx. 30W  |   |
| Dimension                 | 275(W)x350(D)x165(H)<br>mm   |   |
| Weight                    | Approx. 6kg  |   |
| Supplied parts            | Power cord 1 pce.<br>Sampling syringe 10 pcs.<br>Sampling/Drain tube 2 pcs.<br>Tube joint 2 sets<br>Desiccant 1 pce.<br>Desiccant tube 1 pce.<br>Surge prevention fuse 2 pcs.<br>Operation manual 1 pce.<br>Others |   |

## Applications



### Crude oil and petroleum products

Density or specific gravity of crude oil, fuel oil (heavy oil, light oil, kerosene, gasoline) and lubricant is applied to determine trading price or tax rate.



### Chemical products

For quality control of organic products in process or finished products in petrochemical industry or control of purity – concentration of inorganic substance in heavy chemical industry



### Beverages

Milk and dairy products, soft drinks, soda and fruit juice, etc. Density or Brix of these products is used for quality control in line or at finishing process.



### Alcoholic Beverages

Beer, wine, whisky and spirits. Alcohol degree or concentration of extract is measured to determine product price or tax rate.



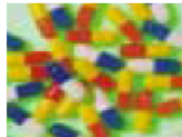
### Foods

Raw material for foods like sucrose solution, concentrated liquid, salty water, syrup, isomerized sugar, etc. and sauce, gravy, seasonings. Brix or concentration of targeted substance is measured to control quality of these products.



### Pharmaceutical products

Measurement of density of products is routinely practiced for quality control or R&D.



### Perfume and medicine

Both density and refractive index are necessary for quality control of perfume, and minimum sample required for measurement is also important for its cost. The new density meter can be used for combined measurement with refractometer.



### Fats and oils

Density or specific gravity of vegetable oil and animal fats is measured for quality control or research work.



### Electronic parts and semiconductor

These materials are quality controlled by measuring density of surface finishing liquid like etching solution or acid cleanser.



### Electrical products

Quality is controlled by measuring density of flux or plating solution.



### Others

Not only foregoing products and industries, many other applications are possible by measuring density, specific gravity, Brix and property concentration.

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