

265 | Automatic Densimeter Model DSG-2



When determining density, balances are used to calculate the mass of substances in air and liquid solutions. Based on the measured values, the density is calculated.

However, it is difficult to obtain uniformed data, and it requires plenty of time and care. This Automatic Densimeter can accurately determine density in a short period of time by simply pressing the start button. The results can be saved in the main unit (capable of outputting them to a PC or a small printer as an option.) A wide range of options are available, enabling the users to measure the density of solids such as rubber, plastics, ceramics, and metals, as well as that of liquids and the rate of change in volume of rubber.

■ PRINCIPLE

Upon entering the air and liquid densities, the sample needs to fix to the clamp. And the test starts to measure the mass in air. The beaker table goes up to submerge the sample in the liquid, and the mass in the liquid is measured. Each mass data is put into the calculating formula to obtain the density and specific gravity.

FEATURES

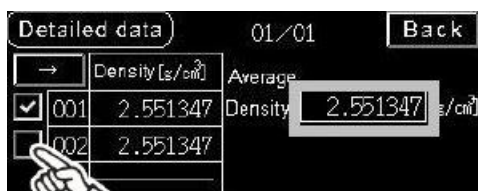
- Measuring a wide range of densities from foams to metals.
- Measuring in short time as little as approximately 15 seconds.
- Preparing in three simple steps: setting conditions, mounting/dismounting specimen, and pressing the start button.
- Saving liquid and air density tables in the main unit, and reflecting the liquid and air densities in the table by simply entering air and liquid temperatures.
- Allowing the use of other liquids such as alcohol in addition to distilled water as the immersion liquid.
- Controlling the liquid temperature by using a double-wall beaker and refrigerated circulator.
- Enabling volumetric and other measurements with the optional calculation software.
- Changing the beaker lifting speed and vertical stop position to improve the testing efficiency.
- Performing tests automatically by simply setting the sample, as an optional fully-automatic version.

LCD TOUCH SCREEN



Measurement Results Showing Screen

- Mass in air, mass in liquid, and density can be checked on a single screen.
- Tests can be performed continuously, and the average density is displayed automatically (up to 100 times.)



Detailed Density Data Showing Screen

- If tests are continuously performed, their individual data can be checked.
- Unchecking the box allows the average density to be recalculated, excluding the data.



Past Data Showing Screen

- Data saved in the main unit can be viewed at any time on the touch panel.
- Test conditions can also be checked.
- The screen has a search function, enabling searching by date or sample name.

SPECIMEN CLAMPS



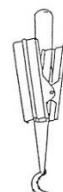
Ω Type Clamp

Plate-shaped specimen can be sandwiched.



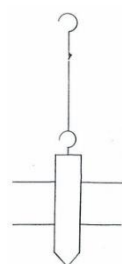
Pierce Type Clamp

This clamp can be pierced into samples.



Clip Type Clamp

Thick plate-shaped specimens, O-ring etc., can be clamped.



Clamp for Films

Can be fixed by sticking it into the film in 4 places.

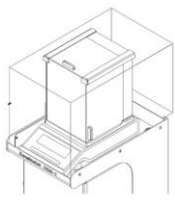
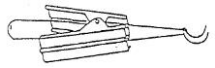
Other Available Clamps

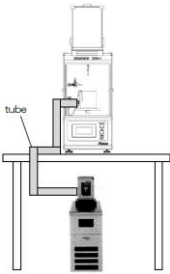
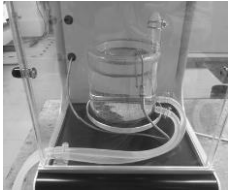
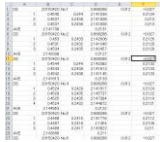
- Ω-type clamp with weights
 - Glass ball clamp (for liquid density measurement)
 - Clamp for pellets (glass container)
 - Clamp for grease
- Special types are also available.

■ ACCESSORIES

Name	Model (Part No.)	Photo	Qty
Balance unit	-----		1
Balance hook	-----		1
Pierce clamp	1-d (2130002)		1
Ohm clamp, without weight	2-a (2130006)		3
Standard beaker	-----		1

■ OPTIONS

Name	Model (Part No.)	Photo
Acrylic windshield for balance unit	SC	
Pierce clamp (Heavier than 1-d)	1-e	
Ohm clamp, with weight	2-d (2130008)	
Clip type clamp	3-a (2130005)	
Glass ball clamp for liquid density measurement	-----	
Calculation software (Optional program) ● Volume ● Volume change rate ● Weight change rate ● Forming rate ● *Liquid density measurement *Optional glass ball clamp and small beaker is required.	OP1	
Automatic input of air density	AT-A1	
Automatic input of water density, For standard beaker	AT-L1	

Automatic input of water density, For double-wall beaker	AT-L2	
Refrigerated circulator (Immersion liquid temp. control) ● Closed-loop chiller ● Measurement range: 10 to 30°C ● Power supply: Single-phase, AC230V, 50Hz	T3	
Refrigerated circulator (Immersion liquid temp. control) ● Closed-loop chiller ● Measurement range: 10 to 30°C ● Power supply: Single-phase, AC115V, 60Hz	T5	
Double-wall beaker, Open type (For open-loop chiller)	B2OP1	
Double-wall beaker, Closed type (For closed-loop chiller)	B2OP2	
Small beaker for liquid density measurement		
Mini printer	PSAC1 (BL2-58SNWJQ)	
Data import software for spreadsheet	EX-2	
RS-232C cable (Cross type)	RS-1	
RS-232C cable (Cross type) with USB conversion adapter	RS-2	
Power cord, type B (For USA etc.)	AC-U	
Power cord, type F (For Germany etc.)	AC-C	
Power cord, type F (For South Korea)	AC-K	
Power cord, type G (For UK etc.)	AC-B	
Power cord, type I (For China)	AC-G	

■ SPECIFICATIONS

Model	DSG-2
Capacity	100g
Calibration weight	Built-in
Minimum display	0.00001g (0.01mg)
Density display resolution	0.000001g/cm ³
Operation panel	4.7" LCD touch screen
Beaker lifting stroke	100mm
Beaker lifting speed	10, 20, 30mm/s (Selectable)
Test data storage capacity	1000 tests max.
Immersion liquid	Water, ethanol, acetone etc. (Note: Use in the environment whose temperature is between the range of 10 to 30°C)
Interface	RS-232C, 1 port (for PC and printer output); USB, 1 port (for PC output)
Electrical	● Main unit: Single-phase, AC100 to 240V, 50Hz or 60Hz, 0.1kVA ● Balance unit: Single-phase, AC100 to 240V, 50/60Hz, 0.05kVA
Dimensions	W290 x D443 x H610mm
Weight (approx.)	26kg (Excluding balance unit) 35kg (Including balance unit)

■ RELATED STANDARDS

JIS K 0061	Test methods for density and relative density of chemical products
JIS Z 8807	Methods of measuring density and specific gravity of solid
JIS K 6258	Rubber, vulcanized or thermoplastic-Determination of the effect of liquids
JIS K 6268	Rubber, vulcanized-Determination of density
JIS K 7112	Plastics-Methods of determining the density and relative density of non-cellular plastics
JIS Z 8804	Methods of measuring density and specific gravity of liquid
ISO 1183-1	Plastics Methods for determining the density of non-cellular plastics Part 1: Immersion method, liquid pycnometer method and titration method
ISO 1817	Rubber, vulcanized or thermoplastic Determination of the effect of liquids
ISO 2781	Rubber, vulcanized or thermoplastic Determination of density
ASTM D297	Standard Test Methods for Rubber Products—Chemical Analysis
ASTM D792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

265 | Automatic Densimeter (Fully-Auto)

Model DSG-A2

Density Tester with Automatic Sample Feeder



■ APPLICATION

Automatic Densimeter, model DSG-A2, is designed to measure the density (specific gravity) of samples fully automatically by mounting samples, including rubbers and plastics, in the designated sample cassette tray. Thanks to the underwater displacement method it has employed, this machine performs tests in a short amount of time compared to the density gradient tube method.

■ FEATURES

1. Capable of measuring density precisely for the fully automation;
2. Capable of controlling sample positions completely due to the menial work of the robot unit; and,
3. Superior in test repeatability and operability.

Model	DSG-A2
Sample dimensions	On a request basis. Prior confirmation is necessary for other dimensions (e.g., 40 x 40 x 2mm or Ø40 x 2mm)
Number of samples	Depending on sample dimensions (e.g., max 64)
Measurement time	Approx. 2 minutes / test (Depending on samples)
Sample feeding mechanism (up and down movement)	Electric actuator
Electrical (measurement unit)	Single-phase, AC100 to 240V, 50/60Hz, 0.1kVA
Electrical (sample feeder)	Single-phase, AC100 to 240V, 50/60Hz, 2kVA
Compressed air	Clean air, 0.3MPa or greater
Dimension	W595 × D600 × H920mm
Weight (approx.)	75kg

Specifications are subject to change without notice.



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