gonotec

OSMOMAT® 030

AUTOMATIC CRYOSCOPIC OSMOMETER

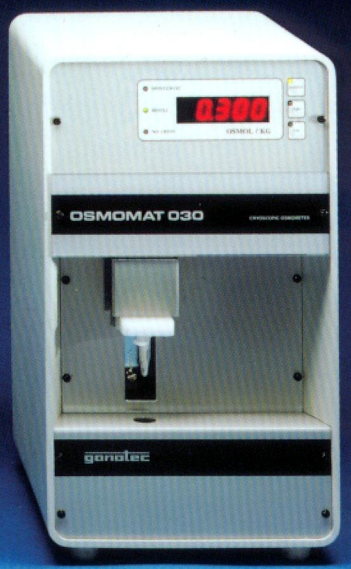
The OSMOMAT 030 was developed by Gonotec in the 70's and has been manufactured and very successfully marketed worldwide from our company in Berlin ever since. Constant improvements in the measuring system were able to maintain the instrument's technological edge and ensure that it remained, in the long term, one of the most popular tools for total osmolality measurement in medical, pharmaceutical and botanical applications.

This success was confirmed by a constant increase in sales. The latest development in the OSMOMAT 030 takes into consideration the ever more demanding customer requirements in the form of a totally new measurement electronics to make measurement even simpler. Within the framework of the old and trusted instrument design the measurement and control functions are now entirely microprocessor controlled.

In addition to improvements in user benefits there is also increased service-friendliness.

OSMOMAT® 030

AUTOMATIC CRYOSCOPIC OSMOMETER



FIELDS OF APPLICATION OF THE OSMOMAT 030:

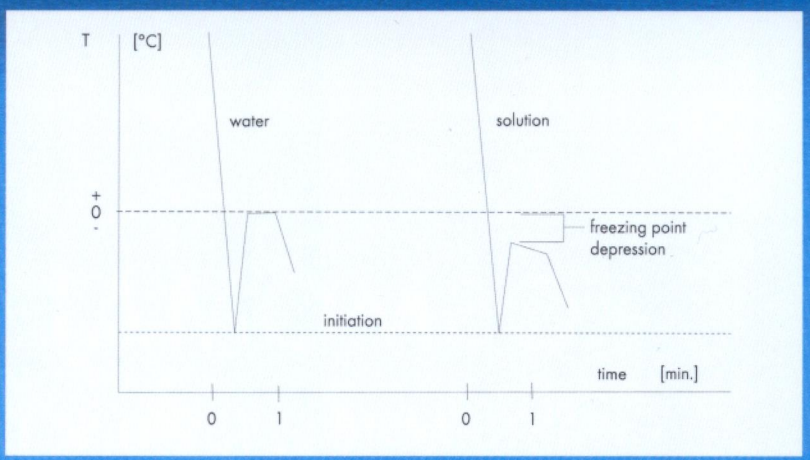
The cryoscopic osmometer is especially designed for routine measurements in the medical field and is also very suitable for measurements in research and industry. The OSMOMAT 030 determines the total osmolality of aqueous solutions. The instrument requires very small sample volumes and can thus be applied for extreme measuring tasks. Its rapidity allows serial measurements in a very short time.

THE OSMOMAT 030 CAN BE USED IN:

General medicine
Routine and research
Forensic medicine
Electron microscopy
Physiology
Clinical Laboratories
Intensive care laboratories
Paediatrics
Gynaecology
Invitro fertilization
Urology
Nephrology
Hemodialysis/ Hemofiltration
Veterinary medicine
Botany
Pharmacy
Dispensaries
etc.

THE MEASURING TECHNIQUE

The total osmolality of aqueous solutions is determined by comparative measurements of the freezing points of pure water and of solutions. Whereas water has a freezing point of 0 °C, a solution with saline concentration of 1 Osmol/kg has a freezing point of -1.858 °C.

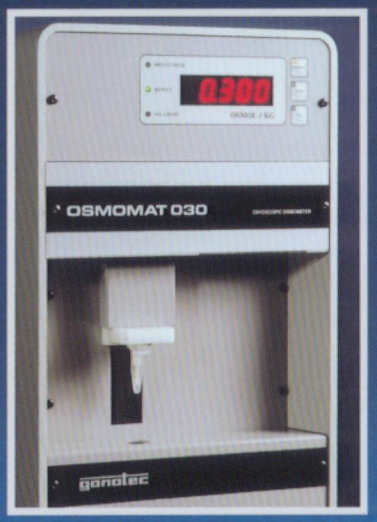


FUNCTION OF THE OSMOMAT 030

The sample solution is cooled by means of a peltier cooling system, the temperature being electronically controlled. When the sample solution has reached its target temperature below the freezing point the crystallization process of the sample is automatically initiated. This is done by injecting ice crystals into the solution (a stainless steel needle is cooled by means of a second cooling system to such an extent that tiny ice crystals stick to its tip; this needle is plunged into the super-cooled sample solution for a short time). Hereafter the temperature rises spontaneously until it has reached the crystallization temperature, the latter is measured with a resolution of 1.858/1000 °C (see diagram on the left). The reproducibility of the result depends definitely on the exact initiation of the crystallization process at the standardized supercooling temperature. With regard to precision the automatic initiation of the crystallization process by injecting ice crystals (as realized with the OSMOMAT 030) offers a distinct advantage as opposed to other procedures (i.e. vibration or stirring of the solution, or manual initiation of the crystallization). Consequently, with the OSMOMAT 030, precision of measurement no longer depends on individual operation.

ALL ADVANTAGES OF THE OSMOMAT 030 AT A GLANCE

- ✔ automatic calibration: no manual adjustment of a potentiometer is required
- ✔ no ice formation in the lower cooling system: reliable measurements even for long working periods
- ✔ measuring time approx. one minute: valuable in case of serial measurements
- ✔ automatic measuring: simple operation
- ✔ minimum sample volume: 50 µl standard sample volume, 15 µl-version available (optional)
- ✔ disposable plastic measuring vessels: saves time and money
- ✔ air cooling: no water supply needed, electronic wall-socket suffices
- ✔ latest electronic engineering: microprocessor controlled, automatic determination, display and storage of the result
- ✔ the upper front panel is clearly arranged with foil keyboard and easy-to-read digital display
- ✔ automatic error-detection: display shows clear error messages
- ✔ compact and modular construction: permitting fast and simple servicing
- ✔ measurement documentation with the printer version (optional): provides a hard copy of the result with date, time and a sample number (user selected 4-digit)
- ✔ favourable price



MEASURING IS AS EASY AS THIS

Switch the instrument on
The OSMOMAT 030 is ready for measurement within less than three minutes after switching on. In the meantime you can pipette the sample solution into the disposable plastic measuring vessel.

Start measuring
Push the measuring vessel onto the measuring vessel holder and then let the holder down into the lower cooling system.

Read the measured result on the digital display
After approx. one minute you can read the automatic stored measured value („RESULT" lamp on). Now lift the measuring vessels holder back into its upward position, remove the vessel and clean the thermistor probe using tissue or cotton wool. The OSMOMAT 030 is immediately in stand-by function again.

CALIBRATING IS AS EASY AS THIS

The OSMOMAT 030 is calibrated by performing measurements with distilled water and with a calibration solution of 300 mOsmol/kg. The procedure is the same as described above. The calibration remains constant for a long period of time.

OPTIONS OF THE OSMOMAT 030

The following useful accessories can be built in by the manufacturer at extra charge. They further increase the utility value of the standard instrument.

Option D: Built-in matrix printer using standard paper for the automatic recording of the result with continuous, 4-digit sample numbering, date and time. The OSMOMAT 030-D gives a reliable record of the results, together with sample numbers. It provides an increase in the measuring speed for serial measuring.

Option A: Analog output for continuous recording of the temperature by a potentiometric recorder.

Option RS: Digital serial output RS 232 C for the connection of the OSMOMAT 030-RS to a computer.

Option M: The OSMOMAT 030-M is adjusted to a micro sample volume of 15 µl. Reproducibility is then <±2%. This option is recommended if only these small sample volumes are at your disposal. If you measure sample volumes up to 50 µl with the OSMOMAT 030-M the reproducibility remains <±2%.

You can combine as many of the above mentioned options as desired.

TECHNICAL DATA OF THE OSMOMAT 030

(standard instrument)	
sample volume:	50 µl to 30 µl
duration of measurement :	approx. one minute
reproducibility	<± 0.5% (50 µl) <±1% (30 µl)
display:	4,5 digits
measuring range:	up to approx. 3000 mOsmol/kg
resolution:	1 mOsmol/kg over the entire measuring range
initiation of the crystallization process:	by means of the tip of a stainless steel needle covered with ice crystals which is controlled automatically
cooling:	by means of two separate peltier cooling systems with heat dissipation by air
lower cooling system:	electronic temperature regulation and stabilisation
ambient temperature:	10 °C to 35 °C
power supply:	220 V (±30 V), 50/60 Hz, 120 VA, special versions 110 V, 100 V
dimensions:	220 x 205 x 360 mm
weight:	approx. 7 kg

(options)	
Option D:	alpha-numerical matrix-printer 5x7 matrix
digits:	4-digit for sample number, 4-digit for result
paper:	normal paper, 43 mm
paper feed:	automatically after each print and with pushbutton
ink ribbon:	endless ink ribbon cassette, exchangeable
printer function:	switch on/off with pushbutton
error:	the nature of the error is printed clearly
Option A:	analog output through standardized 5-pole socket output voltage: 1 mV/mOsmol
Option RS:	data output (serial), standardized interface RS 232 C
baud rate:	1200 bps
data format:	1 start bit, 8 data bits, 2 stop bits (no parity check)
data line:	TXD
control line:	DTR, DSR
connector:	Canon, 25-pole
Option M:	special version for 15 µl sample volume reproducibility: then <±2%

QUALITY ASSURANCE
We are certified
Regular, voluntary supervision according to ISO 9001

Information and specifications contained within this publication may be subject to change without notice.

Standard accessories:	100 disposable plastic measuring vessels 20 ampoules of calibration solution 1 pasteur pipette 2 spare fuses, 1 mains cable 1 instruction manual
Option D:	8 rolls of printer-paper
Option A:	2-pole recorder cable with banana plug for potentiometric recorder
Option RS:	1 connection cable

Manufactured and sold by:

Gesellschaft für Meß- und Regeltechnik mbH
Eisenacher Strasse 56
10823 Berlin/Germany
Tel.: +49 (0) 30 7 80 95 88–0
Fax: +49 (0) 30 7 80 95 88–88
e-mail: contact@gonotec.com
Internet: http://www.gonotec.com

Version 1.2 Stand 10/01