SURFACE AREA AND PORE SIZE DISTRIBUTION ANALYZER

BELSORP MAX

The BELSORP MAX is Microtrac MRB's high-end volumetric gas adsorption instrument. It is used to measure adsorption isotherm from low relative pressure with high accuracy to obtain useful information about micropores.

The BELSORP MAX is designed for surface area and pore size distribution analysis of a wide range of adsorption isotherms. Equipped with a 13.3Pa pressure transducer, it is able to measure adsorption isotherms from a relative pressure as low as 1 x10-8 (N2 at 77K, Ar at 87K). The new AFSM method for free space measurement is applied, hence adsorption isotherms can be measured with high accuracy. The chemisorption option permits unattended measurement from pretreatment with step programs.

PRODUCT ADVANTAGES

- Measurement of specific surface area, pore size distribution, vapor adsorption and chemisorption (OP)
- Adsorption measurement from extremely low pressure (p/po=10-8 - 0.997)
- Up to 3 samples can be measured simultaneously
- Fully automated chemisorption option available
- Kr adsorption possible for low surface area material
- No coolant level controller required; highly reproducible data can be obtained (AFSM)
- BELSim, which analyze the pore size distribution by NLDFT and GCMC simulation method can be incorporated into the powerful data analysis software, BELMaster.
- ISO 9277 and JIS Z 8830 compliant

TECHNICAL DATA

Please note that the specifications below are just an examplary configuration.
Please contact us to discuss your individual requirements.

Measurement principle	Volumetric gas adsorption method + AFSM™
Adsorptive	N_2, Ar, Kr, NH_3, CO_2, H_2, CO, O_2, CH_4, other non-corrosive gases H_2O, MeOH, EtOH, C_6H_6, other non-corrosive vapors
Measurement port	Max 3 ports simultaneously STD mode (p/p0 = 10-4 –0,997): 3 ports High accuracy mode (p/p0 = 10-8 –0,997): 1 port (OP: 2 ports)
Specific surface area	0.01 m_2/g and above (N2/77K, Ar/87K) 0.0005 m_2/g and above (Kr/77K)
Pore size distribution	0.35 - 500 nm in pore diameter
Vapor adsorption	P/P0=~0.95 @below 30°C/40°C (depending on thermostatic chamber temperature and adsorbate)
Chemisorption	H2/CO adsorption for precious metal catalyst. Metal dispersion, Metal surface area, Metal particle size
Pressure transducer	133 kPa (1000 Torr) ±0.15% of F.S. x 5 units 1,33 kPa (10 Torr) ±0,5% of R. x 2 units (OP: 3 units) 0,133 kPa (0,1 Torr) ±0.15% of R. x 1 unit (OP: 2 units)
Thermostatic air oven	40°C / 50°C
Gas port	2 (up to 3 possible)
Vapor port	1
Sample tube	Standard: approx. 1.8 cm3 (optional: 5 cm3)
Vacuum gage/ pump	Cold cathode gauge (ATM –5 x 10-7 Pa)/Turbo molecular pump + Fore vacuum pump (OP)
Dewar vessel	Volume: 2.6 l Holding time: 60 h
Pretreatment heater	50-550 °C (3 ports)
Electric furnace (Chemisorption)	50-1100 °C (1 port)
Water bath	-10-70°C (3 ports)
Analysis software BELMaster™ 7	Adsorption isotherm, BET specific surface area ?type (ISO9277), BET automated analysis, Langmuir supecific surface area, BJH, DH, CI, INNES method, t-plot
Analysis software BELMaster™ 7 cont.	HK, SF, CY method, NLDFT / GCMC(OP BELSim™), MP method, Dubinin-Astakhov method, difference adsorption isotherm, molecular probe, Adsorption rate analysis(OP)

Dimensions (W x H x D)	565 x 850 x 580 mm
Weight	84 kg (main body)
Utility - Gas	He, adsorption gas: 0.1MPa (G)
Utility - Joint	1/8" Swagelok joint Compressed air: 0.5~0.6 MPa (G) quick connect for 1/4” plastic (teflon) tube
Utility - Power	Main body: AC 100-120 V or 200-240 V / 1500W, 50 / 60 Hz (400 W for vacuum pump) Heater: AC100-120V/200-240V, 600W, 50 / 60 Hz

www.microtrac.com/belsorp-max