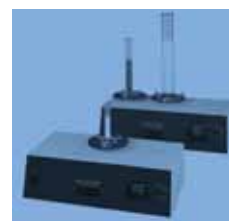


AUTOTAP

AUTOMATED TAP DENSITY ANALYZERS

AUTOTAP



AUTOMATED TAP DENSITY ANALYZERS

Tapped Density

Each particle of a solid material has effectively the same true density regardless of size or shape, but more or less geometric space is occupied by the material according to the relative particle-particle cohesion and mechanical interference. That is, the apparent bulk densities of powdered, granular or flaked materials are highly dependent on the manner in which the particles are packed together. Furthermore, handling or vibration of particulate material causes the smaller particles to work their way into the spaces between the larger particles. The geometric space occupied by the powder decreases and its density increases; Ultimately no further natural particle packing takes place without the addition of pressure and maximum particle packing is achieved. Under controlled conditions of tapping rate, tap force drop and cylinder diameter, this condition of maximum packing efficiency is highly reproducible. Tap density measurement is formalized in a number of international standards to which both Autotap models conform.

Standards Suitability

- ASTM B527 (metallic powders)
- ASTM D4164 (formed catalysts)
- ASTM D4781 (fine catalysts)
- IDF 134 (dried milk)
- ISO 787-11 (pigments)
- ISO 3953 (metallic powders)
- ISO 8460 (instant coffee)
- ISO 8967 (dried milk)
- ISO 9161 (uranium dioxide powder)
- JIS K5101-12-2 (pigments)
- JIS Z 2512 (metallic powders)
- MPIF 46 (metal powders)
- USP<616>Part II (pharmaceutical powders)

To measure tap density, samples are placed in standard graduated cylinders and mounted on a universal tap platform designed to accommodate cylinders from 10 ml to 500 ml. After noting the initial volume and weight of the material, the number of desired taps is entered and tapping started. When the specified number of taps is completed, tapping stops automatically. Reading of the powder surface is facilitated by automatic rotation of cylinders during tapping which promotes a flat powder interface.

If the material characteristics are unknown, tapping may be done continuously, or step-wise by user specified numbers of taps, while noting or graphing the results until the volume becomes constant. Once the tapping behavior is known the proper number of taps, typically thousands, including a significant excess (to account for future variability between samples) can be preset on subsequent runs thus freeing the operator for other work.

Specifications

Performance

- Stations:** Autotap:1 Dual Autotap 2
- Cylinder sizes:** 250 ml standard; 10ml, 25ml, 50ml, 100ml, 500ml, 1000ml optional.

1000ml requires auxillary plate (p/n 04000-1299) or quick-change assembly p/n 01470-5830.
- Nominal tapping rate:** 260 min⁻¹
- Tapping (drop) height:** 3mm (0.125 inch). 1mm (optional).
- Tap counter:** 1-999999
- Display:** LCD, automatic countdown, automatic reset.
- Platform rotation:** Automatic.
- Sample Weight limits:** 900g (2 lb) with no effect on tapping rate.
1800g (4 lb) with 5% reduction in tapping rate.
2275g (5 lb) with 15% reduction in tapping rate.
- Controls:** on/off, start, stop, counter reset.
- Lock-out:** optional keyed padlock for tap counter.

Physical

- Height:** 175 mm (7 in) excluding cylinders
- Width:** 540 mm (21 in)
- Depth:** 280 mm (11 in)
- Weight:** 11 kg (24 lbs) Autotap
14 kg (31 lbs) Dual Autotap

Electrical

- Voltage:** 110-120 V or 220-240V
- Frequency:** 50/60 Hz
- Power (max):** 150 VA
- Connection:** Grounded, single- phase outlet

Environmental

- Temperature:** 15°C - 40°C
- Max. Related Humidity:** 80%

Ordering Information

- Autotap, 50 Hz, 100-115v:** p/n 02106-50-100-1
- Autotap, 50 Hz, 220-240v:** p/n 02106-50-1
- Autotap, 60 Hz, 100-115v:** p/n 02106-60-1
- Autotap, 60 Hz, 220-240v:** p/n 02106-60-220-1
- Dual Autotap, 50 Hz, 100-115v:** p/n 02105-50-100-1
- Dual Autotap, 50 Hz, 220-240v:** p/n 02105-50-1
- Dual Autotap, 60 Hz, 100-115v:** p/n 02105-60-1
- Dual Autotap, 60 Hz, 220-240v:** p/n 02105-60-220-1



Quantachrome Instruments' corporate headquarters in Boynton Beach, Florida.

Quantachrome®

Renowned innovator of ideas for today's porous materials community.

For over 40 years, Quantachrome's scientists and engineers have revolutionized measurement techniques and designed instrumentation to enable the accurate, precise, and reliable characterization of powdered and porous materials:

- Adsorption/Desorption Isotherms
- Surface Area Measurement
- Pore Size Distribution
- Chemisorption Studies
- Water Sorption Behavior
- Mercury Porosimetry
- True Solid Density
- Tapped Density

Not only are Quantachrome products the instruments of choice in academia, but the technology conceived and developed by our expert staff is applied in industrial laboratories worldwide, where research and engineering of new and improved porous materials is ongoing. Manufacturers also rely on porous materials characterization technology to more precisely specify bulk materials, to control quality, and to isolate the source of production problems with greater efficiency.

Quantachrome is also recognized as an excellent resource for authoritative analysis of your samples in our fully equipped, state-of-the-art powder characterization laboratory.



Quantachrome Instruments Application Laboratory.

CORPORATE HEADQUARTERS

Quantachrome Instruments

1900 Corporate Drive
 Boynton Beach, FL 33426 USA
 Phone: +1 800 989 2476
 +1 561 731 4999
 Fax: +1 561 732 9888
 E-mail: qc.sales@quantachrome.com
 www.quantachrome.com

CHINA

Quantachrome Representative Office

M806, Jingbao Garden
 183 Andingmenwai Street
 Beijing 100011, China
 Phone: +86 800 810 0515
 +86 10 64400892
 +86 13 801191442
 Fax: +86 10 64400892
 www.quantachrome.com.cn

EUROPE

Quantachrome UK Limited

Pale Lane Farm, Pale Lane
 Hartley Wintney
 Hook RG27 8BA, UK
 Phone: +44 (0) 1252819719
 Fax: +44 (0) 1252819901
 www.quantachrome.co.uk

EUROPE

Quantachrome GmbH & Co. KG

Rudolf-Diesel Str. 12
 85235 Odelzhausen, Germany
 Phone: +49 (0) 8134/93240
 Fax: +49 (0) 8134/932425
 www.quantachrome.de



Quantachrome Instruments' quality management system is certified to be in accordance with ISO9001:2000.

WORLDWIDE SALES AND SERVICE

Argentina	Mexico
Australia	Middle East
Austria	Morocco
Bahrain	Netherlands
Belarus	New Zealand
Belgium	Norway
Brazil	Oman
Bulgaria	Pakistan
Canada	Peru
Central America	Philippines
Chile	Poland
China	Portugal
Colombia	Puerto Rico
Croatia	Romania
Cyprus	Russia
Czech Republic	Saudi Arabia
Denmark	Singapore
Egypt	Slovak Republic
Estonia	Slovenia
Finland	South Africa
France	South Korea
Germany	Spain
Greece	Sri Lanka
Hungary	Sweden
India	Switzerland
Indonesia	Taiwan
Ireland	Tanzania
Israel	Thailand
Italy	Turkey
Jamaica	Ukraine
Japan	United Arab Emirates
Jordan	United Kingdom
Kuwait	Uruguay
Latin America	Uzbekistan
Latvia	Venezuela
Lithuania	Vietnam
Malaysia	

Quantachrome
 INSTRUMENTS

Serving Porous
 Materials and Powder
 Characterization
 Needs Since 1968



www.quantachrome.com

Trademarks and registered trademarks are the property of their respective owners.