

## ABOUT DFM

DFM is Denmark's National Metrology Institute (NMI). DFM is a signatory to the CIPM-MRA arrangement, and performs measurements under accreditation by DANAK.

The CIPM-MRA and DANAK's agreement with EA and ILAC ensure mutual recognition of measurements worldwide.

## TRACEABILITY

All measurements are traceable to recognized national and international standards.

## ISO CERTIFICATION

All services are covered by DFM's ISO 9001 certification

## CONTACT DFM

DFM A/S  
Kogle Alle 5  
DK-2970 Hørsholm  
Denmark

www.dfm.dk  
administration@dfm.dk  
Tlf.: +45 7730 5800

# Calibration of particle counters



Photo: Particle counter in a cleanroom facility.

## Applications

Particle counters are widely used in the pharmaceutical industry for detection of airborne particles, for instance on clean room production lines.

These facilities must meet demanding requirements to the number of airborne particles as defined by the authorities, such as the FDA.

For this reason, calibrated measurement equipment is needed to ensure these requirements are met. With the accredited calibration by DFM you stay safe and compliant.

## Traceability

After the calibration, your particle counter is directly traceable to DFM's primary standard, which ensures your counter gives reliable results.

To provide this traceability DFM maintains full traceability of each of the quantities required for the calibration:

- Number of particles
- Particle size
- Volume flow
- Air velocity
- Time
- Temperature
- Barometric pressure
- Size setting \*)
- Size resolution \*)

\*) : calibration traceable, accreditation pending



## CONSULTANCY SERVICES

Do you need new measurement capabilities, does a method call for a bit of scrutiny, or are you perhaps seeking to acquire new equipment? Take advantage of the consultancy services we provide in addition to our calibration services.

As an independent institute deeply rooted within research and metrology, DFM has gained the reputation of being an agile, solid, and valuable partner. Contact us and find out why.

# Specifications and services

DFM calibrates the Particle Number Concentration (PNC) under DANAK accreditation (no. 255) and in accordance with ISO 21501-4 section 3.3 for selected sizes of polystyrene particles between 0.1 µm and 6 µm. In addition, DFM reports the counting efficiency (CE). DFM may also carry out additional testing according to ISO 21501-4. This service may cover a) False count rate, b) Sampling flow rate, c) Sampling time, d) Size setting and e) Size resolution.



Photo: Bottle with a suspension of polystyrene particles for reference purposes. The average particle size is determined as part of the accredited services K09.101 og K02.102.

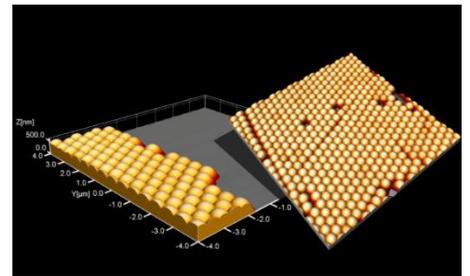


Photo: Polystyrene particles measured by Atomic Force Microscopy (AFM), services K09.101 and K09.102

## Calibration and Measurement Capability (CMC)

The Particle Number Concentration (PNC) is defined as the number of particles per unit volume, typically expressed as a number per cm<sup>3</sup>. The measurement range for DFM's accredited calibration service is 0 – 5 cm<sup>-3</sup>. The expanded measurement uncertainty U(PNC) (k=2) depends on the diameter of the particles:

0.1 µm – 1.999 µm: U(PNC)/PNC = 5%, and 2.0 µm – 6.0 µm: U(PNC)/PNC = 8%

### Services

- K09.001: Calibration of counting efficiency, one particle counter, at one particle size \*)
- K09.002: Additional particle sizes in the calibration, same measurement session \*)
- K09.003: Additional ISO 21501-4 tests , per counter

### Related services

- K09.101: Bottle of polystyrene particles (100 nm - 5 µm diameter) calibrated by AFM \*)
- K09.102: Calibration of polystyrene particles (100 nm - 5 µm diameter) by AFM \*)
- K09.103: Bottle of polystyrene particles, calibrated by means of light scattering
- K09.104: Calibration of polystyrene particles by means of light scattering

The services marked \*) are under accreditation.

**Prices and further descriptions of the services are found at [www.dfm.dk](http://www.dfm.dk).**

## CONTACT DFM

DFM A/S  
Kogle Alle 5  
DK-2970 Hørsholm  
Denmark

[www.dfm.dk](http://www.dfm.dk)  
[administration@dfm.dk](mailto:administration@dfm.dk)  
Tlf.: +45 7730 5800