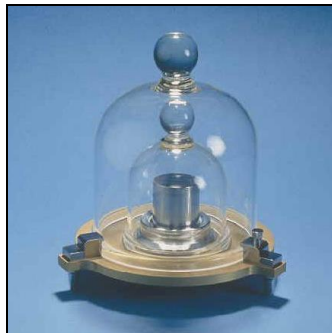


FIELD OF ACTIVITY



National prototype of the kilogram. Copy n° 69 of the International prototype



Robotic mass comparator.
Resolution: 0.1 µg.
Working range: 1 mg to 5 g



Silicon Sphere – Standard for the Solid Density Laboratory

The Laboratories for Mass and Solid Density are responsible for the National Standards of Mass and Solid Density, providing the following additional services:

- Dissemination of the unit of mass, solid density;
- Calibrations;
- Participation and coordination of international laboratory comparisons;
- Technical support for legal metrology.

SI UNIT

Base unit of the International System (SI) of the quantity Mass (m):

kilogram (kg)

The kilogram, symbol kg, is the SI unit of mass. It is defined by taking the fixed numerical value of the Planck constant h to be $6.626\ 070\ 15 \times 10^{-34}$ when expressed in the unit J s, which is equal to $\text{kg m}^2 \text{s}^{-1}$, where the metre and the second are defined in terms of c and $\Delta\nu_{\text{Cs}}$.

Derived unit of the International System (SI) of the Density (ρ):

kilogram per cubic meter (kg/m^3)

Defined as the mass per unit volume of a substance at a given temperature and pressure

TRACEABILITY

Mass


The traceability is assured by the regular calibration of the National prototype kilogram, copy n° 69 at the *Bureau International des Poids et Mesures* (BIPM). The participation in EURAMET comparisons allows the quality verification of the standard calibrations of multiples and sub-multiples of the kilogram.

Density

The traceability is assured by national standards of the mass laboratory and a silicon sphere calibrated in PTB (Germany).



AVAILABLE SERVICES**Calibration**

EQUIPMENT	RANGE	UNCERTAINTY	
Mass			
Mass standards of class E1, E2, F1 and F2	1 mg to 10 kg 	Accordingly with OIML R111 (2004)	
Mass standards of class E2, F1 and F2	50 kg and 20 kg		
Mass standards of class F2, M1, M2 and M3	100 kg to 1 000 kg		
Other materialized measures	1 mg to 50 kg		
Solid Density			
		Volume	Density
Mass standards of class E1/E2	1 g to 1 kg	0.00015 cm ³	0.0012 g/cm ³
Silicon spheres	Up to \varnothing 94 mm		

Metrological Control

EQUIPMENT	TESTS	LAWS	
Weights	Pattern Approval	Portaria n.º 100/86 de 24 de Março	

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