

## Calibration

### Definition:

Weights & masses calibration consists in determining its conventional mass. "Conventional mass" concept is detailed in OIML D28 document: "The conventional value of a weight is equal to the total mass of the reference weights produced in a material having a density of 8000 kg/m<sup>3</sup>, which balances that weight, in air having a density of 1,2 kg/m<sup>3</sup>, the operation being performed at 20 °C."

### Measurement method:

Calibration methods used in the laboratory are standardised calibration methods recognised by OIML recommendation R111.

- Mass value determined by substitution method (Borda double weighing method): difference between the indications of the balance in equilibrium with mass standard A, then with mass B to be determined on the same load receptor.
- Substitution scheme: elementary sequence of weighings using the ABBA type "mirror" substitution method.
- Determination: result of a set of weighing operations carried out according to a defined substitution scheme, making it possible to obtain an average value for the difference between mass B and standard A.

### Number of weighing cycles:

Class	E1	E2	F1	F2	M1, M2, M3
Number of ABBA	5	3	1	1	1



### Uncertainties measurement:

The uncertainties proposed by the Zwiebel SAS laboratory are given with two standard deviations. All equipment having an impact on the results are calibrated according to internal procedures belonging to the documentary system covered by the accreditation, using standards calibrated reference in conformity with the International System of Units SI.

### Document:

Calibration results are recorded in calibration certificates covered by COFRAC accreditation no. 2-1218 (scope available at [www.cofrac.fr](http://www.cofrac.fr)), supplemented where appropriate by a "verification report" section. This report forms an integral part of the certificate and indicates the reference standard used to determine compliance (generally OIML R111).

The issue of a COFRAC-ILAC MRA calibration certificate bearing the logo Cofrac - Calibration-ILAC MRA guaranteed the traceability of calibration measurements to the International System of Units SI.

The laboratory does not issue any opinions or interpretations.

### Additional operations:

In the event of non-compliance in relation to the Maximum Tolerated Errors (MTE), the weight may be cleaned, adjusted or replaced (additional invoicing).

If certain weights or masses do not meet the metrological criteria required by OIML Recommendation R111, a calibration level will be carried out (calibration with the uncertainty of the desired class but without a verification report).

## Packaging

Weights must be carefully packaged for transport to prevent impact and damage.

Each weights of classes E or F must be individually protected and placed in individual or collective boxes.

Minimum packaging :



## Use of accreditation mark

Zwiebel's customers are not authorised to use the accreditation mark (apart from the full reproduction of calibration certificates issued by Zwiebel SAS). In the event of misuse, Zwiebel SAS reserves the right to take any action it considers appropriate.

## Complaints

The complaints handling process is available on our website [www.zwiebel.fr](http://www.zwiebel.fr) in the download section.

## Note

In the case of COFRAC calibrations, we inform you that confidential data may be divulged during audits carried out by external bodies subject to a confidentiality clause.