



Precision Weight Calibration

Calibration Services

Buy Weights

Download Certificates

The Metrology Lab

Technical Articles

Metric Weight Tolerances

About Us

Contact Us

Blog

Archives

What's New

The Impact of OOT Calibration Weights

Calibration Weight Frequencies

Understanding the Weight Traceable Certificate

Calibration Weight Usage - Getting Good Measurements

Measurement Uncertainty & Minimum Sample Weight for Balances

Search

« Welcome

Weight Checks for Laboratory Balances »

Figuring out the Accuracy Classes

Home » Blog » Figuring out the Accuracy Classes

This is a quick guide and background on weight accuracy classifications for your balance calibration weight (i.e. mass standards) to ensure traceable and accurate weighing measurement & calibrations.

When choosing balance calibration weights for your weighing and measurement application, the first thing that needs to be addressed is what accuracy class will be needed. Accuracy classifications are predetermined accuracy designations at the time of manufacturer. Currently there are three major categories for classifying precision laboratory weights; ASTM, OIML, and Manufacturing (Ultra Class and Ulti Class).

WEIGHT CLASS BACKGROUND

The ASTM Classification is as per the document ASTM E 617. Most of the domestic (United States) weight classifications adhere to this specification. The Weight Classes are broken out numerically from ASTM Class 0 to 7, starting with the most accurate classes first. ASTM Class 0 would be the most accurate and tightest allowable tolerance of the weight classifications followed by ASTM Class 1 as the next most accurate (tightest allowable tolerance). In most precision laboratory and calibration applications ASTM Class 4 weights would be as far down as you would probably want to go.

The OIML Classification is used internationally (Europe, Africa, Asia, South America, etc.). OIML R 111-1 is the document for the OIML weight classifications. The classifications are broken out as per alpha-numeric designations, Class E1, Class E2, Class F1, Class F2, Class M1, Class M2, and Class M3. OIML Class E1 would be the most accurate and tightest allowable tolerance followed by OIML Class E2 and OIML Class F1 respectively. For precision laboratory and calibration applications OIML Class F2 should be used as a minimum accuracy for the weights.

Manufacturing weight classifications, Ultra Class and Ulti Class, are for very precise laboratory applications. These weight classifications are only recognized by the end users and the manufacturers themselves. The weighing regulating bodies of ASTM, NIST, and OIML do not formally recognize Ultra Class or Ulti Class. The classifications and tolerance values are very similar to the ASTM Class 0 weight classification.

ACCURACY CLASS APPLICATIONS AND USAGE

There aren't too many standards or references in terms of what weights to use and when.

Speaking in metrological terms, a practical guide would be the following:

ASTM Class 0, Ultra Class, and OIML Class E1 should be used as at the highest level of precision i.e. mass standards (calibrating other weights), micro-balances testing and calibration, and critical weighing applications.

ASTM Class 1, 2 and OIML Class E2, F1 should be used in precision applications i.e analytical balance testing and calibration.

ASTM Class 3, 4 and OIML Class F1, F2 are best suited for Top Loading Balance calibrations and testing, and moderate precision applications (laboratory non-critical).

For more information and background please see our Calibration Weight Accuracies under the Technical Articles in this site.

This entry was posted on Tuesday, December 1st, 2009 at 7:06 pm and is filed under [Uncategorized](#).

Comments are closed.



Looking for weighing equipment & systems?
ATLANTIC SCALE COMPANY

Calibration Cert
No. 2736.01