

# Mass Standards Handbook — Troemner Weights and Calibration Services

Troemner offers the most comprehensive selection of Precision Masses and Mass Standards.

- **ANY SIZE** - 50 micrograms to 2,000 kg, 0.00001 oz to 5000 lbs.
- **ANY DENOMINATION** - metric, avoirdupois, troy ounce, grain, pennyweight, carat, customization is available.
- **ANY TOLERANCE** - All ANSI/ASTM, NIST, OIML, customized tolerances are available.
- **ANY MATERIAL** - stainless steel, brass, aluminum, cast iron, steel, gold, silver, titanium and more.
- **ANY SHAPE** - Precision, OIML, grip handle, slotted, hook bar, cylindrical, customized shapes are available.

## *Troemner Calibration Certificate Choices –*

**Troemner NVLAP Weight Calibration Certificate** - NVLAP calibrations/certifications meet all ISO, FDA, GMP, GLP, DOD, ANSI/NCSS Z540-1 and Nuclear requirements and are traceable to NIST. Procedures and processes used to generate this multi-page certificate, as well as its format and content, are prescribed by NVLAP. Users held absolutely accountable for their weights should request NVLAP certification. The document contains:

- Customer name & address
- Date of calibration
- Equipment and standards used in the calibration
- Accuracy class
- True mass value (mass in a vacuum)
- “As found” mass correction (for recalibration) and “as left” mass corrections for each weight
- Uncertainty of measurement process for each weight. Uncertainty to tolerance ratios are guaranteed.
- Environmental conditions during test
- Construction and density of the weight(s)
- Calibration procedure used
- A statement of traceability to NIST
- Helpful list of terms and definitions

**Troemner UKAS Certificate of Calibration** - Similar in terms of content to the NVLAP certificate described above, however, this document also meets the requirements of the United Kingdom Accreditation Service.

**Troemner Traceable Certificate** - Our Traceable Certificate includes nominal value, mass correction, uncertainty and tolerance for each weight in addition to the basic customer information such as name, address, purchase order number, date of calibration, accuracy class, density and statement of traceability to NIST. The Traceable Certificate measurement process includes one series of comparisons using a single standard.

## *Additional Troemner Mass Services –*

**Troemner NVLAP Density Determinations** - Troemner’s mass metrology laboratory can determine the actual density of one-piece mass standards that range in size from 1 g to 5 kg. Troemner provides this service to reduce the uncertainty of calibrating one-piece precision ASTM Class O and OIML Class E1 and E2 weights. Utilizing a state of the art balance immersed in a fluorinated fluid, a series of measurements are compared to a NIST traceable density standard to determine the density value.

**Troemner NVLAP Magnetic Susceptibility Determinations** - Troemner has the capability of measuring the magnetic field intensity and the potential magnetic susceptibility of stainless steel mass standards between 1 g and 10 kg.

