

## **Care and Handling for NIST Class F Cast Iron Field Standard Weights\***

Cast iron is considered a porous metal and will absorb moisture. It will also rust when exposed to the elements. Because of this it is required to have a protective surface.

### **PAINTING**

Flat aluminum paint is the recommended surface finish. Weights are color coded with gold for metric, and silver for avoirdupois. The entire surface should be painted including the bottom. Epoxy paints or plated surfaces are not allowed. Painting a weight may adjust its mass enough to affect whether or not it is in tolerance. A single light coat of paint on a 50 lb weight is about 2 grams (tolerance is 2.3 grams). If a weight is painted, it cannot be used until recalibrated. If a freshly painted weight is found to be in tolerance during calibration, there is a very good chance that it was being used out of tolerance before it was painted. Two light coats of paint are better than one thick coat. Be sure to allow enough drying time, and remove any rust before painting.

### **REPAIRING**

Cast iron is brittle due to its high carbon content. If weights are chipped, damaged, have holes, or crevices, they can be repaired by proper welding. Body fillers such as putty or fiberglass are not allowed for repairs.

### **TRANSPORTING**

All efforts should be taken to protect weights from the elements, especially water and snow. The best way to do this is transporting them in enclosed vehicles. If this is not possible, weights should be set on some sort of grate or stringer system to allow for drainage under the weights. They should also be protected from above by some type of covering. Do not allow weights to sit in water or snow!

### **STORING**

To deter rusting and moisture absorption, weights should be stored inside a climate conditioned space. If this is not an option, then similar practices as described in the "Transporting" section should be followed. Avoid storing directly on concrete as moisture from the concrete could be transferred to the weights.

### **HANDLING**

To keep weights in tolerance, they should not be slid across surfaces as a means of moving them. This includes sliding across the bed of a truck, floors, or scale decks. This wears away the protective painted surface and the cast iron itself.

### **CLEANING**

It is acceptable to clean these weights and may be necessary if debris begins to accumulate. A damp or dry rag should be sufficient for most cases. Be careful not to remove paint when cleaning. Do not pressure wash cast iron!

### **CALIBRATION**

Calibration is required annually and when damage is known or suspected. Some examples of damage are rust, paint wearing off, chipping, or the sealing cap falling out. If your weights show wear from extensive use, then you should be calibrating more often than the minimum of once a year. Our lab finds many cast iron weights out of tolerance and in poor condition. This leads to increased costs for the service companies in the form of lab adjustments or weight rejections and repairs.

By following the information above, this can be reduced. For more information on NIST Class F field standards, see [NIST HANDBOOK 105-1](#).

\* Our compliments to the New Hampshire Department of Agriculture, as the majority of the contents of this care and handling instructional document was provided to us from their [Weights & Measures Division website](#).