

SCALE CERTIFICATION

Purpose

This instruction defines the general requirements for certifying scales by USDA graders.

Procedure

All scales must be checked for accuracy prior to production. For scales with a capacity of 300 pounds or less, accuracy shall be determined with test weights sufficient in number and size to check the weight level of product being weighed. For scales with a capacity greater than 300 pounds, the minimum amount of test weights used must be the smaller weight level between; 1) the number and size sufficient to check the weight level of product being weighed or; 2) the number and size equal to the following National Institute of Standards and Technology (NIST) Handbook 44 specifications:

Minimum Test Weights	
Device Capacity	Test Weights (greater of)
301 to 3,000 lb (151 to 1,500 kg)	25% or 300 lb (150 kg)
3,001 to 40,000 lb (1,501 to 20,000 kg)	12.5% or 1,000 lb (500 kg)

For bulk weighing scales that are difficult to test using traditional weights (i.e., hopper/tank scales), a known amount of product may be used for testing purposes. When this method is used, the product must be pre-weighed using a scale that has been verified for accuracy with traditional weights. The known product weight must comply with the provisions stated in item 1 above. When testing bulk weighing systems such as hopper/tank scales, any item that is not a permanent part of the system (i.e., product shovel hanging on tank) must be removed prior to verifying accuracy. This includes disconnecting any external couplings that adjoin other pieces of equipment such as augers, grinders, etc. During official use, any such item will become part of the tare weight of the vessel. However, graders must ensure that no excess weight is added from such items (or persons leaning against hopper) after the tare has been established.

Scales used for weighing products shall be graduated in tenths of a pound or less for weighing products individually in containers up to 100 pounds. Scales graduated in 1-pound increments or less may be used for weighing bulk containers of over 100 pounds. All new scales must be graduated in the same or smaller graduations than those with which the product is marked. In instances where graders must weigh product on scales not graduated in the same or smaller graduations, a statement similar to the following shall be placed in the remarks section of the PY 210 Certificate or QAD 1426A Memorandum of Findings issued:

"Container weights marked in one-hundredth of pound increments. Scales available for official test weighing graduated in one-tenth of a pound increments."

The accuracy of test weights and/or scales must be periodically verified (at least yearly) by certified State or county weights and measures personnel or other qualified individuals licensed by the State or County to perform scale certifications. Records of scale certification must be made available to the USDA grader. Graders are required to check scales for accuracy with test weights prior to production. All scales must zero at no load before testing with a test weight.

Scale tolerances have been established by the NIST and are contained in their published handbook - Handbook 44. The acceptance tolerance values apply only to digital type scales regardless of the increment of calibration. These tolerance values do not apply to dial-type scales which must be adjusted to reflect the actual weight of the test weight. Digital scales registering beyond the allotted tolerance value must be adjusted accordingly. Additionally, the tolerance value shall be determined once for each scale and does not have to be recalculated unless the scale or test weights are replaced. When verifying scales for accuracy, graders shall use established tolerance values based on information provided in NIST Handbook 44 using the following formula:

$$\frac{\text{Test Weight}}{\text{Scale Division}} = \text{Test Load}$$

Once the test load is determined, the grader shall use the following chart to determine whether the scale meets maintenance tolerance values. The scale must meet these tolerances in order to be utilized in test weighing procedures. The tolerance is the maximum number of scale divisions allowed for a scale to be acceptable for official test weighing without further adjustment.

TEST LOAD (Scale Divisions)	TOLERANCE (Scale Divisions)
0 - 500	1
501 - 2000	2
2001 - 4000	3
4001 - +	5

Example: A 50-pound test weight used on a scale graduated in hundredths of a pound. Fifty pound divided by .01 lbs. = a test load of 5,000 scale divisions. A tolerance of ± 5 scale divisions or .05 pound is allowed.