2.4.4 For admixtures used at less than 25 oz per 100 lb of cementitious materials (1630 mL per 100 kg), each dispenser of liquid admixtures equipped with a visual or other means of providing a gross check to the batchman of the amount of admixture batched during each cycle, within ±20 percent. The gross check shall be independent of the accuracy, function, or operation of the primary metering device (Note 15).

Note 15: This gross check is required to help the batchman prevent large overdoses or deficiencies of admixture due to dispenser malfunction in any batch, which could cause great changes in fresh and/or hardened concrete properties. Following are examples of how the gross check might be provided: (a) collecting the measured quantity of admixture in a dispenser measuring unit during each cycle and holding it for a short period to permit a visual check; (b) measuring the dispensed quantity through the use of an independent meter to obtain a rough check on the amount measured by observation of a volumetric indicator. Admixtures used at rates of 25 oz. per 100 lb. (1630 mL per 100 kg) of cementitious materials or greater, such as accelerating admixtures, corrosion inhibitors and viscosity modifying admixtures, are exempt from the independent check required in 2.4.4.

Admixture dispensers for water reducers, air entraining admixtures (AEA), and other low to moderate dosage range admixtures are required to have a means of visually checking that the approximate quantity of the required type of admixture is being dispensed. Admixtures are typically metered into a dispenser measuring unit before it is discharged into a load of concrete. The graduations on the container or attached scale permit an approximate visual gross check of the metered quantity.

When the admixture dosage is measured by a meter and the dispenser measuring unit is used only as a gross check (±20%) it is not required to have accurate graduations to measure to the required measurement tolerance of 2.5.4.

INSP shall observe that the gross check is within ± 20% of the metered quantity.

As indicated in (b) of Note 15, some plants may not have admixtures flowing through a dispenser measuring unit (bottle). A secondary meter or other independent measuring unit that verifies the measurement of the primary meter can be used. These systems are designed to protect from over or under dosing admixtures in a concrete batch.

In some systems, the independent measurement activates an interlock cut-off and/or an alarm to the batchman when an error is detected. System capabilities may include the following as possible dispensing errors:

**Example:**

**Metered quantity = 160 ounces**

**Gross check limits = 160 ± 0.20 (160)**

**Gross check limits = 128 to 192 ounces**
• The second meter verifies the measured quantity from the first meter and checks against set tolerance, typically 3%.
• Flow rate is deficient
• Changes in meter pulsing
• Reverse flow
• Air in dispensing line or empty pipe detection

These capabilities are not required by Section 2.4.4. The primary intent is to ensure that there is an independent check of the primary measuring device. These dual meter systems generally exceed the requirement for the “gross” check and satisfies the intent. If admixture does not flow through a dispenser measuring unit (bottle) and the INSP is not sure whether there is an independent check, consult the admixture supplier who installed the dispensers.

INSP verifies that the measuring system includes an independent meter or measuring device that checks the dispensed quantity of the primary meter. Also verify that it is at least as accurate as the requirement for a gross check.

The gross visual check of admixture measured is required for all admixtures used at dosage rates of less than 25 oz per 100 lb of cement. Some admixtures used at higher dosages are typically accelerating admixtures, corrosion inhibitors and viscosity modifying admixtures. These admixtures are exempt from being passed through the dispenser measuring unit. These admixtures used at larger quantities are typically directly discharged into the concrete batch and are exempt from the gross check.

Gross check readings must be readily visible to the batchman. This is sometimes accomplished via closed circuit camera and a TV monitor at batching station. For the dual meter type systems, a separate display may be setup near the batch panel for the batchman’s observation of flow rate, measured quantity, or other factors.