

HB 44

Section 3.30 Liquid Measuring Devices

S.2. Measuring Elements

S.2.9. Wholesale Devices Equipped with Electronic Automatic Density-Correction Systems.

S.2.9.1. Automatic Density Correction. – If a device is equipped with an automatic means for adjusting the indication and registration of measured volume of product to correct for the expansion of volume when blending separately metered components to create a new product with altered properties.

(a) Wholesale device must also be equipped with an electronic Automatic Temperature-Compensating System; and

(b) An automatic means to determine and correct for changes in product density shall be incorporated in the system:

(1) automatic means to accept, calculate, or measure a density of the finished product; or

(2) automatic means to accept, calculate, or measure a density and volume of each base component.

S.2.9.2. Provision for Deactivating. – On a device equipped with an automatic density-correction system, provision shall be made for deactivating the automatic density correction so that the meter can indicate and record in terms of the uncorrected volume.

S.2.9.3. Provision for Sealing Automatic Density Correction System. – Provision shall be made for applying security seals for a densimeter in such a manner that no adjustment may be made to the system without breaking the seal.

(Added 202X)

Nonretroactive

S.4 Marking Requirements

S.4.3. Wholesale Devices.

S.4.3.3. Automatic Density Correction for Changes in Product Composition. – If a device is displaying density-corrected volumes, then the volumes must be labeled clearly and conspicuously on the primary indicating elements, recording elements, and recorded representation that the adjustment has been made.

(Added 202X)

Nonretroactive

N.4. Testing Procedures

N.4.1.2. Wholesale Devices Equipped with Automatic Density Correction. – On wholesale devices equipped with automatic density correction for changes in product composition, normal tests shall be conducted by comparing the density corrected volume as indicated by the device to the actual delivered volume corrected by a reference implementation.

The first test shall be performed with the automatic density-correction system operating in the “as found” condition.

On devices that indicate or record the density-corrected volume, temperature-compensated volume, and uncompensated volume for each delivery, the tests in N.4.1.1.(a), N.4.1.1.(b), and N.4.1.2., may be performed as a single test.

(Added 202X)

Nonretroactive

UR.3.6. Temperature Volume Compensation and Correction, Wholesale

UR.3.6.1. Automatic.

UR.3.6.1.1. When to be Used. – If a device is equipped with a mechanical automatic temperature compensator, it shall be connected, operable, and in use at all times. An electronic or mechanical automatic temperature-compensating system may not be removed, nor may a compensated device be replaced with an uncompensated device, without the written approval of the responsible weights and measures jurisdiction.

Note: This requirement does not specify the method of sale for product measured through a meter.

(Amended 1989)

UR.3.6.1.2. Invoices.

(a) A written invoice based on a reading of a device that is equipped with an automatic temperature compensator shall show the net volume delivered and that the volume delivered has been adjusted to the volume at 15 °C (60 °F).

(b) The invoice issued from an electronic wholesale device equipped with an automatic temperature-compensating system shall also indicate for each metered component or the finished product:

- (1) the API gravity, specific gravity, or coefficient of expansion ~~for the product~~;
- (2) ~~product~~ temperature(s); and
- (3) gross reading.

(c) The invoice issued from a wholesale system equipped with an automatic density correction system, in addition to the requirements in (b) above, shall indicate:

(1) excess volume for the finished product; and

(2) the net standard volume inclusive of the excess volume.

Note: Shall include the statement, “Volume delivered has been adjusted to the volume at 15 °C (60 °F) and for changes in density.”

Nonretroactive

(Added 202X)

UR.3.6.2. Nonautomatic.

UR.3.6.2.1. Temperature Determination. – If the volume of the product delivered is adjusted to the volume at 15 °C (60 °F), the product temperature shall be taken during the delivery in:

(a) the liquid chamber of the meter; or

(b) the meter inlet or discharge line adjacent to the meter; or

(c) the compartment of the receiving vehicle at the time it is loaded.

UR.3.6.2.2. Density Determination. – If the volume of the product delivered is adjusted for changes in the density of the finished product, then the product density shall be measured, or the product density at base conditions shall be determined by industry accepted practices and applied in the calculation via analysis of each of the base components.

Nonretroactive

(Added 202X)

UR.3.6.2.3. Invoices. The accompanying invoice for a nonautomatic density corrected finished product shall indicate that the volume of the product has been adjusted for temperature variations to a volume at 15 °C (60 °F). Further the invoice shall also indicate for each metered component or the finished product:

(1) the API gravity, specific gravity, or coefficient of expansion;

(2) temperature(s);

(3) gross reading;

(4) excess volume for the finished product; and

(5) the net standard volume inclusive of the excess volume.

Note: Shall include the statement, “Volume delivered has been adjusted to the volume at 15 °C (60 °F) and for changes in density”.

Nonretroactive

(Added 202X)

T. Tolerances

T.4. Automatic Temperature-Compensating Systems. – *The difference between the meter errors (expressed as a percentage) determined with and without the automatic temperature-compensating system activated shall not exceed:*

- (a) 0.2 % for mechanical automatic temperature-compensating systems; and*
- (b) 0.1 % for electronic automatic temperature-compensating systems.*

The delivered quantities for each test shall be approximately the same size. The results of each test shall be within the applicable acceptance or maintenance tolerance.

[Nonretroactive as of January 1, 1988]

(Added 1987) (Amended 1992, 1996, and 2002)

T.5. Density Compensation Systems. - *The error between the calculated net standard volume and the volume as determined in a reference implementation shall not exceed 0.1% for nonautomatic or automatic density-correction system for the total delivered volume.*

The delivered quantities for each test shall be approximately the same size. The results of each test shall be within the applicable acceptance or maintenance tolerance.

[Nonretroactive as if January 1, 202X]

(Added 202X)