

# Bulletin

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Document(s): <b>W&amp;M Regs, section 270; API Table 54C</b>	Issue Date: <b>2008-02-29</b>	Effective Date: <b>2008-04-01</b>
	Supersedes: <b>V-10 (rev.1), V-12, V-13, V-14</b>	

## Volume Correction Factors of Non-Petroleum Products Authorized For Use With Liquid Measuring Meters

### 1.0 Purpose

The purpose of this bulletin is to establish policy regarding the use of automatic temperature compensation (ATC) for non-petroleum products and to provide a source for tables of volume correction factors (VCFs) when inspections involve those products identified herein.

### 2.0 Scope

This bulletin applies to the inspection of all approved volume meter registers and flow computers that are installed with ATC devices for use in trade.

### 3.0 References

Product specific tables of VCFs can be found on the Volume information page of Measurement Canada's web site at <http://mc.ic.gc.ca>. These tables have been identified to provide the inspector or technician with VCFs authorized for use in the inspection, testing and verification of ATC devices used with the specified products.

### 4.0 Background

During the early 1990s, Measurement Canada permitted various non-petroleum based products to be automatically corrected to reference conditions and subsequently, established VCF tables where no tables had been specified in section 270 of the *Weights and Measures Regulations*. These product VCFs were initially documented in bulletin V-10 (rev. 1), V-12 and V-13.

4.1 More recently, when requested to allow additional products to be sold on a temperature corrected basis, it was determined that section 236 of the *Weights and Measures Regulations* only allows a device to register in terms of volume correction to reference conditions when a specification has been developed by the Minister. Accordingly, section 4 of SVM 2 allows for the net registration of liquid petroleum products, liquified petroleum gases and natural gas liquids. Currently, no other specifications have been developed to allow for net registration of any other products.

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## 5.0 Policy

Measurement Canada does not recognize or condone the use of ATC for any products other than liquid petroleum products, liquified petroleum gases, natural gas liquids and those products specifically listed in section 5.1 and 5.2 of this bulletin.

The use of ATC for the products listed in this bulletin will be reviewed on a periodic basis to determine if the practice of temperature correction should be continued. Interested parties will be given the opportunity to provide comments when such decisions are being considered.

### 5.1 Volume Correction Factors for Pure Liquids

**5.1.1** Listed below are the pure liquids involved along with the corresponding authorized values of cubical coefficient of thermal expansion at 15°C for use with API Table 54C.

Pure Liquids	Cubical Coefficient of Thermal Expansion @ 15°C per °C
Methanol (methyl alcohol anhydrous)	0.001180
Ethanol (ethyl alcohol anhydrous)	0.001072
Isopropyl Alcohol (anhydrous)	0.001016
Acetone (dimethyl ketone)	0.001416
Methyl Isobutyl Ketone	0.001152
Methyl Ethyl Ketone	0.001280
Hexylene Glycol	0.000788
Methyl Isobutyl Carbinol	0.000698
Anhydrous Ammonia	Value not listed because it is out of range for use with API Table 54C. VCF Table must be referenced.

**NOTE:** Summary VCF tables for each liquid can be found on the Volume information page of Measurement Canada's web site at <http://mc.ic.gc.ca>.

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## 5.2 Volume Correction Factors for Liquid Blends

5.2.1 Listed below are the specific liquid blends involved along with their blend ratio and density ranges.

Liquid	Blend Ratio	Density Range at 15 °C
Toluene	95 -100 % (Toluene) by Volume	869 to 873 kg/m <sup>3</sup>
Xylene	All blends of O-, M- and P-Xylene	865 to 875 kg/m <sup>3</sup>

**NOTE:** Summary VCF tables for each liquid can be found on the Volume information page of Measurement Canada's web site at <http://mc.ic.gc.ca>.

5.3 A mechanical ATC in use on any liquid must be approved for use with the actual liquid and shall be marked with the authorized value of the applicable liquid's density, relative density, API gravity or cubical coefficient of thermal expansion in accordance with subsection 270 (1) of the *Weights and Measures Regulations*.

## 6.0 Revision

The original bulletin was issued on September 01, 1993, as bulletin V-13.

6.1 The purpose of Revision 1 (Bulletin V-13) was to reformat and establish as Bulletin V-10 (rev. 1) in a revised set of bulletins issued September 20, 1996.

6.2 The purpose of revision 2 (Bulletin V-10 rev.1) was to combine several related bulletins (V-10 r1, V-12, V-13, and V-14) into one document and subsequently, revoked the redundant Bulletins V-12, V-13, and V-14. Additionally, the 88% Isopropyl Alcohol and 12% water mixture identified in Bulletin V-13 was removed from the list of liquids involved.

6.2.1 In this revision the format was updated to include new purpose, scope, background and policy sections. Minor editorial modifications from the original bulletins were implemented for clarification and to suit the new format. Further to this, the associated VCF tables were removed from the documents and relocated to the Volume information page of the Measurement Canada web site at <http://mc.ic.gc.ca>.

## 7.0 Additional Information

For additional information regarding this bulletin, please contact the Senior Program Officer responsible for volume measurement. Further information regarding Measurement Canada and its programs, can be found on the Measurement Canada web site located at <http://mc.ic.gc.ca>.

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