

Australian Standard[®]

**Liquid hydrocarbons—Dynamic
measurement—Statistical control of
volumetric metering systems**

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 - Australian Institute of Physics
 - Australian Petroleum Production and Exploration Association
 - Institute of Instrumentation, Control and Automation, Australia
 - LPG Australia
 - National Association of Testing Authorities, Australia
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-

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**Liquid hydrocarbons—Dynamic
measurement—Statistical control of
volumetric metering systems**

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PREFACE

This Standard was prepared by the Standards Australia Committee ME-049, Oil and Gas Measurement. It is identical with, and has been reproduced from ISO 4124:1994, *Liquid hydrocarbons—Dynamic measurement—Statistical control of volumetric measuring systems*.

The objective of this standard is to provide a means of statistical control of volumetric metering systems for the dynamic measurement of liquid hydrocarbons, where the performance of such meters is affected by changes in flow conditions such as flow rate, viscosity, temperature, pressure, density of product, and by mechanical wear.

As this Standard is reproduced from an international standard, the following applies:

- (a) Its number appears on the cover and title page while the international standard number appears only on the cover.
- (b) In the source text 'this International Standard' should read 'this Australian Standard'.
- (c) A full point substitutes for a comma when referring to a decimal marker.

None of the references in the source document have been adopted as Australian or Australian/New Zealand Standards.

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AUSTRALIAN STANDARD

Liquid hydrocarbons — Dynamic measurement — Statistical control of volumetric metering systems

Section 1: General

1.1 Scope

In dynamic measuring systems the performance of meters for liquid hydrocarbons will vary with changes in flow conditions, viz. flowrate, viscosity, temperature, pressure, density of product, and with mechanical wear.

This International Standard has been prepared as a guide for establishing and monitoring the performance of such meters, using appropriate statistical control procedures for both central and on-line proving. These procedures may be applied to measurements made by any type of volumetric or mass metering system.

The procedures to be followed for collecting data on which the control limits are based, are described. An alternative method for establishing the reliability of these data is described in ISO 7278-3.

Methods are described for calculating the warning and action control limits for the charts covering the selected performance characteristics, the application of these control charts to subsequent routine measurements, and their interpretation. Worked examples are given in the appropriate central and on-line proving sections.

1.2 Definitions

For the purposes of this International Standard, the following definitions apply.

1.2.1 proving; proof; calibration: Determination of the meter performance via the relationship between the volume of liquid actually passing through a meter and the reference volume of the pipe prover.

1.2.2 K-factor: Relationship between the number of pulses (N) generated by the meter during the proving run and the volume of liquid (V) displaced by the sphere or piston in the pipe prover between detectors.

Normally, $K = N/V$; it is recommended that this value be corrected by the pulse interpolation technique described in ISO 7278-3.

1.2.3 meter factor: Ratio of the actual volume passed through a meter, as derived from the pipe prover, to the volume indicated by the meter totalizer.