AS 4250.5—1995
ISO 4267-2:1988

Australian Standard®

Liquid hydrocarbons—Dynamic measurement—Proving systems for volumetric meters

Part 5: Dynamic measurement

[ISO title: Petroleum and liquid petroleum products—Calculation of oil quantities, Part 2: Dynamic measurement]

This Australian Standard was prepared by Committee ME/49, Oil and Gas Measurement. It was approved on behalf of the Council of Standards Australia on 15 August 1994 and published on 5 January 1995.

The following interests are represented on Committee ME/49:

Australian Custom Service

Australian Gas Association

Australian Institute of Petroleum

Australian Institute of Physics

Australian Liquefied Petroleum Gas Association

Australian Petroleum Exploration Association

CSIRO, Division of Applied Physics

Department of Primary Industries and Energy

Institute of Instrumentation and Control, Australia

Institution of Engineers Australia

National Association of Testing Authorities

National Standards Commission

Pipeline Authority

This Standard was issued in draft form for comment as DR 93328.

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First published as AS 4250.5—1995.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 9259 1

PREFACE

This Standard was prepared by the Standards Australia Committee on Oil and Gas Measurement and is designated Part 5 of a series of Standards dealing with petroleum liquid measurement systems under the general title *Liquid hydrocarbons—Dynamic measurement—Proving systems for volumetric meters*. Part 5 covers *Dynamic measurement.*

Other Standards or proposed Standards in this series are as follows:

Part 1: General principles
Part 2: Pipe provers
Part 3: Pulse interpolation
Part 4: Temperature corrections in volumetric calibration by water transfer method

This Standard is technically equivalent to ISO 4267.2:1988, *Petroleum and liquid petroleum products—Calculation of oil quantities*, Part 2: *Dynamic measurement*.

For the purposes of this Standard, the ISO text is amended as set out in Appendix ZZ. Each change is indicated in the text by a marginal bar.

The term 'normative' has been used in this Standard to define the application of Appendix ZZ. A 'normative' appendix is an integral part of a Standard.

Replace any references to 'International Standard' with 'Australian Standard'.

Reference to International Standard		*Australian Standard*	
ISO		AS	
91	Petroleum measurement tables	2520	Petroleum measurement tables
91–1	Part 1: Tables based on reference temperatures of 15°C and 60°F		
2715	Liquid hydrocarbons—Volumetric measurement by turbine meter systems	2651	Liquid hydrocarbons—Volumetric measurement by turbine meter systems
5024	Petroleum liquids and gases—Measurement—Standard reference conditions	2649	Petroleum liquids and gases—Measurement—Standard reference conditions
7278	Liquid hydrocarbons—Dynamic measurement—Proving systems for volumetric meters	4250	Liquid hydrocarbons—Dynamic measurement—Proving systems for volumetric meters
7278.2	Part 2: Pipe provers	4250.2	Pipe provers
8222	Petroleum measurement systems—Calibration—Temperature corrections for use with volumetric reference measuring systems	—	
9770	Petroleum products—Compressibility factors for hydrocarbons in the range 638 kg/m^3 to 1 074 kg/m^3	—	

Under arrangements made between Standards Australia and the International Standards bodies, ISO and IEC, as well as certain other Standards organizations, users of this Australian Standard are advised that the number of this Standard is not reproduced on each page; its identity is shown only on the cover and title pages.

CONTENTS

Page

Page

AUSTRALIAN STANDARD

Liquid hydrocarbons—Dynamic measurement—Proving systems for volumetric meters

Part 5: Dynamic measurement

0 Introduction

Before the compilation of this publication, words and expressions employed in dynamic measurement calculations were interpreted slightly differently by different people, and there was a lack of coherence in their use. In addition, because data were spread over so many standards, there was difficulty in readily comparing the finer points of calculations.

Rules for rounding, and the choice of how many significant figures entered each calculation, were open to a variety of interpretations. For different operators to obtain identical results from the same data, the rules for sequence, rounding and significant figures have to be defined. This International Standard aims, among other things, at defining the minimum set of rules required. Nothing in this International Standard precludes the use of more precise determinations of temperature, pressure and density or the use of more significant digits, by mutual agreement among the parties involved.

This International Standard aims at consolidating and standardizing calculations pertaining to the metering of petroleum liquids, and at clarifying terms and expressions by eliminating local variations of such terms. The purpose of standardizing calculations is to produce the same answer from the same data regardless of the computing system used.

Although ISO/TC 28 standards use 15 °C as a standard reference temperature, it is recognized that individual countries may use other reference temperatures, for example 20 °C, 12 °C or 60 °F.

This standard sets minimum levels of accuracy for industrial calculations, but, if parties consider agreeing to set tighter requirements, it is important to demonstrate whether such requirements can be met. Future technological progress in meter proving and operation may justify a tighter specification for calculation procedures.

1 Scope and field of application

This International Standard defines the various terms (be they words or symbols) employed in the calculation of metered petroleum quantities. Where two or more terms are customarily employed in the oil industry for the same quantity, a preferred term is selected.

This International Standard also specifies the equations which allow the values of correction factors to be computed. It also gives rules for the sequence, rounding and significant figures to be employed in a calculation. It provides tables which may be used to look up specific correction factors should it not be desired to calculate them by manual as well as computer methods. The calculation of prover base volumes, meter factors and measurement tickets is also covered.

The field of application of this International Standard is the volumetric measurement of liquid hydrocarbons, including liquefied petroleum gases, by meter and prover. It does not include two-phase fluids (though it may be found useful in such situations) except in so far as sediment and water may be mixed in with crude oil.

2 References

ISO 91-1, *Petroleum measurement tables — Part 1: Tables based on reference temperatures of 15 °C and 60 °F*.

ISO 2715, *Liquid hydrocarbons — Volumetric measurement by turbine meter systems*.

ISO 5024, *Petroleum liquids and gases — Measurement Standard reference conditions*.

ISO 7278-2, *Liquid hydrocarbons — Dynamic measurement — Proving systems for volumetric meters — Part 2: Pipe provers*.[1)]

ISO 8222, *Petroleum measurement systems — Calibration — Temperature corrections for use with volumetric reference measuring systems*.

ISO 9770, *Petroleum products — Compressibility factors for hydrocarbons in the range 638 kg/m^3 to 1 074 kg/m^3*.[1)]

1) At the stage of draft.