INTERNATIONAL STANDARD

ISO 7507-1

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Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks —

Part 1: Strapping method

Pétrole et produits pétroliers liquides — Étalonnage des réservoirs cylindriques verticaux —

Partie 1: Méthode par ceinturage

Reference number
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Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7507-1 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, Sub-Committee SC 3, *Static petroleum measurement*.

ISO 7507 consists of the following parts, under the general title *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks*:

— *Part 1: Strapping method*

— *Part 2: Optical-reference-line method*

— *Part 3: Optical-triangulation method*

— *Part 4: Internal electro-optical distance-ranging methods*

— *Part 5: External electro-optical distance-ranging methods*

At the time of publication of this part of ISO 7507, parts 4 and 5 were in course of preparation.

Annexes A, B, C, D and E form an integral part of this part of ISO 7507. Annex F is for information only.

Introduction

This International Standard forms part of a series on tank calibration including the following:

ISO 7507-2:1993, *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks — Part 2: Optical-reference-line method*

ISO 7507-3:1993, *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks — Part 3: Optical-triangulation method*

ISO 7507-4:—[1], *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks — Part 4: Internal electro-optical distance-ranging methods*

ISO 7507-5:—[1], *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks — Part 5: External electro-optical distance-ranging methods*

ISO 8311:1989, *Refrigerated light hydrocarbon fluids — Calibration of membrane tanks and independent prismatic tanks in ships — Physical measurement*

ISO 9091-1:1991, *Refrigerated light-hydrocarbon fluids — Calibration of spherical tanks in ships — Part 1: Stereo-photogrammetry*

ISO 9091-2:1992, *Refrigerated light hydrocarbon fluids — Calibration of spherical tanks in ships — Part 2: Triangulation measurement*

The strapping method for the calibration of vertical cylindrical tanks has been used for many years and is a recognized method of determining the capacity of storage tanks from measurements of the circumference of a tank at various heights. The strapping method is also often used to establish a reference circumference at a selected height to use as a datum in other methods of tank calibration.

1) To be published.

Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks —

Part 1: Strapping method

1 Scope

1.1 This part of ISO 7507 specifies a method for the calibration of substantially vertical cylindrical tanks by measuring the tank using a strapping tape.

1.2 This method is known as the "strapping method" and is suitable for use as a working method, a reference method or a referee method.

NOTE 1 For the reference method, the number of strappings required will be specified in the standard which calls up this part of ISO 7507.

1.3 The operation of strapping, the corrections to be made and the calculations leading to the compilation of the tank capacity table are described.

1.4 This method does not apply to abnormally deformed, e.g. dented or non-circular, tanks.

1.5 This method is suitable for tilted tanks with a deviation of up to 3 % from the vertical, provided that a correction for the measured tilt is applied in the calculations.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7507. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7507 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 91-1:1992, *Petroleum measurement tables — Part 1: Tables based on reference temperatures of 15 °C and 60 degrees F.*

ISO 3675:1993, *Crude petroleum and liquid petroleum products — Laboratory determination of density or relative density — Hydrometer method.*

3 Definitions

For the purposes of this and subsequent parts of ISO 7507, the following definitions apply.

NOTE 2 Preferred terms only have been defined, and alternative terms are given with reference to the appropriate preferred term.

3.1 argument: The independent variable of a function.

NOTE 3 A table is entered with value(s) of the independent variable(s), the value(s) extracted from the table being known as the dependent value(s).

3.2 bottom calibration

(1) The determination of the partial capacities of the lower portions of a tank.

(2) The quantity of liquid contained in a tank below the dip-point.

3.3 calibration: Process of determining the capacity of a tank, or the partial capacities corresponding to different levels.

3.4 capacity: Total volume of a tank.