Measurement and Calibration of Tank Cars

API STANDARD 2554
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FOREWORD

The standard in this publication is one of a series approved jointly by the American Petroleum Institute and the American Society for Testing and Materials. This standard is the result of a cooperative arrangement established by the two organizations to develop and jointly approve and publish standards dealing with quantitative and qualitative measurements of petroleum products and lubricants.

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Suggested revisions are invited and should be submitted to the director of the Measurement Coordination Department, American Petroleum Institute, 1220 L Street, N.W., Washington, D.C. 20005.

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Standard Method for

MEASUREMENT AND CALIBRATION OF TANK CARS[1]

API Standard: 2554

ASTM Designation: D 1409 – 65

ADOPTED, 1965.[2,3]

This standard of the American Petroleum Institute issued under the fixed designation API 2554 is also a standard of the American Society for Testing and Materials issued under the fixed designation D 1409; the final number indicates the year of original adoption as standard, or, in the case of revision, the year of last revision.

This method was adopted as a joint API-ASTM standard in 1965.

Scope

1. This standard describes the procedures for calibrating tank cars. It is presented in two parts: Part I (Sections 2 to 21) outlines procedures for nonpressure-type tank cars; Part II (Sections 22 to 31) outlines procedures for pressure-type tank cars.

NOTE 1.—Other calibration standards are:

API Standard 2550—ASTM D 1220: Measurement and Calibration of Upright Cylindrical Tanks

API Standard 2551—ASTM D 1410: Measurement and Calibration of Horizontal Tanks

API Standard 2552—ASTM D 1408: Measurement and Calibration of Spheres and Spheroids

API Standard 2553—ASTM D 1407: Measurement and Calibration of Barges

API Standard 2556—ASTM D 1406: Liquid Calibration of Tanks

PART I. PROCEDURE FOR CALIBRATING NONPRESSURE TANK CARS

General

2. (*a*) The volume capacity of tank car tanks shall be determined in one of the three followings ways:

(*1*) By filling the tank with a quantity of water measured by discharge from calibrated tank or tanks (water gage plant procedure).

(*2*) By filling the tank with water and weighing the car before and after filling (water-weighing procedure).

(*3*) By computing the volume from external measurements of the tank and deducting for the thickness of walls, laps, etc. ("strapping" procedure).

(*b*) Since 1951 the volume of all new tank cars should have been determined by the water gage plant procedure.

(*c*) With reference to the use of the three different procedures for calibration, it has been realized that there should be some further clarification with regard to the relation of these three procedures. This has been expressed as follows:

(*1*) The water gage plant procedure is recommended as the most accurate.

(*2*) Where facilities are not available for the use of the water gage plant procedure, an acceptable alternative is the water-weighing procedure used for all types of tank cars, and the strapping procedure used for only nonpressure or noninsulated tank cars.

(*d*) The calibration procedures outlined herein require that the interior surface of the tank be clean and free from any foreign substance such as the residue of commodities adhering to the bottom and sides of the tank—dirt, rust, and the like. Examination and inspection of a tank car may indicate the need for thorough cleaning if the correct established capacity is to be assured.

(*e*) Tank cars modified or damaged to the extent that the capacity is changed should be recalibrated; and the new capacity should be reported in accordance with instructions in *Freight Tariff No. 300*, latest issue and supplements thereto, issued under ICC authority for United States, Canadian, and Mexican railroads.

WATER GAGE PLANT PROCEDURE

Design and Construction of Gage Plants

3. (*a*) The gage plant (see Fig. 1) shall consist of one or more elevated tanks

[1] Under the standardization procedures of the API and the ASTM, this standard is under the jurisdiction of the API Central Committee on Petroleum Measurement and the ASTM Committee D-2 on Petroleum Products and Lubricants.

[2] The API method was adopted as API Standard 2554 in October, 1965.

Prior to their present publication, the API methods of test were issued as API Code 1201 and API Code 1202. API Code 1201 was issued as tentative in July, 1948; it was revised and reissued in January, 1957 as API Standard 1201. API Code 1202 was issued as tentative in December, 1951; it was revised and reissued in February, 1960 as API Standard 1202.

[3] Revised and adopted as standard June, 1965, by action of the ASTM at the Annual Meeting and confirming letter ballot.