SS 648-2:2024+C1:2025
(ICS 01.140.30; 47.020)

SINGAPORE STANDARD

Code of practice for bunker mass flow metering

– Part 2 : Technical requirements and procedures

Incorporating Corrigendum No. 1

Singapore Standards Council

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Foreword

This Singapore Standard was prepared by the Working Group on Bunker Mass Flow Metering set up by the Technical Committee on Bunkering (Ambient Liquids Fuels) under the purview of the Chemical Standards Committee.

This standard was first developed as TR 48:2015, “Technical Reference for bunker mass flow metering”. TR 48 was reviewed to further its development into SS 648:2019.

In this revision, SS 648 was divided into two parts under the general title, “Code of practice for bunker mass flow metering” based on pre-approval and post approval processes:

- Part 1: Meter selection and acceptance tests
- Part 2: Technical requirements and procedures

This standard incorporates Corrigendum No. 1, January 2025 denoted by C1 C1.

In preparing this standard, reference was made to the following publications. Some of the definitions in Clause 3 were reproduced from the publications with permission from the respective organisations as indicated in parentheses after the definitions. All rights are reserved by the organisations.

American Petroleum Institute

API MPMS 5.6:2002(2008)	Manual of Petroleum Measurement Standards - Measurement of liquid hydrocarbons by Coriolis meters

American Society of Mechanical Engineers

ASME MFC-11:2006 (R2014)	Measurement of fluid flow by means of Coriolis mass flow meters

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International Organization for Standardization

ISO/IEC Guide 99:2007	International vocabulary of metrology – Basics and general concepts and associated terms (VIM)
ISO 10790:2015	Measurement of fluid flow in closed conduits – Guidance to the selection, installation and use of Coriolis flowmeters (mass flow, density and volume flow measurements)
ISO/IEC 23264-1:2021	Information security - Redaction of authentic data – Part 1: General

A copy of the complete standard may be obtained from https://www.singaporestandardseshop.sg/

International Organization of Legal Metrology

OIML D028:2004	Conventional value of the result of weighing in air

Reproduction of content from OIML D028: 2004 complies with OIML B11, "Rules governing the translation, copyright and distribution of OIML Publications".

Acknowledgement is made for the use of information from the above publications.

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1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as "mature standards". Mature standards will not be subject to further review unless there are requests to review such standards.*

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Code of practice for bunker mass flow metering – Part 2 : Technical requirements and procedures

1 Scope

This standard sets out the post-approval requirements and procedures for the transfer of bunkers to receiving vessels by bunker tankers using Coriolis mass flow metering (MFM) system. It covers the metrology and system integrity requirements, metering procedures during bunker delivery, and dispute handling. Bunker quality specifications including sampling process of bunkering are also covered in this document.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For undated references, the latest edition of the referenced document (including any amendments) applies.

International Recommendation OIML R117	Dynamic measuring systems for liquids other than water
ISO 8217	Products from petroleum, synthetic and renewable sources – Fuels (class F) – Specifications of marine fuels
ISO 8601-1	Date and time – Representations for information interchange – Part 1: Basic rules
ISO/IEC 17020	Conformity assessment – Requirements for the operation of various types of bodies performing inspection
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
ISO/IEC Guide 98-3	Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement
SS 600	Code of practice for bunkering by bunker tankers using tank gauging
SS 648-1	Code of practice for bunker mass flow metering – Part 1: Meter selection and acceptance tests
SS 709	Specification for digital bunkering supply chain documentation
TR 80	Code of practice for meter verification using master mass flow meter