

**SS 660 : 2020**

(ICS 01.140.30; 47.020)

**SINGAPORE STANDARD**

**Code of practice for bunker cargo delivery from  
oil terminal to bunker tanker using mass flow  
meter**

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ISBN 978-981-49-2512-9

The content of this Singapore Standard was approved on 7 August 2020 by the Chemical Standards Committee (CSC) under the purview of the Singapore Standards Council.

First published 2020.

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*Emerson Process Management Marine Solutions Singapore Pte Ltd*  
*Endress+Hauser (S.E.A.) Pte Ltd*  
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*Krohne (South East Asia) Pte Ltd*  
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*Maritime and Port Authority of Singapore*  
*Metcore International Pte Ltd*  
*National Metrology Centre*  
*PB Tankers Ltd (Tankstore)*  
*Sentek Marine & Trading Pte Ltd*  
*SGS Testing & Control Services Singapore Pte Ltd*  
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## **Foreword**

This Singapore Standard was prepared by the Working Group on Bunker Transfer from Oil Terminal Using MFM set up by the Technical Committee on Bunkering under the purview of CSC.

The objective of this standard is to harmonise the method of quantity measurement by the use of a consistent, single method of measurement from cargo delivery at oil terminals to bunker delivery. This is to ensure oil loss control along the bunker supply chain. The standard also aims to strengthen the quality management of bunker supply chain under SS 524, "Specification for quality management for bunker supply chain" in terms of fuel quality compliance through specifying the sampling requirements for the oil terminal to bunker tanker interface.

In preparing this standard, reference was made to the following publications:

### **American Society of Mechanical Engineers**

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

### **International Organization for Standardization**

ISO 10790 : 1999      Measurement of fluid flow in closed conduits – Guidance to the selection, installation and use of Coriolis meters (mass flow, density and volume flow measurements)

### **Bureau International des Poids et Mesures**

Joint Committee for Guides in Metrology JCGM 200:2012      International vocabulary of metrology – Basic and general concepts and associated terms (VIM) 3<sup>rd</sup> Edition

### **International Organization of Legal Metrology**

OIML D028:2004      Conventional value of the result of weighing in air  
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Some of the definitions in Clause 3 were reproduced from the above publications with permission from the respective organisations and from SS 648 : 2019, "Code of practice for bunker mass flow metering", as indicated in brackets after the definitions. All rights are reserved by the organisations.

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

This standard is expected to be used by oil terminals, vendors of Coriolis mass flow meters, bunker suppliers, surveyors, bunker tanker operators, shipowners/buyers and relevant authorities.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

**NOTE**

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.*
2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
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## Code of practice for bunker cargo delivery from oil terminal to bunker tanker using mass flow meter

### 1 Scope

This Singapore Standard covers the quantity measurement and sampling requirements from oil terminals to bunker tankers during custody transfer.

This standard is applicable to oil terminal that carry out bunker cargo delivery using Coriolis mass flow meter (MFM) to bunker tanker.

### 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.

API MPMS Chapter 8.2	Standard practice for automatic sampling of petroleum and petroleum products
International Recommendation OIML R117	Dynamic measuring systems for liquids other than water
ISO 8217	Petroleum products – Fuels (class F) – Specifications of marine fuels
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories