

SS 668 : Part 1 : 2020
(ICS 67.040)

SINGAPORE STANDARD

**Cold chain management of chilled and frozen
foods**

– Part 1 : General requirements

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The Technical Committee set up the Working Group on Cold Chain Management of Chilled and Frozen Foods – General Requirements to prepare this standard. The Working Group consists of the following experts who contribute in their *individual capacity*:

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Enterprise Singapore
GS1 Singapore Limited
Jurong Cold Store Pte Ltd
Malaysia Dairy Industries Pte Ltd
MyKenzen Nutrition Services Pte Ltd
NTUC Fairprice Co-operative Ltd
Occasions Catering Pte Ltd
OJJ Foods Pte Ltd
PSA Corporation Ltd
Reckitt Benckiser Group
Republic Polytechnic
SATS Airport Services Pte Ltd
Singapore Food Agency
Singapore Polytechnic
SMH Food Group of Companies
SOCOTEC Certification Singapore Pte Ltd
Swisslog Singapore Pte Ltd
Yamato Transport (S) Pte Ltd

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Foreword

This Singapore Standard was prepared by the Working Group on Cold Chain Management of Chilled and Frozen Foods – General Requirements set up by the Technical Committee on Food Processing, Distribution and Services under the purview of FSC.

The review of the following standards resulted in the development of the SS 668 series of standards on cold chain management of chilled and frozen foods:

- SS 585 : 2013 Cold chain management of vegetables;
- SS 552 : 2016 Code of practice for cold chain management of chilled pork;
- SS 621 : 2016 Code of practice for cold chain management of milk and dairy products;
- TR 49 : 2016 Cold chain management of frozen fish and seafood.

The SS 668 series comprises the following parts under the general title of “Cold chain management of chilled and frozen foods”:

- Part 1 : General requirements
- Part 2 : Code of practice for meat
- Part 3 : Code of practice for vegetables and fruits
- Part 4 : Code of practice for fish
- Part 5 : Code of practice for chilled table eggs

The maintenance of the cold chain is integral to uphold the safety of consumers and the protection of public health while preserving the nutritional and sensory qualities of perishable food products. The cold chain extends the shelf life of foods by slowing down microbial spoilage and/or biological contamination. It also reduces unnecessary food wastage along the chain.

The introduction of new and modern technologies in food production at the farm, processing and packaging have revolutionised the whole concept of chilled and frozen food preparation, storage and transportation. These processes have a significant impact on consumers' perception and expectations of food safety and quality. Proper management of every link of the cold chain constitutes an integral part in the production, storage and transportation of wholesome and safe chilled and frozen foods to the consumers.

SS 668 : Part 1 covers general requirements for cold chain management, meat, vegetables and fruits, fish and chilled table eggs. It covers the major links in the cold chain management starting from production at the farm, processing, packaging, storage, transportation and retail. Thus activities undertaken and devices utilised for monitoring the time-temperature profile along the entire chain commencing from the processing establishments, refrigerated transport/distribution containers for land and air transportation, warehouses and chillers at retail outlets as well as the mode of handling and storage from the retail outlets to consumers were taken into consideration in preparing this standard.

It is presupposed that in the course of their work, users will comply with all relevant regulatory and statutory requirements. Some examples of relevant regulations and acts are listed in the Bibliography. The Singapore Standards Council and Enterprise Singapore will not be responsible for identifying all of such legal obligations.

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.*
- 3. Compliance with a SS or TR does not exempt users from any legal obligations.*

Cold chain management of chilled and frozen foods – Part 1 : General requirements

0 Introduction

Singapore is heavily dependent on imports for its food supply. Many foods such as fresh meat and fish are highly perishable. A cold chain management system is an integrated system in which food is kept cold in chilled or frozen form in an unbroken link from the initial chilling or freezing of freshly produced food at a farm or processing establishment throughout the stages of transportation, storage, distribution and retail outlets.

A cold chain management system is important for an organisation involved in chilled and frozen food to maintain the freshness, shelf life, quality (including nutritional value and sensory characteristics) and safety of the food products. A cold chain management system effectively controls the growth of spoilage and food poisoning bacteria as well as slows down quality deterioration.

The potential benefit of a cold chain management system is the ability to consistently provide quality, safe and wholesome food for consumers. Implementation of a cold chain management system is a strategic decision for an organisation to improve its overall performance in providing food products and services.

1 Scope

Part 1 provides generic requirements for an organisation to set up a cold chain system. It also covers the management of the cold chain system at the top level to set policy and goals of the organisation to ensure food safety, freshness and quality.

General technical requirements for the common sectors in a cold chain also include the following:

- cold chain operations including temperature/time measurement and cold chain validation;
- cold room facilities including processing/packing room, cold room and anteroom;
- transportation, including air, sea and land, and distribution;
- packaging and labelling; and
- retail outlets.

2 Normative references

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

SS 668 : Part 2	Cold chain management of chilled and frozen foods Part 2 – Code of practice for meat
SS 668 : Part 3	Cold chain management of chilled and frozen foods Part 3 – Code of practice for vegetables and fruits
SS 668 : Part 4	Cold chain management of chilled and frozen foods Part 4 – Code of practice for fish
SS 668 : Part 5	Cold chain management of chilled and frozen foods Part 5 – Code of practice for chilled table eggs