

TR 79 : 2020
(ICS 67.020; 67.120.30)

TECHNICAL REFERENCE

Code of practice for the preparation of ready-to-eat raw fish



TR 79 : 2020

(ICS 67.020; 67.120.30)

TECHNICAL REFERENCE

**Code of practice for the preparation of ready-to-eat
raw fish**

Published by Enterprise Singapore

All rights reserved. Unless otherwise specified, no part of this Technical Reference may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilming, without permission in writing from Enterprise Singapore. Request for permission can be sent to: standards@enterprisesg.gov.sg.

© Enterprise Singapore 2020

ISBN 978-981-49-2521-1

The content of this Technical Reference was approved on 9 October 2020 by the Food Standards Committee (FSC) under the purview of the Singapore Standards Council.

First published, 2021

FSC consists of the following members:

	Name	Representation
Chairman	: Dr Allan Lim	<i>Individual Capacity</i>
Deputy Chairman	: Dr Tan Lee Kim	<i>Singapore Food Agency</i>
Secretary	: Mr Alvin Wee	<i>Singapore Manufacturing Federation – Standards Development Organisation</i>
Members	: Mr Ang Khim Wee	<i>Singapore Food Manufacturers' Association</i>
	Ms Cyndy Au	<i>DuPont Nutrition & Biosciences</i>
	Ms Michelle Bin	<i>Innovate360</i>
	Mr David Chai	<i>Food Innovation Resource Centre</i>
	Mr Andrew Chan	<i>Restaurant Association of Singapore</i>
	Prof William Chen	<i>Nanyang Technological University</i>
	Mr Cheong Chung Kin	<i>Singapore Manufacturing Federation</i>
	Mr Chew Chee Bin	<i>Singapore Agro-Food Enterprises Federation Limited</i>
	Ms Chong Nyet Chin	<i>NTUC Fairprice Co-operative Ltd</i>
	Dr Steven Fong	<i>Republic Polytechnic</i>
	Ms Laureen Goi	<i>Tee Yih Jia Food Manufacturing Pte Ltd</i>
	Assoc Prof Ralph E. Graichen	<i>Biomedical Research Council</i>
	Ms Nurul Hidayah	<i>Majlis Ugama Islam Singapore</i>
	Mr Richard Khaw	<i>Nanyang Polytechnic</i>
	Ms Melissa Koh	<i>Health Promotion Board</i>
	Mr Matthew Kovac	<i>Food Industry Asia</i>
	Ms Nichol Ng	<i>Foodservices Inc.</i>
	Mr Ong Boon Hock	<i>Commonwealth Capital Pte Ltd</i>
	Dr Benjamin Smith	<i>Singapore Institute of Food and Biotechnology Innovation</i>
	Ms Bernice Tay	<i>Enterprise Singapore</i>
	Dr Wuang Shy Chyi	<i>Temasek Polytechnic, Aquaculture Innovation Centre</i>
	Ms Lianey Yeap	<i>SATS Ltd</i>
	Prof Zhou Weibiao	<i>National University of Singapore</i>
Co-opted Member	: Dr Diana Chan	<i>Individual Capacity</i>

FSC set up the Technical Committee on Food Product to prepare this standard. The Technical Committee consists of the following members:

	Name	Representation
Chairman	: Mr Lim Kay Kong	<i>Individual Capacity</i>
Deputy Chairman	: Ms Ong Moi Kim	<i>Individual Capacity</i>
Secretary	: Ms Sharene Toh	<i>Singapore Manufacturing Federation – Standards Development Organisation</i>
Members	: Mr Ang Khim Wee	<i>Singapore Food Manufacturers' Association</i>
	Dr Gan Heng Hui	<i>Nanyang Polytechnic</i>
	Ms Verleen Goh	<i>Alchemy Foodtech Pte Ltd</i>
	Assoc Prof Ralph E. Graichen	<i>Biomedical Research Council</i>
	Ms Jessie Koh	<i>Fraser and Neave, Limited</i>
	Dr Leong Lai Peng	<i>National University of Singapore</i>
	Ms Lim Xiao Wen	<i>Fraser and Neave, Limited</i>
	Ms Reanne Liu	<i>Unilever Singapore Pte Ltd</i>
	Ms Evelyn Ong	<i>Singapore Polytechnic</i>
	Mr Thomas Pek	<i>Tai Hua Food Industries Pte Ltd</i>
	Ms Claire Ariela Shen	<i>Singapore Manufacturing Federation</i>
	Ms Teo Siok Lay	<i>Malaysia Dairy Industries</i>
	Dr Wong Kwok Onn	<i>Singapore Food Agency</i>
	Dr Wu Ji'En	<i>SETSCO Services Pte Ltd</i>

The Technical Committee set up the Working Group on Ready-to-Eat Raw Fish to prepare this standard. The Working Group consists of the following experts who contributed in their *individual capacity*:

	Name
Co-Convenors	: Ms Lilian Foo Mr Ting Heng Luan
Members	: Prof William Chen Wei Ning Ms Chong Nyet Chin Ms Ashley Goh Mei Huang Ms Hoong Yuqin Mr Koh Boon Liang Ms Joy Lee Ms Ng Hooi Beng Ms Shrestha Sook Yean Mr William Tan Ms Wong Suat Li

The organisations in which the experts of the Working Group are involved are:

Dairy Farm Singapore

GS1 Singapore Limited

Nanyang Technological University

NTUC Fairprice Co-operative Ltd

Sakae Holdings Ltd

Sheng Siong Group Ltd

Singapore Food Agency

Singapore Food Manufacturers' Association

Singapore Hotel Association Holdings Pte Ltd

Singapore Polytechnic

Contents

	Page
Foreword _____	6
0 Introduction _____	7
1 Scope _____	7
2 Normative references _____	7
3 Terms and definitions _____	8
4 Suppliers of raw fish _____	8
5 Local processors _____	9
6 Transport and receipt of chilled and frozen RTE raw fish _____	13
7 Food retail establishments _____	14
8 Consumer awareness _____	20

Annexes

A Microbiological parameters and limits for RTE raw fish _____	21
B Traceability system _____	22
C Control of non-conformity _____	23
D Visual inspection _____	24

Figures

1 Typical flow of the supply of raw fish intended to be consumed uncooked _____	7
2 General process flow and documentation of received chilled fish intended to be consumed uncooked _____	10
3 General process flow and documentation of received frozen fish intended to be consumed uncooked _____	11
4 General process of handling whole raw fish intended to be consumed uncooked at food retail establishments _____	16
5 General process of handling RTE raw fish (fillets and slices) at food retail establishments _____	17
Bibliography _____	25

Foreword

This Technical Reference (TR) was prepared by the Working Group on Ready-to-eat Raw Fish under the direction of the Food Standards Committee (FSC). The FSC endorsed the TR on 9 October 2020.

This TR is developed to meet the demand by consumers for ready-to-eat (RTE) raw fish in terms of good hygiene practices. It aims to set best practices in handling, storage and processing of RTE raw fish to ensure it is safe for consumers eating it without further heat treatment. This will ensure consumer safety by preventing the growth and multiplication of bacteria that may cause food spoilage and foodborne illnesses.

This TR is a provisional standard made available for application over a period of three years. The aim is to use the experience gained to update the TR so that it can be adopted as a Singapore Standard. Users of the TR are invited to provide feedback on its technical content, clarity and ease of use. Feedback can be submitted using the form provided in the TR. At the end of the three years, the Technical Reference will be reviewed, taking into account any feedback or other considerations, to further its development into a Singapore Standard if found suitable.

This TR is expected to be used by importers, local processors, transportation and food retail establishments of RTE raw fish.

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 Technical Reference 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.*

Code of practice for the preparation of ready-to-eat raw fish

0 Introduction

Fish is commonly consumed by our local population for their health and nutritional benefits. In Singapore, it is a common sight to see families and friends gather to celebrate the Lunar New Year by tossing yusheng, a salad commonly consisting of raw fish and a variety of vegetables and condiments. However, raw fish is a highly perishable food, particularly in our hot and humid environment. The reported dangers of illnesses brought on by eating raw fish often cause fear and confusion to consumers. Recognising the risk of infection, but uncertain of the severity, some consumers continue eating raw fish and ignoring the dangers. Food poisoning from raw fish occurs when consuming raw fish that has become too warm before serving or been contaminated with an infectious organism – a virus, parasite or bacterium – or a toxin from an infectious organism. Contamination of raw fish can occur at any time during its storage, handling or preparation. There is no cooking process to kill any pathogens and other harmful organisms in the raw fish. Hence, to minimise food poisoning from ready-to-eat (RTE) raw fish, it is prudent to develop a detailed code of practice for local food establishments (processors and retail outlets) preparing RTE raw fish for human consumption. This Technical Reference (TR) defines the hygienic recommendations and the control measures for local processors/handlers during transportation and at food retail establishments to ensure safe RTE raw fish.

This TR is intended for use by food establishments handling RTE raw fish for sale in Singapore.

1 Scope

This TR provides requirements and recommendations for the handling RTE raw fish at source, processors, during transportation and at food retail establishments. It also covers control measures that can prevent pathogenic bacterial and parasitic contamination to minimise the risk of food-borne illnesses. Figure 1 illustrates the various stages in the supply of raw fish intended to be consumed uncooked from the source to the consumers.

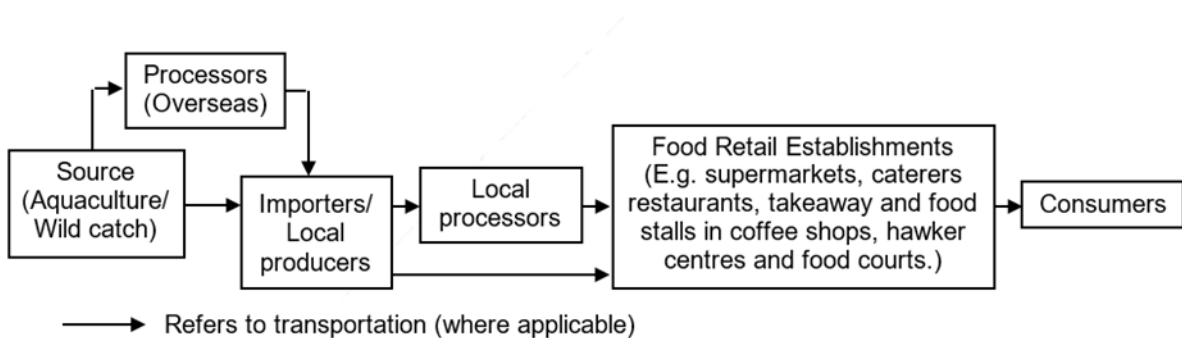


Figure 1 – Typical flow of the supply of raw fish intended to be consumed uncooked

2 Normative references

There are no normative references in this TR.