

NSF International Standard / American National Standard

NSF/ANSI 7 - 2019

Commercial Refrigerators and Freezers









NSF International, an independent, not-for-profit, nongovernmental organization, is dedicated to being the leading global provider of public health and safety-based risk management solutions while serving the interests of all stakeholders.

This Standard is subject to revision.

Contact NSF to confirm this revision is current.

Users of this Standard may request clarifications and interpretations, or propose revisions by contacting:

Chair, Joint Committee on Food Equipment c/o NSF International 789 North Dixboro Road, PO Box 130140 Ann Arbor, Michigan 48113-0140 USA Phone: (734) 769-8010 Fax: (734) 769-0109 Email: info@nsf.org
Web: <www.nsf.org>

This is a preview of "NSF/ANSI 7-2019". Click here	to purchase the full version from the ANSI store
--	--

NSF/ANSI 7 - 2019

NSF International Standard / American National Standard for Food Equipment –

Commercial Refrigerators and Freezers

Standard Developer **NSF International**

Designated as an ANSI StandardOctober 9, 2019 **American National Standards Institute**

This is a preview of "NSF/ANSI 7-2019". Click here to purchase the full version from the ANSI store.

Prepared by

The NSF Joint Committee on Food Equipment

Recommended for adoption by

The NSF Council of Public Health Consultants

Adopted by **NSF International**April 1966

Revised October 1970 Revised March 1972 Revised March 1973
Revised November 1983 Revised November 1985 Revised May 1990
Revised March 1997 Revised December 1999 Revised July 2000
Revised April 2001 Revised June 2007 Revised May 2009
Revised February 2014 Revised October 2016 Revised April 2020

Published by

NSF International

PO Box 130140, Ann Arbor, Michigan 48113-0140, USA

For ordering copies or for making inquiries with regard to this Standard, please reference the designation "NSF/ANSI 7-2019".

Copyright 2020 NSF International

Previous editions © 2016, 2014, 2009, 2007, 2001, 2000, 1999, 1997, 1990, 1985, 1983, 1973, 1972, 1970, 1966

Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from NSF International.

Printed in the United States of America.

Disclaimers¹

NSF International (NSF), in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of NSF represent its professional judgment. NSF shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. NSF shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard. It is the responsibility of the user of this standard to judge the suitability of the ANS for the user's purpose.

NSF Standards provide basic criteria to promote sanitation and protection of public health and the environment. Provisions for mechanical and electrical safety have not been included in this Standard because governmental agencies or other national standards-setting organizations provide safety requirements.

Participation in NSF Standards development activities by regulatory agency representatives (federal, state, or local) shall not constitute their agency's endorsement of NSF or any of its Standards.

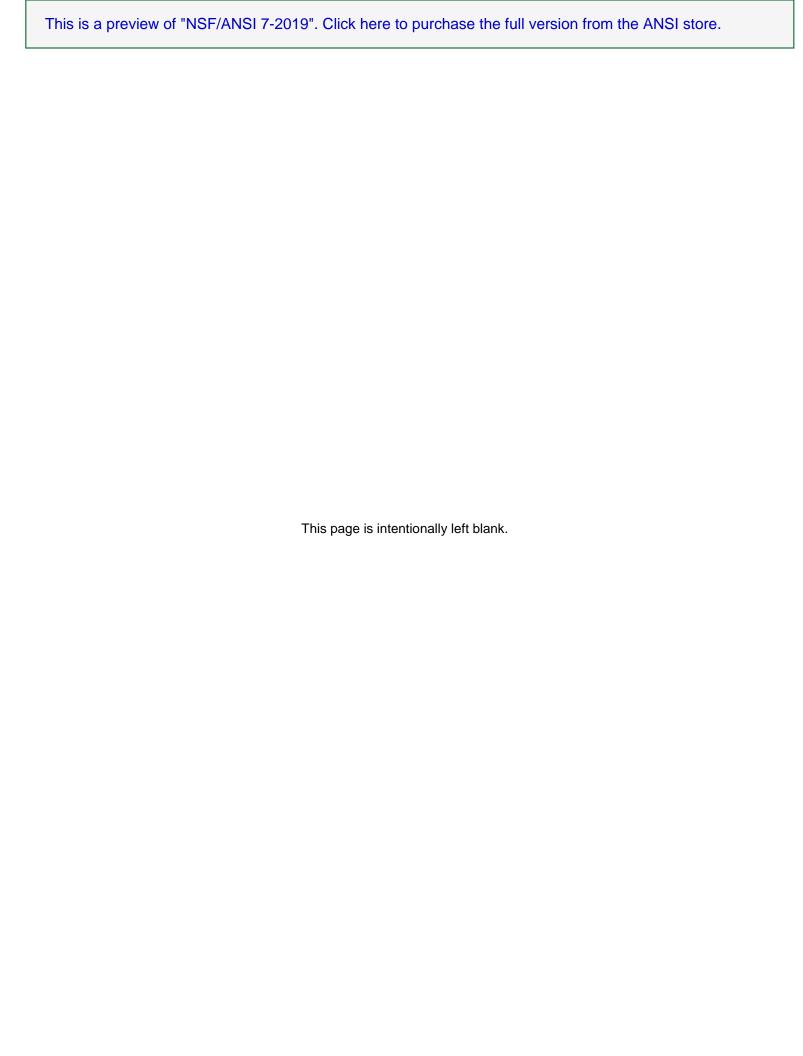
Preference is given to the use of performance criteria measurable by examination or testing in NSF Standards development when such performance criteria may reasonably be used in lieu of design, materials, or construction criteria.

The illustrations, if provided, are intended to assist in understanding their adjacent standard requirements. However, the illustrations may not include all requirements for a specific product or unit, nor do they show the only method of fabricating such arrangements. Such partial drawings shall not be used to justify improper or incomplete design and construction.

At the time of this publication, examples of programs and processes were provided for general guidance. This information is given for the convenience of users of this standard and does not constitute an endorsement by NSF International. Equivalent programs and processes may be used.

Unless otherwise referenced, the annexes are not considered an integral part of NSF Standards. The annexes are provided as general guidelines to the manufacturer, regulatory agency, user, or certifying organization.

¹ The information contained in this Disclaimer is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this Disclaimer may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.



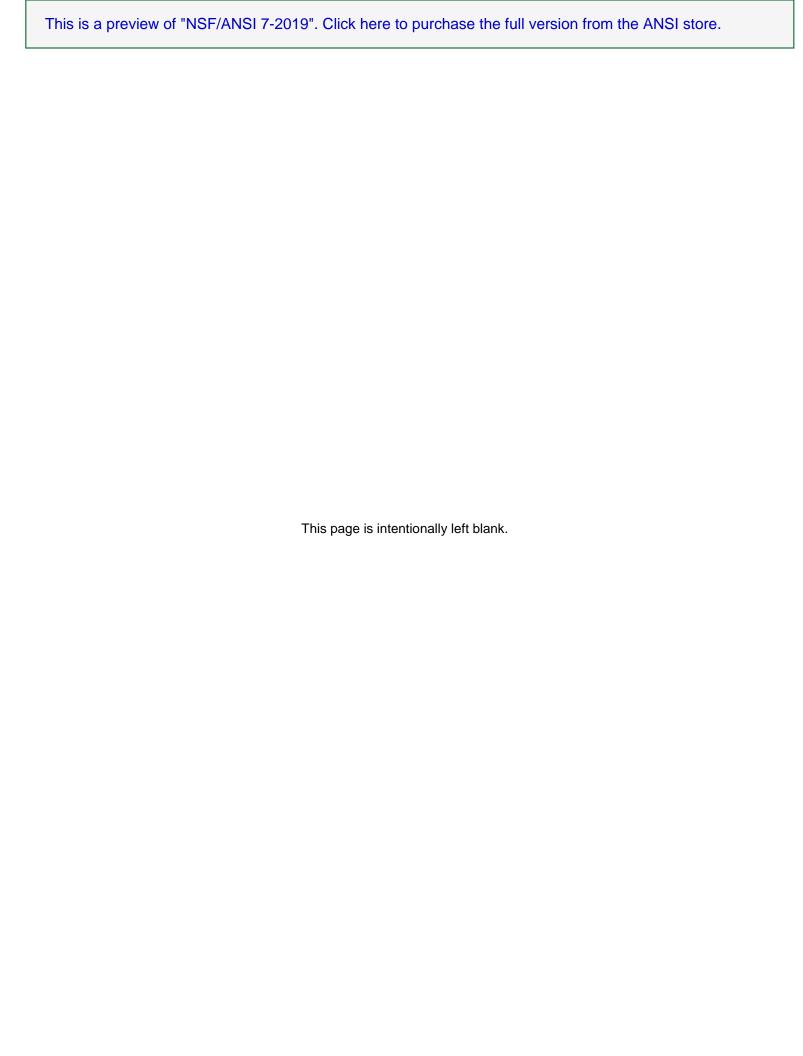
Contents

1	Gene	ral	1
	1.1	Purpose	. 1
	1.2	Scope	
		Alternate materials, design, and construction	
	1.4	Measurement	
			•
2	Norm	ative references	_
_	NOITH	duve references	. 2
_	D . C .	44	_
3	Defin	itions	. 2
4		rials	
	4.1	Conformance to NSF/ANSI 51	
	4.2	Zinc-coated materials	
	4.3	Solder	. 3
	4.4	Gaskets	. 3
	4.5	Canopies and awnings	
	4.6	Storage shelving	
5	Desic	n and construction	2
0	5.1	General sanitation	
	5.2	External angles and corners	
	5.3	Fasteners	
	5.4	Joints and seams	
	5.5	Edges and nosings	
	5.6	Reinforcing and framing	
	5.7	Inspection and maintenance panels	. 5
	5.8	Veneers	. 6
	5.9	Doors	. 6
	5.10	Hinges	. 6
		Door gaskets	
		Door tracks and guides	
		Covers	
		Openings into food zones	
		Entry ports	
		Drains	
		Hardware	
		Handles and pulls	
		Latches and catches	
		Breaker strips	
	5.21	Shelving	. 8
	5.22	Ventilation openings	. 8
	5.23	Louvers	. 8
	5.24	Equipment mounting	. 6
		Legs and feet	
		Casters, rollers, and gliders	
		Insulation	
		Cutting boards	
		Temperature controls	
		Breakable glass components	
		Food drawers	
	5.32	Food shields	11

6	Stora	ge retrigerators and freezers and retrigerated food transport cabinets	
	6.1	Zinc-coated materials	
	6.2	Internal angles and corners	11
	6.3	Joints and seams	11
	6.4	Hinges	12
	6.5	Casters, rollers, and gliders	12
	6.6	Refrigeration and cooling components	12
	6.7	Temperature-indicating devices (thermometers)	13
	6.8	Drains	
	6.9	Equipment labeling and literature requirements	13
	6.10	Performance – Storage refrigerators and refrigerated food transport cabinets	13
		Performance – Storage freezers	
7	Refri	gerated buffet units and refrigerated food preparation units	16
-	7.1	Internal angles and corners	
	7.2	Equipment labeling and literature requirements	
	7.3	Refrigeration and cooling components	
	7.4	Temperature-indicating devices (thermometers)	
	7.5	Performance	
0	Desta		4.0
8		bricated walk-in and roll-in refrigerators and freezers	18
	8.1	Prefabricated walk-in and roll-in refrigerators and freezers	19
	8.2	Prefabricated walk-in and roll-in refrigerators and freezers used for the storage of food in the original sealed package	20
	8.3	Equipment labeling and literature requirements	
	8.4	Performance for PVC laminated steel or aluminum	
9		ay refrigerators and freezers	
	9.1	Materials	
	9.2	Design and construction	
	9.3	General sanitation	
	9.4	Fasteners	
	9.5	Joints and seams	
	9.6	Reinforcing and framing	
	9.7	Doors	
	9.8	Drains	
	9.9	Shelving	26
		Equipment mounting	
		Refrigeration and cooling components	
	9.12	Temperature-indicating devices (thermometers)	27
	9.13	Equipment labeling and literature requirements	28
	9.14	Performance	29
	9.15	Performance – Temperature recovery test	30
		Performance – Automatic lockout	
10	Ranio	d pull-down refrigerators and freezers	32
		Internal angles and corners	
10		Refrigeration and cooling components	
	1(1)	Temperature-indicating devices unermometers:	
		Temperature-indicating devices (thermometers)	
	10.4	Equipment labeling and literature requirements Performance	33

This is a preview of "NSF/ANSI 7-2019". Click here to purchase the full version from the ANSI store.

Normative Annex 1 Procedures for the preparation of refrigeration performance test media N-1.1 Open-top refrigeration test medium	
N-1.2 Rapid pull-down refrigeration test medium	
prmative Annex 1	
Informative Annex 2 Joint Committee on Food Equipment roster	43



Foreword²

The purpose of this Standard is to establish minimum food protection and sanitation requirements for the materials, design, construction, and performance of commercial refrigerators and freezers.

Requirements for Food Store Refrigeration were developed in collaboration with the Commercial Refrigerator Manufacturers Association.

This edition of the Standard contains the following revisions:

Issue 20

This revision clarifies commercial requirements regarding the use of drains in Section 9.8.1.

Issue 21

This revision clarifies the design and construction language regarding joints and seams in Section 6.3.

Issue 22

This revision updates the normative reference in response to the newer version (2016) of American National Standard for Metric Practice.

This revision also includes an editorial update to the names of the Annexes within. The Annexes are being changed from alpha characters to numeric, preceded by a 'Normative' or 'Informative'. The Annexes have also been reordered so the Normative Annexes appear first, followed by the Informative Annexes. The table below shows the previous name of the Annex with the corresponding new name of the Annex:

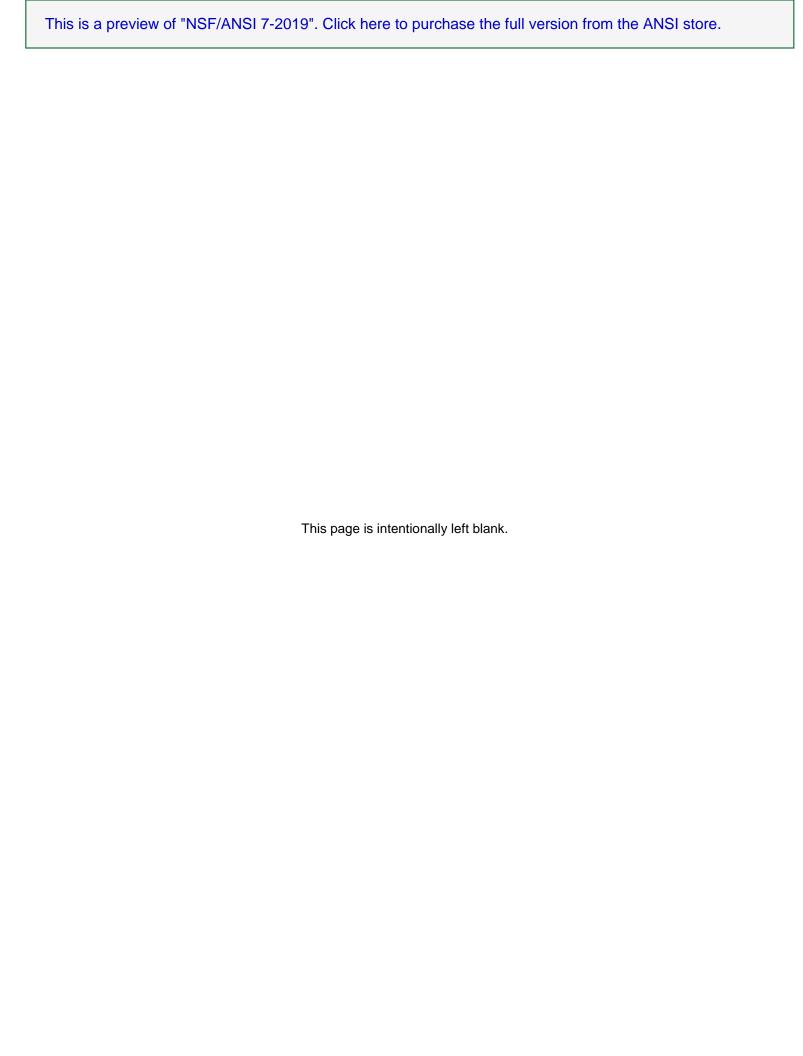
Annexes		
Previously known as:	Now known as:	
Annex A	Normative Annex 1 (N-1)	
Annex B	Informative Annex 1 (I-1)	
Annex C	Informative Annex 2 (I-2)	

This Standard was developed by the NSF Joint Committee on Food Equipment using the consensus process described by the American National Standards Institute.

This Standard and the accompanying text are intended for voluntary use by certifying organizations, regulatory agencies, and/or manufacturers as a basis of providing assurances that adequate health protection exists for covered products.

Suggestions for improvement of this Standard are welcome. This Standard is maintained on a continuous maintenance schedule and can be opened for comment at any time. Comments should be sent to: Chair, Joint Committee on Food Equipment at standards@nsf.org, or c/o NSF International, Standards Department, PO Box 130140, Ann Arbor, Michigan 48113-0140, USA.

² The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.



NSF International

NSF, founded in 1944, is well known for the development of standards, product testing and certification services in the areas of public health, safety and protection of the environment. The NSF Mark is placed on millions of consumer, commercial and industrial products annually and is trusted by users, regulators and manufacturers. Technical resources at NSF include physical and performance testing facilities and analytical chemistry and microbiology laboratories. NSF professionals include engineers, chemists, toxicologists, sanitarians and computer scientists with extensive experience in public heath, food safety, water quality and the environment. NSF certification programs are fully accredited by the American National Standards Institute (ANSI), the Dutch Council for Accreditation (RvA) and the Standards Council of Canada (SCC). NSF also provides management system registration services to ISO 9000 and ISO 14000 standards through its subsidiary NSF International Strategic Registrations, Ltd.

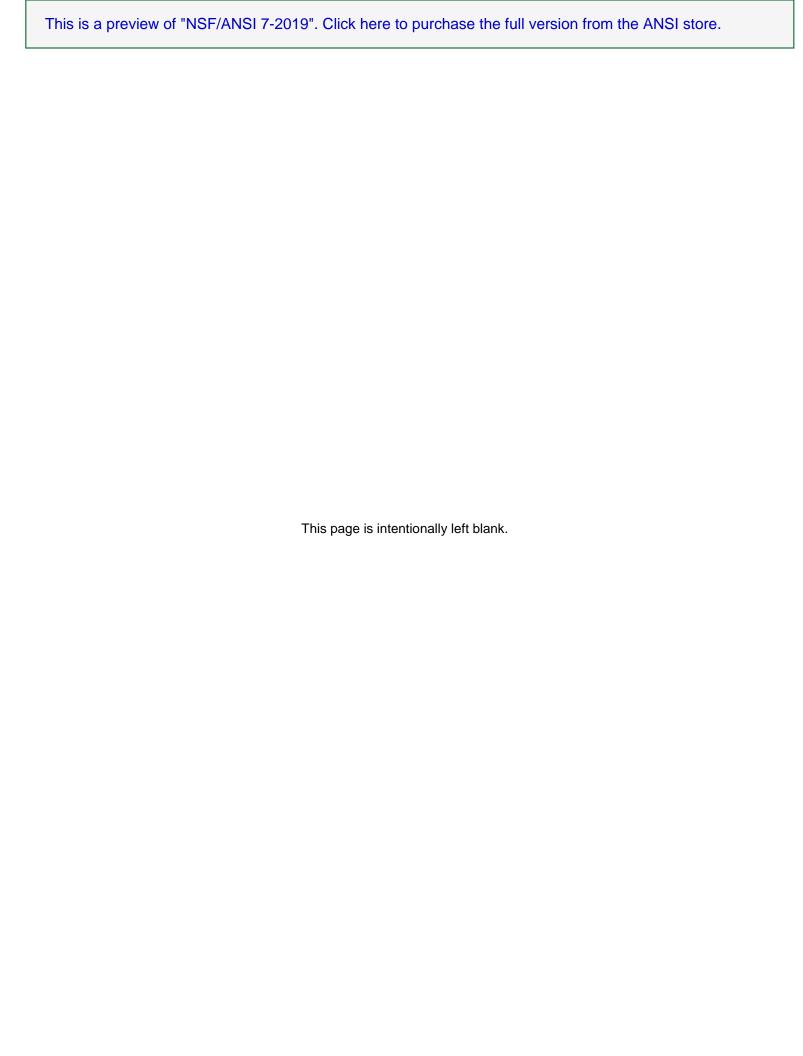
NSF maintains laboratories in Michigan, as well as offices in Ann Arbor, MI, and Brussels, Belgium.

Commercial Refrigerator Manufacturers Division / Air Conditioning Refrigeration Institute

The Commercial Refrigerator Manufacturers Association (CRMA) was founded in 1933 as a national trade association dedicated to advancing the common interests of the commercial refrigeration industry. In April 2000, CRMA merged with the Air Conditioning Refrigeration Institute (ARI) to form the Commercial Refrigerator Manufacturers Division / Air Conditioning Refrigeration Institute. CRMD/ARI continues to target three primary objectives:

- to showcase technical and business information to help solve common problems and promote growth in industry;
- to represent the collective voice of the industry with any government organization addressing policies or issues affecting the industry; and
- to support high voluntary standards for quality in equipment design and performance.

CRMD/ARI is a not-for-profit corporation of leading businesses meeting international demands for increasingly specialized and efficient refrigeration equipment. CRMD/ARI members serve a wide range of markets, including supermarkets, food stores, convenience stores, restaurants, hotels, motels, food processing establishments, and hospitals.



© 2020 NSF NSF/ANSI 7 – 2019

NSF/ANSI Standard for Food Equipment –

Commercial Refrigerators and Freezers

1 General

1.1 Purpose

This Standard establishes minimum food protection and sanitation requirements for the materials, design, manufacture, construction, and performance of commercial refrigerators and freezers and their related components.

1.2 Scope

This Standard contains requirements for refrigerators and freezers used to store and/or display cold food. The types of refrigerators and freezers covered by this Standard include, but are not limited to:

- storage refrigerators (e.g., reach-in, under counter, walk-in, roll-in);
- storage freezers (e.g., reach-in, under counter, walk-in, roll-in);
- rapid pull-down refrigerators and freezers;
- refrigerated food transport cabinets;
- refrigerated buffet units;
- refrigerated food preparation units;
- display refrigerators;
- beverage coolers; and
- ice cream cabinets.

This Standard does not establish equipment installation requirements. While the requirements of this Standard are intended to ensure that equipment may be installed in a sanitary manner, proper installation of equipment shall be governed by the applicable codes.

Refrigerator and freezer components and materials covered under other NSF or NSF/ANSI Standards or Criteria shall also conform to the requirements therein. This Standard is not intended to restrict new unit design, provided that such design meets the minimum specifications described herein.

1.3 Alternate materials, design, and construction

While specific materials, design, and construction may be stipulated in this Standard, equipment that incorporates alternate materials, design, or construction may be acceptable when such equipment meets the applicable requirements herein.

1.4 Measurement

Decimal and SI conversions provided parenthetically shall be considered equivalent. Metric conversions have been made according to IEEE/ASTM SI 10.