

NSF International Standard / American National Standard

NSF/ANSI 14 - 2019

Plastics Piping System Components and Related Materials









NSF/ANSI 14 – 2019

# Plastics Piping System Components and Related Materials

NSF International Standard / American National Standard



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 Plastics 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>

**NSF/ANSI 14 - 2019** 

NSF International Standard / American National Standard for Plastics –

## Plastics Piping System Components and Related Materials

Standard Developer **NSF International** 

**Designated as an ANSI Standard**October 18, 2019 **American National Standards Institute** 

#### Prepared by

The NSF Joint Committee on Plastics

Recommended for adoption by

The NSF Council of Public Health Consultants

Adopted by **NSF International** 

October 1965

Revised February 1977
Revised November 1983
Revised August 1986
Revised November 1990
Revised December 1999
Revised January 2003
Revised March 2007
Revised April 2010
Revised March 2013
Revised June 2016
Revised January 2020

Revised November 1978 Revised November 1984 Revised October 1987 Revised September 1996 Revised February 2001 Revised September 2004 Revised May 2008 Revised April 2011 Revised August 2014 Revised June 2017 Revised November 1980 Revised November 1985 Revised December 1988 Revised November 1998 Revised January 2002 Revised August 2006 Revised December 2009 Revised February 2012 Revised May 2016 Revised November 2018

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 14 – 2019".

Copyright 2020 NSF International

Previous editions © 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2004, 2003, 2002, 2001, 1999, 1998, 1996, 1990, 1988, 1987, 1986, 1985, 1984, 1983, 1980, 1978, 1977.

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.

#### Disclaimers<sup>1</sup>

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.

<sup>&</sup>lt;sup>1</sup> 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	General				
	1.1	Purpose	1		
	1.2	Scope			
	1.3	Materials, design, and construction	1		
2		native references			
	2.2	Normative references for compounds and other materials			
	2.3	International and other normative references	9		
3	Defir	nitions	10		
4	Dage	vivore auto for plactic minima avatere companyante and valated restarials	4.5		
4		uirements for plastic piping system components and related materials			
	4.1 4.2	Materials Physical and performance requirements			
	4.2 4.3				
	4.3 4.4	Potable water requirements			
	4.5	Marking requirements			
	4.6	Quality assurance			
	4.0	Quality assurance	10		
5	Phys	ical and performance requirements	16		
J	5.1	General			
	5.2	Long-term strength of plastic pipe			
	5.3	Requirements for PVC resins			
	5.4	Critical dimensions			
	5.5	PVC ingredients			
	5.6	Monitoring			
	5.7	Chlorine resistance – Dependent transfer listing requirements			
	5.8	Chlorine resistance – Equivalency for polyethylene compound modifications			
	5.9	Fittings and valves			
6		sial engineered (SE) product requirements			
	6.1	General			
	6.2	Special engineered (SE) specifications	20		
7		uirements for potable water plastic piping system components and related materials			
	7.1	General			
	7.2	Requirements for generic ingredients			
	7.3	Requirements for lead			
	7.4	Monitoring	22		
8	Mork	ing requirements	22		
0	8.1	General			
	8.2	Pipe			
	8.3	Fittings and appurtenances			
	8.4	Thread compounds, sealants, gasket lubricants, solvent cement, and adhesives			
	8.5	Special engineered (SE) products			
	8.6	Ingredients			
	0.0		20		
9	Quality assurance				
-	9.1	General			
	9.2	Start-up and qualification			
	9.3	Generic ingredients			
	9.4	Verification of the calibration of equipment			
	9.5	Quality assurance records	25		

### This is a preview of "NSF/ANSI 14-2019". Click here to purchase the full version from the ANSI store.

9.6	Production	code identification		
9.7	Number of	test specimens	25	
		n verification for solvent cements and primers		
9.9	9 Marking verification requirements			
Informat	tive Annex 1	References	55	
Informative Annex 2		Abbreviations	557	

#### Foreword<sup>2</sup>

The purpose of this Standard is to establish minimum physical, performance, and health effects requirements for plastics piping system components and related materials.

This edition of the Standard contains the following revisions:

#### **Issue 101**

This revision clarifies language concerning requirements for generic ingredients used in PVC compounds in Section 5.5, and updates QA test frequency for generic ingredients in Section 9.3.

#### Issue 102

This revision corrects an error in Table 9.13 (previously Table 9.12).

#### Issue 103

This revision corrects an error in Table 9.31 (previously Table 9.33).

#### Issue 104

This revision harmonizes conflicting criteria regarding chlorine resistance testing in Section 5.8.2.

#### Issue 105

This revision adds a marking verification frequency table to Section 9.

#### Issue 106

This revision update the QC tables in Section 9.

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	Informative Annex 1 (I-1)			
Annex B	Informative Annex 2 (I-2)			

<sup>&</sup>lt;sup>2</sup> 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. As such, 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.

This is a preview of "NSF/ANSI 14-2019". Click here to purchase the full version from the ANSI store.

This Standard was developed by the NSF Joint Committee on Plastics 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 Plastics at standards@nsf.org, or c/o NSF International, Standards Department, PO Box 130140, Ann Arbor, Michigan 48113-0140, USA.

© 2020 NSF NSF/ANSI 14 – 2019

NSF/ANSI Standard for Plastics –

### Plastics Piping System Components and Related Materials

#### 1 General

#### 1.1 Purpose

This Standard establishes minimum physical, performance, and health effects requirements for plastic piping system components and related materials. These criteria were established for the protection of public health and the environment.

#### 1.2 Scope

The physical, performance, and health effects requirements in this Standard apply to thermoplastic and thermoset plastic piping system components including, but not limited to, pipes, fittings, valves, joining materials, gaskets, and appurtenances. The established physical, performance, and health effects requirements also apply to materials (resin or blended compounds) and ingredients used to manufacture plastic piping system components. This Standard provides definitions and requirements for materials, ingredients, products, quality assurance, marking, and recordkeeping. Plastic piping system components which are manufactured to one of the normative references in Section 2 and do not have integral connections specifically intended for plastic piping systems are not covered by this Standard.

#### 1.3 Materials, design, and construction

For plastic piping system components and materials cited by the references in Section 2, the materials, design, and construction requirements of this Standard and the applicable product standard(s) in Section 2 shall apply. When materials, designs, or constructions are utilized that are not cited in Section 2, the plastic piping system components and related materials shall comply with the applicable requirements of this Standard. Plastic piping system components and related materials that incorporate materials, designs, or constructions not cited in Section 2 shall be acceptable, provided that such plastic piping system components and related materials can be demonstrated to be at least equivalent in terms of strength, quality, effectiveness, durability, and safety to those that are cited in this Standard.