

NSF International Standard / American National Standard

NSF/ANSI 14 - 2011

Plastics Piping System Components and Related Materials









NSF International, an independent, notfor-profit, non-governmental 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, P. O. Box 130140 Ann Arbor, Michigan 48113-0140 USA Phone: (734) 769-8010 Telex: 753215 NSF INTL FAX: (734) 769-0109 E-mail: info@nsf.org Web: http://www.nsf.org

NSF International Standard/ American National Standard for Plastics —

Plastics piping system components and related materials

Standard Developer **NSF International**

NSF International

Designated as an ANSI Standard February 8, 2012

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 1978
Revised November 1980
Revised November 1983
Revised November 1984
Revised November 1985
Revised August 1986
Revised October 1987
Revised December 1988
Revised November 1990
Revised September 1996
Revised November 1998

Revised December 1999
Revised February 2001
Revised January 2002
Revised January 2003
Revised September 2004
Revised August 2006
Revised March 2007
Revised May 2008
Revised December 2009
Revised April 2010
Revised April 2011
Revised February 2012

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 – 2011."

Copyright 2012 NSF International

Previous editions © 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.

Disclaimers¹

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.

NSF Standards provide basic criteria to promote sanitation and protection of the public health. 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, local, state) 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.

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.

This page is intentionally left blank.

Contents

1	General	
	1.1 Purpose	
	1.2 Scope	
_		
2	Normative references	
	2.1 Normative references for plastic pipe and related components	
	Normative references for compounds and other materials Other normative references	
3	Definitions	9
4	Requirements for plastic piping system components and related materials	13
	4.1 Materials	
	4.2 Physical and performance requirements	
	4.3 Potable water requirements	
	4.4 Special engineered products	
	4.5 Marking requirements	
	4.0 Quality assurance	
5	Physical and performance requirements	14
	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	
	5.6 Fittings and valves	10
6	Special engineered (SE) product requirements	17
	6.1 General	
	6.2 SE specifications	17
_	Description and for matchie water plactic mining evetors company to and related materials	40
7	Requirements for potable water plastic piping system components and related materials 7.1 General	
	7.1 General	
	7.3 Requirements for lead	
	7.4 Monitoring	
	3	
8	Marking requirements	
	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 products	
	o.o ingredients	20
9	Quality assurance	
	9.1 General	
	9.2 Start-up and qualification of molds	
	9.3 Generic ingredients	
	9.4 Verification of the calibration of equipment	
	9.6 Production code identification	

9.7 Number of test specimens	
9.8 Formulation verification for solvent cements and primers	22
9.9 Product-specific quality assurance requirements	22
Table 1 – Calcium carbonate and titanium dioxide summary of exposure durations	22
Table 2 – Minimum number of test specimens for a sample	23
Table 3 – Solvent analysis methods	
Table 4 – Solvent control limits	
Table 5 – Acrylonitrile-butadiene-styrene (ABS) pipe testing frequency	
Table 6 – Acrylonitrile-butadiene-styrene (ABS) fitting test frequency	
Table 7 – Continuous waste tubing and fittings ABS, PVC and PP test frequency	26
Table 8 – Chlorinated poly(vinyl chloride) (CPVC) pipe test frequency	26
Table 9 – Chlorinated poly(vinyl chloride) (CPVC) fittings test frequency	
Table 10 – PE-water, PE-gas and PB pipe and tubing test frequency	
Table 11 – Fittings for PE, PEX and PB tubing test frequency	
Table 12 – Poly(vinyl chloride) (PVC) pipe test frequency	
Table 13 – Poly(vinyl chloride) (i vo) pipe test frequency	
Table 14 – Thermoset pipe and thermoset mortar pipe testing requirements and frequency	
Table 15 – Solvent cements and primers ^{1, 2} test frequency	54
Table 16 – Polyolefin and Polyvinylidene Fluoride (PVDF) pipe for corrosive	54
waste drainage systems	24
	34
Table 17 – Polyolefin and Polyvinylidene Fluoride (PVDF) fittings for corrosive	25
waste drainage systems	
Table 18 – Composite pipe test frequency	30
Table 19 – Fittings for composite pipe	
Table 20 – PP pipe and fittings test frequency	
Table 21 – Air admittance valve test frequency	
Table 22 – Pressure rated composite pipe for elevated temperature services	
Table 23 – Fittings for pressure rated composite pipe for elevated temperature services	
Table 24 – Poly(vinyl chloride) (PVC) gasketed sewer fittings	
Table 25 – PVC plastic schedule 40 drainage and DWV fabricated fittings	
Table 26 – Flexible water connectors	39
Table 27 – Multilayer pipe type 2, compression fittings, and compression joints	
for hot and cold drinking-water systems	40
Table 28 – Fittings or appurtenances used in poly(vinyl chloride) (PVC)	
or chlorinated poly(vinyl chloride)(CPVC) systems	
Table 29 – Oriented Polyvinyl Chloride (PVCO) pressure pipe	
Table 30 – Pipe and fittings having post-industrial recycle content	42
Table 31 – Quality assurance requirements for materials suppliers and	
special compounders ¹	43
Table 32 – Poly(vinyl chloride) PVC pipe and fittings for underground fire	
service test frequency	43
Table 33 – PVC pressure pipe and fabricated fittings for water transmission	
and distribution	44
Annex A	A1
	_
Annex B	
Table B1 – Abbreviations	B1

Foreword²

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

In this edition of NSF/ANSI 14, the following revisions have been incorporated:

This version includes the following revisions:

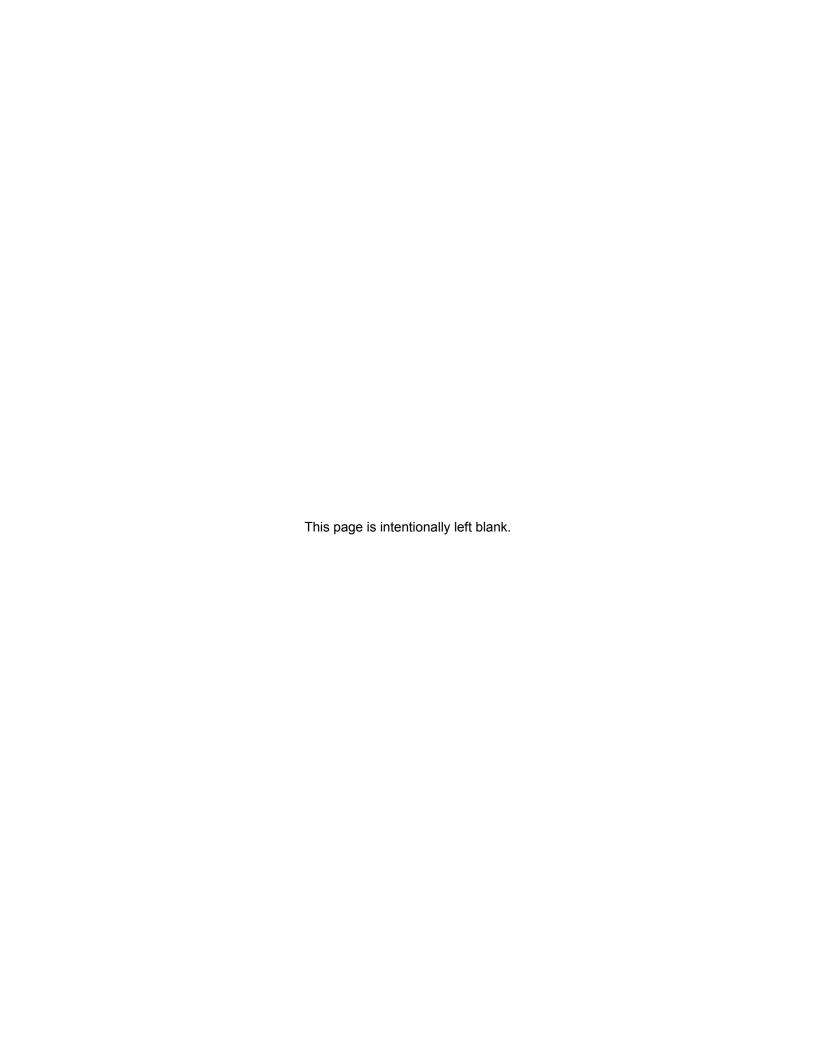
- Issue 41: This issue removes the weekly burst pressure requirement for reducer bushings.
- Issue 43: The accelerated regression testing requirement was removed from Table 29 on the basis that it is intended as a qualifying test, and should not be listed under the product-specific quality assurance requirements for PVCO. Table 30 was revised to clarify the language in the title and footnote of the table to include both post-industrial and post-consumer recycled materials.
- Issue 44: This issue provides an alternate method for section 5.7, Chlorine Resistance Dependent Transfer Listing requirements under the physical and performance requirements of section 5. The revised language will allow for the evaluation of pipe that cannot be tested at a high stress level at the highest temperature due to their specific design with regards to the occurrence of mixed mode failures.

This Standard was developed by the NSF Joint Committee on Plastics using the consensus process described in NSF Standards Development Policies and accredited by ANSI.

Suggestions for improvement of this Standard are welcome. Comments should be sent to Chair, Joint Committee on Plastics, c/o NSF International at standards@nsf.org, or 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. 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.



© 2012 NSF NSF/ANSI 14 – 2011

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.

1.3 Materials, design, and construction

For plastic piping system components and materials cited by the references in 2, the materials, design, and construction requirements of this Standard and the applicable product standard(s) in 2 shall apply. When materials, designs, or constructions are utilized that are not cited in 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 2 are 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.

2 Normative references

The following documents contain requirements that, by reference in this text, constitute requirements of this Standard. At the time of publication, the indicated editions were valid. All of the documents are subject to revision, and parties are encouraged to investigate the possibility of applying the recent editions of the documents indicated below. It is the responsibility of the user of this Standard to determine the acceptance of the referenced standards to the application and requirements of the local jurisdictions.

2.1 Normative references for plastic pipe and related components

ASME A112.4.14-2004. Manually Operated, Quarter-Turn Shutoff Valves for Use in Plumbing Systems³

³ American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990 www.asme.org.