

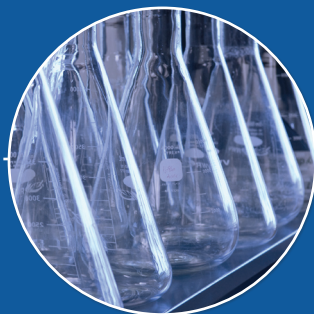
This is a preview of "NSF/ANSI 24-2008". [Click here to purchase the full version from the ANSI store.](#)



*NSF International Standard /
American National Standard*

NSF/ANSI 24 - 2008

Plumbing System Components for Recreational Vehicles



NSF International, an independent, not-for-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 —

Plumbing system components for recreational vehicles

Standard Developer
NSF International

Approved by ANSI
July 27, 2008
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
The NSF Board of Directors
January 1969

Revised June 1970
Revised July 1971
Revised September 1971
Revised November 1971
Revised April 1972
Revised September 1973

Revised July 1979
Revised November 1979
Revised June 1987
Revised June 1988
Reaffirmed September 1996
Revised March 2006
Revised July 2008

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 24 – 2008."

Copyright 2008 NSF International
Previous editions © 1988, 1987, 1979, 1973, 1972, 1971, 1970, 1969, 1988, 1996, 2006

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 appendices are not considered an integral part of NSF Standards. The appendices 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

Disclaimers	iii
Foreword	ix
1 General	1
1.1 Scope	1
1.2 Measurement	1
1.3 Normative references	1
2 Definitions	2
3 Materials	4
3.1 General	4
3.2 Dissimilar materials	4
3.3 Welding	4
3.4 Potable water contact surfaces	4
3.5 Non-corrosion-resistant materials	4
4 Design and construction	4
4.1 General	4
4.2 Cleanability	4
4.3 Backflow and back siphonage	4
4.4 Specific requirements for components	4
5 Connector couplings, caps, and drain hoses	5
5.1 Design and construction	5
5.2 Performance	5
5.3 Marking and identification	5
6 Side-vented drainage system	5
6.1 Scope	5
6.2 Materials	5
6.3 Design and construction	5
6.4 Performance	6
6.5 Marking and identification	6
7 Plumbing fixtures / receptors (except toilets)	6
7.1 Scope	6
7.2 Applicable standards	6
7.3 Steel fixtures	6
7.4 Design and construction	6
7.5 Showers	6
7.6 Shower receptors	7
7.7 Shower and tub enclosures	7
7.8 Strainers	7
7.9 Floor support	7
7.10 Watertight installation	7
7.11 Openings	7
7.12 Access	7
7.13 Brackets	7
7.14 Marking and identification	7

8	Nonpressurized potable water tanks	8
8.1	Design and construction	8
8.2	Performance	8
8.3	Marking and identification	8
9	Pressurized potable water tanks, fittings, and filler caps	8
9.1	Scope	8
9.2	Design and construction	8
9.3	Performance	9
9.4	Marking and identification	9
10	Waste holding tanks	9
10.1	Design and construction	9
10.2	Performance	9
10.3	Marking and identification	10
11	Mechanical seal toilets	10
11.1	Scope	10
11.2	Materials	10
11.3	Design and construction	11
11.4	Performance	11
12	Self-contained, recirculating, chemically controlled toilets	11
12.1	Scope	11
12.2	Applicable standards	11
12.3	Materials	11
12.4	Load Test	11
12.5	Marking and identification	11
13	Water closets	12
13.1	Scope	12
13.2	Applicable standards	12
13.3	Marking and identification	12
14	Termination valves	12
14.1	Design and construction	12
14.2	Replacement	12
14.3	Performance	12
14.4	Marking and identification	13
15	Hand-actuated water pumps	13
15.1	Scope	13
15.2	Design and construction	13
15.3	Performance	13
15.4	Marking and identification	13
16	Electric water pumps	14
16.1	Scope	14
16.2	Screens	14
16.3	Performance	14
16.4	Instruction manual	14
16.5	Marking and identification	14
17	Detachable waste holding systems	14
17.1	Scope	14
17.2	Tank design and construction	15

17.3	Traps.....	15
17.4	Connections and draining.....	15
17.5	Drain system design and construction	15
17.6	Performance	15
17.7	Impact resistance	15
17.8	Marking and identification.....	15
18	Flexible drain systems	15
18.1	Scope.....	15
18.2	Design and construction	16
18.3	Performance	16
18.4	Marking and identification.....	16
19	Air admittance valves.....	16
19.1	Scope.....	16
20	Stainless steel sinks	17
20.1	Scope.....	17
20.2	Recreational vehicle sinks	17
21	Flexible vent systems, pipe, and fittings	17
21.1	Scope.....	17
21.2	Performance	17
21.3	Dimensions	17
21.4	Flexibility	17
21.5	Fittings	17
21.6	Chemical resistance	18
Table 1	– Chemical resistance testing	18
21.7	Water absorption	18
21.8	Markings	18
22	Antifreeze for potable water systems.....	19
22.1	Scope.....	19
22.2	Materials	19
22.3	Performance	19
Table 2	– Minimum percent by weight for propylene glycol	20
22.4	Compatibility	20
22.5	Marking and identification of antifreeze.....	20
22.6	Quality control and records maintenance.....	20
23	Portable toilets.....	21
23.1	Scope.....	21
23.2	Materials	21
23.3	Flush water holding tank design and construction	21
23.4	Waste holding tank design and construction.....	21
23.5	Performance	21
24	Installed toilet systems with detachable waste holding tanks	22
24.1	Scope.....	22
24.2	Materials	22
24.3	Design and construction - plumbed systems.....	22
24.4	Design and construction – systems that are not plumbed	22
24.5	Detachable waste holding tank design and construction	22
24.6	Performance requirements	22

This page is intentionally left blank.

Foreword²

The purpose of this Standard is to establish minimum requirements for materials, design and construction, and performance of pipe, fittings, valves, traps, vents, tanks, pumps, connectors, fixtures, appliances, and similar appurtenances used in a plumbing system of a recreational vehicle.

In this edition of NSF/ANSI 24, the following revisions have been incorporated:

- Clarification that toilets under the standard shall comply with only the Function Test of IAPMO TS 12, and not all sections of IAPMO TS 12.
- Removal of the requirement for mechanical seal toilets to comply with the “structural strength and integrity” and “wear and cleanability” sections of ANSI Z124.4. Reference to Vitreous china shall comply with requirements of ASME A112.19.2M was also added in section 12. The load test was added into section 11 and 12 requiring toilets meet the requirements of IAPMO TS-1, Section 5.8 and tanks meet the requirements of IAPMO TS-1, Section 5.9.
- Updated normative references including the addition of IAPMO TS 1-2005. Mechanical Seal Toilets for Use in Recreational Vehicles.
- Section 10.1.3 was updated to include body waste and liquid waste inlet sizes consistent with NFPA 1192.

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

Suggestions for improvement of this Standard are welcome. Comments should be sent to Chair, Joint Committee on Plastics, 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.

This page is intentionally left blank.

NSF/ANSI Standard for Plastics

Plumbing system components for recreational vehicles

1 General

1.1 Scope

This Standard covers pipe, fittings, valves, traps, vents, tanks, pumps, connectors, fixtures, appliances, and similar appurtenances used in a plumbing system of a recreational vehicle.

1.2 Measurement

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

1.3 Normative references

The following reference documents contain requirements that constitute requirements of this NSF/ANSI Standard. At the time of publication, the indicated editions were valid. All documents are subject to revision, and it is the responsibility of the user of this specification to determine the applicability of the most recent editions of these documents.

ANSI Z124.1 – 95. Plastic Bathtub Units³

ANSI Z124.2 – 95. Plastic Shower Receptors and Shower Stalls³

ANSI Z124.3 – 95. Plastic Lavatories³

ANSI Z124.4 – 96. Plastic Water Closet Bowls and Tanks³

ANSI/ASSE 1001-02. Performance Requirements for Atmospheric Type Vacuum Breakers⁴

ANSI/ASSE 1002 – 99. Anti-siphon Fill Valves for Gravity Water Closet Flush Tanks⁴

ANSI/ASSE 1051 – 02. Individual and Branch Type Air Admittance Valves for Sanitary Drainage Systems⁴

ASME A112.18.2 – 2002. Plumbing Fixtures Waste Fittings⁵

³ American National Standards Institute (ANSI), 11 West 42nd St., New York, NY 10036 www.ANSI.org

⁴ ASSE International Office, 901 Canterbury, Suite A, Westlake, OH 44145 www.ASSE.org

⁵ The American Society for Mechanical Engineers (ASME) International, Three Park Avenue, New York, NY 10016-5990 www.ASME.org