



*NSF International Standard /
American National Standard*

NSF/ANSI 44 - 2013 Residential Cation Exchange Water Softeners



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 Drinking Water Treatment Units
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 Drinking Water Treatment Units —

**Residential cation exchange
water softeners**

Standard Developer

NSF International

NSF International

Designated as an ANSI standard

June 11, 2013

American National Standards Institute

Prepared by
The NSF Joint Committee on Drinking Water Treatment Units

Recommended for adoption by
The NSF Council of Public Health Consultants

Adopted by
The NSF Board of Directors
December 1987

Revised November 1996
Revised November 1998
Revised September 1999
Revised May 2000
Revised November 2000
Revised January 2001
Revised February 2002
 Editorial revision December 2003
Revised June 2004
Revised October 2007
Revised August 2009
Revised February 2012
Revised December 2013

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 44 – 2013."

Copyright 2013 NSF International
Previous editions © 2012, 2009, 2007, 2004, 2002, 2001, 2000, 1999, 1998, 1996, 1987

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
1.1	Purpose	1
1.2	Scope	1
1.3	Alternate materials, design, and construction	1
2	Normative references	1
3	Definitions	2
4	Materials	6
4.1	Materials in contact with drinking water	6
4.2	Materials evaluation	7
4.3	Gas chromatography/mass spectroscopy (GC/MS) analysis	8
5	Structural performance	17
5.1	Structural integrity	17
6	Minimum performance requirements	22
6.1	Hazards	22
6.2	Electrical safety and operation	22
6.3	Waste connections	22
6.4	Brine tank	22
6.5	Operation	22
6.6	Performance indication	22
6.7	Chemical and mechanical performance	23
7	Elective performance claims – Test methods	36
7.1	Scope	36
7.2	Barium and radium reduction	39
8	Instruction and information	44
8.1	Installation, operation, and maintenance instructions	44
8.2	Data plate	46
8.3	Performance data sheet	47
Annex A		A1
Annex B		B1

This page is intentionally left blank.

Foreword²

The purpose of this Standard is to establish minimum requirements for materials, design, construction, and performance of drinking water treatment units that are designed to reduce specific aesthetic-related contaminants in public or private water supplies. This Standard specifies the minimum product literature and labeling information that a manufacturer must supply to authorized representatives and system owners. Lastly, the Standard provides minimum service-related obligations that the manufacturer must extend to system owners.

This edition of the Standard contains the following revisions:

Issue 32

This revision addresses tentatively identified compounds (TICs) and unknown compounds that are found during extraction testing under section 4 and clarifies the analytical method(s) to be used to evaluate these compounds with the addition of Annex B.

This Standard was developed by the NSF Joint Committee on Drinking Water Treatment Units using the consensus process described by the American National Standards Institute.

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 Drinking Water Treatment Units at standards@nsf.org or c/o NSF International, Standards Department, P.O. 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 Drinking Water Treatment Units — Residential cation exchange water softeners

1 General

1.1 Purpose

The purpose of this Standard is to establish minimum requirements for materials, design and construction, and performance of residential cation exchange water softeners. This Standard also specifies the minimum product literature that manufacturers shall supply to authorized representatives and owners, as well as the minimum service-related obligations that manufacturers shall extend to owners.

1.2 Scope

The manual, autoinitiated, and demand-initiated regeneration residential cation exchange water softeners addressed by this Standard are designed to be used for the removal of hardness and the reduction of specific contaminants from drinking water supplies (public or private) considered to be microbiologically safe and of known quality. Systems with components or functions covered under other NSF or NSF/ANSI Standards or Criteria shall conform to the applicable requirements therein.

1.3 Alternate materials, design, and construction

While specific materials, design, and construction may be stipulated in this Standard, systems that incorporate alternate materials, designs, and construction may be acceptable when it is verified that such systems meet the applicable requirements.

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.

ANSI/NFPA 70, 2002, National Electric Code³

NSF/ANSI 53 – 2005: *Drinking water treatment units – Health effects*

NSF/ANSI 61 – 2003e: *Drinking water system components – Health effects*

USEPA-600/4-79-020, *Methods for the Chemical Analysis of Water and Wastes*, March 1983⁴

USEPA-600/4-88-039, *Methods for the Determination of Organic Compounds in Drinking Water*, December 1988 (Revised July 1991)⁴

³ National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269 <www.nfpa.org>.

⁴ USEPA, Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268 <www.epa.org>.