

ANSI/NSPI-3 1999

Standards Institute

Standard for
Controlled Residential Sp

ANSI/NSPI-3 1999



Approved November 24, 1998 by the
National Standards Institute

**ANSI/NSPI-3 1999
AMERICAN NATIONAL STANDARD
FOR
PERMANENTLY INSTALLED RESIDENTIAL SPAS**

SPONSOR:

**NATIONAL SPA AND POOL INSTITUTE
2111 Eisenhower Avenue
Alexandria, VA 22314**

**Approved November 24, 1998
by the
American National Standards Institute, Inc.**

This is a preview of "ANSI/NSPI 3-1999". [Click here to purchase the full version from the ANSI store.](#)

AMERICAN NATIONAL STANDARD

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standard developer.

Consensus is established when, in the judgment of the ANSI Board of Standard Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved this standard or not, from manufacturing, marketing, purchasing or using products, processes or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard.

STATEMENT: This voluntary standard has been developed under the published procedures of the American National Standards Institute. The National Spa and Pool Institute, its members, and those participating in its activities do not accept any liability resulting from compliance or noncompliance with the provisions given herein, for any restrictions imposed on materials, or for the completeness of the text.

NSPI does not monitor or enforce compliance with the contents of this document, and any certification of products stating compliance with requirements of this document are at the sole responsibility of the certifier.

It is assumed and intended that spa users will exercise appropriate personal judgment and responsibility and that operators will create and enforce rules of behavior and warning appropriate for their spa.

Copyright[©] by the National Spa and Pool Institute 1999

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transcribed, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without written permission from the publisher: National Spa & Pool Institute, 2111 Eisenhower Avenue, Alexandria, VA 22314-4698.

FOREWORD

(This Foreword is not part of the American National Standard ANSI/NSPI-3 1999)

The objective of this standard is to provide recommended minimum guidelines for the design, equipment, installation, and use of permanently installed residential spas. It is also intended to assist local jurisdictions and other regulatory bodies, where necessary, in the development and promulgation of criteria for permanently installed residential spas.

The design requirements and construction practices in this standard are based upon sound engineering principles, research and field experience which, when applied properly, contribute to the delivery and installation of a safe product.

The words "safe and "safety" are not absolutes. While the goal of this standard is to design and construct a safe, enjoyable product, it is recognized that risk factors can not, as a practical matter, be reduced to zero in any human activity. This standard does not replace good judgment and personal responsibility. In permitting use of the spa by others, owners must consider the skill, attitude, training and experience of the expected user.

As with any product, the specific recommendations for installation and use provided by the manufacturer should be carefully observed.

This standard was prepared by the Spa Standards Writing Committee of the National Spa and Pool Institute (NSPI) in accordance with American National Standards Institute (ANSI) Procedures for the Development and Coordination of American National Standards utilizing the ANSI accredited canvass method. Consensus approval was achieved by ballot of the ANSI accredited canvass list.

The consensus committee that approved this standard was balanced to ensure that individuals from competent and concerned interests have had an opportunity to participate. The proposed standard was made available for public review and comment which provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

The following organizations, recognized as having an interest in the standardization of permanently installed residential spas, were contacted prior to the approval of this standard. Inclusion in this list does not necessarily imply that the organization concurred with the submittal of the proposed standard to ANSI.

Organizations Represented

Name of Representative

American Insurance Services Group	Edward S. Charkey
Akron, Ohio, Department of Public Health	Donald Manson
American Red Cross	Jon Martindale
Applied Safety & Ergonomics	Timothy Rhoades
Aquasport/Seasonmaster	Don Aymes
Aquarius Pools	Gene Wells
Aristech Chemical	C.T. Hicks
Baltimore, Maryland County Department of Public Health	William T. Hastings
Building Officials & Codes Administrators	Sara Rice
California State - Fresno Public Health	Ronald Schultz
Clark County, Nevada Health District	Mike Barnhurst
Contra Costa, California County Health	Jerry Kothe
D.J. Technology	Don Jones

Organizations Represented

Name of Representative

Davis County, Utah Health Department	Delane McGarvey
Fairfax County, Virginia Health Department	James Bowman
Fibre Tech	Hugh Lynch
Garrett Liner	Ken Garrett
Great Lakes Biochemical	John Puetz
Horner Equipment of Florida	William Kent
International Association of Plumbing & Mechanical Officials	S. Rawalpindiwala
Illinois Department of Public Health	Craig Loudat
Laporte Water Technology	John Puetz
Lithium Corporation of America	Thomas Thomas
Los Angeles County Public Health Department	Richard Keababjian
Massachusetts Department of Public Health	Joseph Walsh, Jr.
McNicol & Associates	Jim McNicol
Milwaukee, Wisconsin Health Department	Justus Baird
National Safety Council	Nina Moroz
NSF International	Kevin Smith
National Fire Protection Association	Arthur Cote
National Swimming Pool Foundation	Les Kowalsky
NYC, New York Department of Building	Irving Polsky
NYC, New York Bureau of Public Health & Engineering	Arthur Ashendorff
Oregon State Environmental Health	Hal Nauman
Reidel Environmental Services	Daniel Wilson
Roanoke, Virginia City Health Department	J.B. Kennerly
San Bernardino, California, County Department of Health	George Pfiffner
San Mateo, California, County Health Department	Brian Zamora
Southern Building Code Congress International, Inc.	James Connell
Sonoma, California, County Public Health	Michael Vinatieri
Sta-Rite Industries	Dennis Ruis
Sunco Pool Company	Bob Gray
State of Washington Drinking Water Operations	Gary Fraser
U.S. Department of Health, Centers for Disease Control, Atlanta	Kenneth W. Holt
U.S. Consumer Product Safety Commission	Colin Church*
U.S. HUD - Construction Standards	Donald Fairman*
Underwriters Laboratories	W. Peck
University of California - Berkeley	Richard
University of Washington School of Public Health	Jack Hatlen
Washoe, Nevada, County Department of Health	Terri Sevitch
Weld, Colorado County Environmental Health	Judy Schmidt
Whatcomb, Washington County Health Department	Julie Clinton
Witte and Associates	Don Witte
Yale University, School of Medicine	Eric Mood
YMCA Fredrick County, Maryland	Richard Tokar
Consultants:	Howard Gates
.....	B. Kevin Molloy
*non-voting	E. Douglas Pushard
.....	John Ruskin
.....	Joseph Salvato

Suggestions for improvement of this standard should be sent to the National Spa & Pool Institute, 2111 Eisenhower Avenue, Alexandria, VA 22314, Attention: Technical Department.

In accordance with American National Standards Institute (ANSI) procedures, this document will be reviewed periodically. The National Spa and Pool Institute welcomes your comments and suggestions, and continues to review all NSPI standards, which include:

ANSI/NSPI-1 1991 Standard For Public Swimming Pools
ANSI/NSPI-2 1999 Standard For public Spas
ANSI/NSPI-3 1999 Standard For Permanently Installed Residential Spas
ANSI/NSPI-4 1992 Standard For Aboveground/Onground Residential Swimming Pools
ANSI/NSPI-5 1995 Standard For Residential Inground Swimming Pools
ANSI/NSPI-6 1999 Standard For Residential Portable Spas
ANSI/NSPI-8 Model Barrier Code for Residential Swimming Pools, Spas and Hot Tubs
ANSI/NSPI-9 Standard for Aquatic Recreation Facilities (In Progress)
ANSI/NSPI-10 Standard for Public Swimspas (In Progress)
ANSI/NSPI-11 Standard for Residential Swimspas (In Progress)
NSPI Workmanship Standards For Swimming Pools and Spas
NSPI Pool Plaster Technology

Special thanks to the following whose contributions and dedication made this standard possible:

Lee West, Balboa Instruments, Inc., Chairman
Dave Allen, Hydro-Air Industries
Gary Burkitt, American Products
Rex Stephens, Beyond Waterworks Spas & Pools
Tony Sadati, Sundance Spas
Steve Macey, Watkins Manufacturing
Keith W. Harbol, Zeneca, Inc.
Don Walker, Haywood Pool Products (Retired)

NSPI Staff: Bernice Crenshaw

STANDARD FOR PERMANENTLY INSTALLED RESIDENTIAL SPAS

TABLE OF CONTENTS

Article	Page
I Scope	1
II Materials of Manufacture	1
III Plans and Permits	2
IV Structure and Design	2
V Dimensional Design	3
VI Decks	4
VII Circulation Systems	5
VIII Filters	6
IX Pumps and Motors	7
X Return Inlets and Suction Outlets	7
XI Surface Skimmer Systems	8
XII Electrical Requirements	8
XIII Air Blower and Air Induction Systems	8
XIV Heater and Temperature Requirements	9
XV Water Supply	10
XVI Waste Water Disposal	11
XVII Sanitizing, Oxidation Equipment and Chemical Feeders	11
XVIII Safety Features	11
XIX Glossary	13
Appendix A Chemical Operational Parameters	28
Appendix B Spa Use Parameters	33
Appendix C Metric Conversion Tables	34
Appendix D Use of Ozone	35
Appendix E Use of Elemental Chlorine	35
Appendix F Sources of Materials	36

This is a preview of "ANSI/NSPI 3-1999". [Click here to purchase the full version from the ANSI store.](#)

**STANDARD FOR PERMANENTLY
INSTALLED RESIDENTIAL SPAS**

ARTICLE I

1.0 SCOPE

- 1.1 This standard is intended to cover permanently installed residential spas that are used for bathing and are operated by an owner.
- 1.2 This standard is meant to cover certain aspects of the design, equipment, operation, installation, new construction and rehabilitation of spas. This standard shall be met notwithstanding certain variations in equipment, materials and design.
- 1.3 This standard is not meant to cover public spas, residential portable spas or other spas, such as those operated for medical treatment, physical therapy or other purposes.
- 1.4 Other standards are referenced in this standard for items not covered.

ARTICLE II

2.0 MATERIALS OF MANUFACTURE

- 2.1 The materials of manufacture shall be capable of fulfilling the design, installation, and intended use requirements in this standard. The materials of manufacture, components and accessories used in residential spas shall comply with the following:

Plastic Spa Shells: ANSI Z124.7-97, Pre-fabricated Plastic Spa Shells.

Tile: IAPMO IS-2-90, Tile Lined Roman Bathtubs

Stainless Steel: ASTM-A240, Type 316 Stainless Steel

Piper Copper Tubing:

ASTM B 88-96: Specification for Seamless Copper Water Tube

ASTM B 88 447-84: Specification for Welded Copper Tube

Plastic Piping and Tubing:

ABS: ASTM D 1527-77 (1995), Specifications for Acrylonitrile Butadiene Styrene (ABS) Plastic Pipe, Schedules 40 and 80

PVC: ASTM D 1785-95, Specification for Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120

PVC Hose: IAPMO PS-33-93, Specification for Flexible Hose for Pools, Hot Tubs, Spas and Jetted Bathtubs

CPVC: ASTM D2846-95-A, Specification for Chlorinated Poly Vinyl Chloride (CPVC) Plastic Hot and Cold Water Distribution Systems

PB: ASTM D3309-95-A, Specifications for Polybutylene (PB) Plastic Hot Water Distribution Systems

Steel Pipe Galvanized: ASTM A53-96a, Specification for Pipe, Steel Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

Plastic Fittings: ABS ASTM D2235-95, Specification for Solvent Cements for Acrylonitrile Butadiene Styrene (ABS) Plastic Pipe and Fittings

PVC: ASTM D 2564-95, Specification for Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings

CPVC: ASTM F493-95, Specification for Solvent Cements for Chlorinated Poly Vinyl Chloride (CPVC) Plastic Pipe and Fittings

Soldered Joints:

IAPMO: IS 3-93, Installation Standard for Copper Plumbing Tube & Fittings

IAPMO: IS 21-89, Installation Standard for Copper and Copper Alloy Welded Water Tube Copper Tube Handbook, CDA

Threaded Joints: ANSI/ASME B1.20.1, Pipe Treads, General Purpose (inch)

Accessories and Components:

Suction Fittings: ANSI/ASME A112.19.8-