American National Standard

for Support Surfaces –

Volume 1: Requirements and Test Methods for Full Body Support Surfaces

RESNA

Rehabilitation Engineering and Assistive Technology Society of North America

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Requirements and Test Methods for Full Body Support Surfaces

Secretary

Rehabilitation Engineering and Assistive Technology Society of North America

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Foreword

This standard covers full body support surfaces which play an integral role in any care plan for the prevention and treatment of pressure ulcers. They can make a monumental difference in quality of life for any patient with limited mobility. Since no one full body support surface is best for all patients, a wide variety of surfaces, including mattresses, mattress overlays, and integrated bed systems are available in a broad array of materials. Choosing from this growing list of alternatives has become a daunting task for clinicians, care givers, and patients. Selecting from the available alternatives is further complicated by the lack of consistent information regarding full body support surface characteristics.

Clinicians, manufacturers, vendors, and patients all stand to benefit from the development of standardized procedures to evaluate the characteristics of full body support surfaces. Detailed information provided by standardized testing will help clinicians to objectively match a full body support surface's characteristics with the needs of individual patients. Testing standards will also aid manufacturers by guiding new product development and in the redesign of existing products. Vendors too, will benefit by being able to clearly describe and compare products from multiple manufacturers. Lastly, patients will benefit by having a full body support surface that truly supports their needs.

We note that while these standards are intended to provide a means of measuring and producing metrics for comparison, no data have been established at this time to establish what values represent “good” or “bad” performance. Such determinations must await the rigorous investigation of specific clinical outcomes compared with various performance aspects of the support surfaces used. Only then will the knowledge exist to use the data obtained from these test methods in selecting the most appropriate support surface for any given application.

RESNA SS Volumes 1 consist of the following sections under the general title Support Surfaces:

Volume 1: Requirements and Test Methods for Full Body Support Surfaces

Section 1: **Vocabulary**

Section 2: **Standard protocol for measuring immersion in: full body support surfaces**

Section 3: **Standard protocol for measuring heat and water vapor dissipation characteristics of full body support surfaces – body analog method**

Section 4: **Standard protocol for measuring heat and moisture dissipation characteristics of full body support surfaces – sweating guarded hot plate (SGHP) method**

The following sections are also on the work program:

Section 5: **Sliding Resistance**

Section 6: **Product Life**

Section 7: **Disinfection**

Section 8: **Active Surface Characterization**

These standards had their inception in June 2000 when the RESNA Standards Committee on Support Surfaces began creating standards in the United States as a result of the National Pressure Ulcer Advisory Panel's call for standards in the support surface industry. The standards are test procedures designed to produce objective information about support surface performance characteristics with clinical implications. It is important to note that not all tests are applicable to all surfaces. Any deviation from the standards as written must be documented in the report.

RESNA is accredited as a standards organization and the Assistive Technology Standards Board oversees the work of the RESNA standards committees. RESNA is an interdisciplinary organization that promotes assistive technology for people with disabilities and the development of full body support surfaces for the broad spectrum of patient care environments. The committee has also worked concurrently with other countries as an ANSI member body to the International Organization for Standardization (ISO) to create international standards pertaining to full body support surface standards.

Suggestions for the improvement of this standard are welcome. They should be sent to the following address:

RESNA Assistive Technology Standards Board
1700 North Moore Street, Suite 1540
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This standard was approved by the RESNA Standards Committee on Support Surfaces and the RESNA Assistive Technology Standards Board for submittal to ANSI. Committee approval of the standard does not necessarily imply that all the committee members voted for its approval or the approval of every test method or requirement in the standard. The RESNA Standards Committee on Support Surfaces consisted of the following members:

Organization Represented	Name of Representative
NPUAP	Chair, Evan Call
University of Pittsburgh	Vice-Chair, David Brienza
The Roho Group	Secretary, David McCausland
Alpha Bedding	Ted Lazakis
ArjoHuntleigh (Getinge Group)	Alastair McLeod, Carroll Gillespie, KZ Hong, Mathew Pickering, Christopher Niederkrom
Berlin Cert	Peter Diesing
Brewer Design	Mark Stecker, Ken Bettin, Jerry Jacobs
British Healthcare Trade Association	Ray Hodgkinson
Cleveland Clinic	Steven Reger
Clinical Consultant (formerly ArjoHuntleigh)	Lyn Phillips
Clinical RN	Judith Harwood
Clinician	Kristin Koehler
Dartex Coatings	Richard Haxby, Mark Jones, Jo Milnes
DM Systems	Denis Drennan
E.C. Service	Justin Pedersen
EHOB	Todd Smith, James Spahn

Element.....Brent Larson
Future Mobility Healthcare.....Czeslaw Cimachowski, Mario Netto, Steve Warren, James Hadland
FXI.....Christopher Weyl, Marc Badalucco
Gaymar.....Cindy Sylvia, Joel Jusiak, June Brennan, Brett Fulton, Kristopher Johnson,
.....Heather Lindstrom, Jeanne Perla
Georgia Institute of Technology.....Stephen Sprigle
Hickory Springs.....Corrinne Carriere
Hill-Rom.....Charlie Lachenbruch, Able Ang, Wendy Christian, Frank Sauser
Joerns.....Bonnie Perry, Terri Greulich, Julia Melendez, Doug Ferguson, Grace Vanier
KCI.....Royce Johnson, Manuel Torres
Kindred Healthcare.....Susan Logan
Medline.....Jackie Young
NPUAP.. Arthur Stone, Margaret Goldberg, Mary Ellen Posthauer, Laura Edsberg, Karen Zulkowski,
.....Michelle Deppisch, Karin Zachow
RecoverCare.....Rosalyn Jordan, Marci Christian
Research Institute, National Rehabilitation Center for Persons with Disabilities
(Tokorozawa, Saitama, Japan).....Hideyuki Hirosi
The Roho Group.....Pat Meeker, Dave Parsons, Vanessa Siegel, Tony Sprouse, Kara Kopplin,
.....Darren Hammond
Siekman Consulting.....Alan Siekman
Simbex.....Mike Kokko
.....Jeff Chu
Sizewise.....Susan Morello
Span America.....Jim O'Reagan, Laurie Rappl
Stryker.....Patrick Lafleche, Paula Gruccio, Jean-Francois Girard, Matthew Ward, Prachi Jain,
.....Parikshit Atre, Melanie Dostaler
Tamarack.....Joe Hofmeister
TempurPedic.....Rick Fontaine
Tridien.....Dekron Turian, Abbey Daniels, Jackie Edwards, Ian West
Wellsense.....Kristen Thurman
W.L. Gore.....Pete Brown, Paul Canatella, Alan Maples, Dave Pacanowsky
WCEI.....Gail Hebert
WOCN.....Dianne Mackey
Hokkaido University.....Makoto Takahashi
University of Nebraska Omaha.....Janet Cuddigan
University of Pittsburgh.....Tricia Karg, Mary Jo Geyer

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Scope of Volume 1

Volume 1: Requirements and Test Methods for Full Body Support Surfaces are test methods for characterization of full body support surfaces used in the home care, long term care, long term acute care, acute care, and critical care environments. These standards are also appropriately applied to other full body support surfaces that may be used for patient transport, transfer, and conveyance. The characterization of support surfaces utilizing these described methods is intended to provide the necessary performance features and traits that can be utilized for the benefit of the occupant of the full body support surface. The clinical relevance of these features and traits can then be measured and correlated to the results of tests conducted as described in this standard.

This RESNA standard does not apply to: (1) Residential use support surfaces, or (2) Institutional, or penal system support surfaces. It should also be noted that not all tests are appropriate for all surfaces, and these standards will need to continue to evolve with technology.

This standard specifies terms, requirements and test methods for determining clinically relevant full body support surface performance characteristics. It also specifies requirements for the disclosure of the test results. However, no pass/fail or minimum performance values are listed or implied.

These test methods may be used to verify manufacturers' claims that a product performs at a prescribed level as defined in this standard.

WARNING: This RESNA Standard calls for the use of procedures that may be injurious to the testing technician if adequate precautions are not taken. Lifting tools, aids, or fixtures should be used to prevent mechanical injury when lifting or moving test mannequins and supporting equipment.

Section 1

Vocabulary

Contents

Section 1 Introduction

There are no tracked changes in this section as this document stands by itself. If ISO completes the development of a new standard, this RESNA standard shall supersede the ISO version.

The development and application of full body support systems standards is particularly dependent upon clear and consistent terms and definitions. The major proportion of this section of RESNA SS-1 includes terms and definitions used in more than one or more sections of the RESNA standards specifically related to full body support systems. These include: RESNA SS-1, Sec 2, Sec 3, and Sec 4.

Full body support systems will cite this document for definition of terms wherever possible thus facilitating the consistent use of a common vocabulary.

This section of RESNA SS-1 is intended purely as a means of specifying terms and definitions. It does not attempt to classify full body support surfaces.

Section 1: Vocabulary

1 Scope

This section of RESNA SS-1 specifies a vocabulary consisting of terms and definitions used in the field of full body support surfaces (mattresses, mattress overlays, and integrated bed systems). This section of RESNA SS-1 includes, but is not limited to the preferred terms used in one or more sections of the RESNA SS-1 standards, but does not include terms considered to be adequately defined in everyday English.

2 Rules and elements used in vocabulary

Most terms defined are used in more than one section of the RESNA standard relating specifically to full body support surfaces. Terms specific to only one of these sections are defined in the terms and definitions clause of that section.

3 Terms and definitions

For the purposes of this section of RESNA SS-1, the terms and definitions below apply:

3.1 active support surface
a powered support surface with the capability to change its load distribution properties with or without applied load

3.2 air
a low density fluid with minimal resistance to flow

3.3 air fluidized
a feature of a support surface that provides pressure redistribution by forcing air through a granular medium (e.g., beads) producing a fluid state

3.4 alternating pressure
a feature of a support surface that provides pressure redistribution via cyclic changes in loading and unloading as characterized by frequency, duration, amplitude, and rate of change parameters

3.5 bladder
(See cell)

3.6 cell/bladder
a means of encapsulating a support medium

3.7 bottoming out
the state of support surface deformation at which no increase in mattress/overlay deformation occurs when further loading is applied. (ISO 7176-26-2007 E, 4.8.15)

