

New Zealand Standard

Specification for Buoyancy Aids and Marine Safety Harnesses and Lines

Superseding NZS 5823:2001

NZS 5823:2005

COMMITTEE REPRESENTATION

This Standard was prepared under the supervision of the Buoyancy Aids and Marine Safety Harnesses and Lines Committee (P 5823) for the Standards Council, established under the Standards Act 1988.

The committee consisted of representatives of the following:

Bureau Veritas NZ Ltd
Coastguard New Zealand
Hutchwilco Ltd
Maritime Safety Authority of New Zealand
RFD New Zealand Ltd
Rhumbline Ltd
Safety at Sea (Australasia) Ltd
Water Safety New Zealand

ACKNOWLEDGEMENT

The assistance provided by the Maritime Safety Authority of New Zealand towards the publishing of this Standard is gratefully acknowledged.

© COPYRIGHT

The copyright of this document is the property of the Standards Council. No part of it may be reproduced by photocopying or by any other means without the prior written permission of the Chief Executive of Standards New Zealand unless the circumstances are covered by Part III of the Copyright Act 1994.

Standards New Zealand will vigorously defend the copyright in this Standard. Every person who breaches Standards New Zealand's copyright may be liable to a fine not exceeding \$50,000 or to imprisonment for a term not to exceed three months. If there has been a flagrant breach of copyright, Standards New Zealand may also seek additional damages from the infringing party, in addition to obtaining injunctive relief and an account of profits.

Published by Standards New Zealand, the trading arm of the Standards Council, Private Bag 2439, Wellington 6020.

Telephone: (04) 498 5990, Fax: (04) 498 5994.

Website: www.standards.co.nz

AMENDMENTS

<i>No.</i>	<i>Date of issue</i>	<i>Description</i>	<i>Entered by, and date</i>
1	7 October 2011	Replace clause 401.12.1, pages 28 and 29	Incorporated in this edition

CONTENTS PAGE

Committee representation.....	IFC
Acknowledgement.....	IFC
Copyright.....	IFC
Referenced documents	4
Latest revisions	6
Review of Standards	6
Foreword	7

PART 1 GENERAL

Section

101 Scope and application.....	9
102 Definitions.....	10

PART 2 SELECTION OF BUOYANCY AIDS

Section

201 Types of buoyancy aids	12
202 Selection of buoyancy aids	14

PART 3 GENERAL REQUIREMENTS FOR BUOYANCY AIDS

Section

301 Scope and application.....	16
302 General design.....	16
303 Source of buoyancy.....	17
304 Protection of source of buoyancy.....	17
305 Outer covering materials	17
306 Webbing, tapes and cords.....	20
307 Sewing	20
308 Fastenings and fittings	20
309 Inflatable chambers	21
310 Resistance to corrosion	23
311 Resistance to crushing	23
312 Resistance to heat	23
313 Resistance to petroleum products	23
314 Compliance.....	24
315 Information to be supplied by the manufacturer	24
316 Marking.....	24
317 Crotch straps.....	24

**PART 4
SPECIFIC REQUIREMENTS FOR BUOYANCY AIDS**

Section

401	Open-waters lifejackets	25
402	In-shore waters personal flotation devices.....	30
403	Buoyancy vests	34
404	Buoyancy-aid wet suits	37
405	Buoyancy garments.....	40
406	Specialist personal flotation devices	43

**PART 5
RESCUE BUOYS**

501	Scope	47
502	Application.....	47
503	General design requirements.....	47

**PART 6
FLOAT-OFF BUOYANCY AIDS**

601	Scope	49
602	Application.....	49
603	General design requirements.....	49

**PART 7
MARINE SAFETY HARNESES AND LINES**

Section

701	Scope	51
702	General design requirements.....	51
703	Materials	52
704	Sewing and splicing.....	53
705	Performance requirements	53
706	Information to be supplied by the manufacturer	54
707	Marking.....	55

Table

300.1	Test requirements for protective skin coatings and uncoated expanded plastics buoyant material.....	18
400.1	Limits of buoyancy-aid colours in terms of the CIE 39.2 Colorimetric Systems and measured with standard illuminant D ₆₅ at 45/0 geometry.....	28
L1	Summary of applicable clauses for performance tests for buoyancy aids.....	79

Figure

A1	Dummy for testing child's harness and safety line	57
A2	Dummy for testing adult harness and safety line	58
A3	Position of dummy for testing	59
C1	Test point	62
D1	Apparatus for testing air porosity	64
F1	Stitch type 301.....	67
G1	Typical arrangement for the test of strength of fastening devices test.....	69
H1	Apparatus for testing automatic inflation devices (illustrating application of test to a buoyancy aid)	70
I1	Apparatus for flow measurement of oral inflation device ...	72
N1	Illustration of palm and needle whipping.....	81

Appendix

A	Performance test of marine safety harnesses (Normative)	56
B	Method for the determination of buoyancy (Normative)	60
C	Method for testing resistance to puncturing (Normative)	62
D	Method for testing air porosity (Normative)	64
E	Method for testing state of vulcanization (Normative)	66
F	Stitching to be used in buoyancy aid fabrication (Normative)	67
G	Method of testing strength of fastening device or devices (Normative)	68
H	Method for testing resistance to inadvertent operation of automatic inflation devices (Normative)	70
I	Method of test for oral inflation device (Normative).....	72
J	Method for testing strength of attachment of mechanical inflation heads (Normative).....	74
K	Method for exposure of buoyancy aids to kerosene (Normative)	75
L	In-water performance testing of buoyancy aids (Normative)	76
M	Method of test for non-magnetic properties (Normative)	80
N	Palm and needle whipping (Informative).....	81
O	Recommendations for record keeping, storage, examination and maintenance of safety harnesses and safety lines (Informative)	82
P	Bursting force test (Normative).....	84
Q	Cautionary and care information for inclusion on swing-tags (Normative).....	87

REFERENCED DOCUMENTS

Reference is made in this document to the following:

NEW ZEALAND STANDARD

NZS 5432:1990 Webbing for restraining devices for occupants of motor vehicles

AMERICAN STANDARDS

ASTM C 177 – 04 Standard test method for steady-state heat flux measurements and thermal transmission properties by means of the guarded-hot-plate apparatus

ASTM C 518 – 04 Standard test method for steady-state thermal transmission properties by means of the heat flow meter apparatus

ASTM D 3574 – 03 Standard test methods of testing for flexible cellular materials – Slab, bonded, and moulded urethane foams
Test F – Tear resistance test

AUSTRALIAN STANDARDS

AS 1192:2004 Electroplated coatings – Nickel and chromium

AS 1753:1990 Webbing for restraining devices for occupants of motor vehicles

AS 1789:2003 Electroplated coatings – Zinc on iron or steel

AS 2001: - - - - Methods of test for textiles
Part 1:1995 Conditioning procedures
Part 2.10:1986 Physical test – Determination of the tear resistance of woven textile fabrics by the wing-rip method
Part 4.E02:2001 Methods of test for textiles – Colour fastness tests – Colour fastness to sea water
Part 4:- - - - Colour fastness tests
Method 4.21 Determination of colour fastness to light using an artificial light source (mercury vapour, tungsten filament, internally phosphor-coated lamp)

AS 2193:2002 Calibration and classification of force-measuring systems

AS 2259:1996 General requirements for buoyancy aids

AS 2332:2003 Slide fasteners

AS 4142:- - - - Fibre ropes
Part 1:1993 Care and safe usage
Part 2:1993 Three-strand hawser-laid and eight-strand plaited

AS 4143:- - - - Methods of test for fibre ropes
Part 1:1993 Dimensions, linear density, breaking force and elongation

BRITISH STANDARDS

BS 381C: 1996	Colours for identification, coding and special purposes
BS EN ISO 2411:2000	Rubber or plastics-coated fabrics. Determination of coating adhesion
BS EN ISO 4674.1:2003	Rubber- or plastics-coated fabrics. Determination of tear resistance. Constant rate of tear methods
BS 2782:- - - - Part 3:- - - -	Methods of testing plastics Mechanical properties Methods 320A to 320F:1976 Tensile strength, elongation and elastic modulus (under review)
BS 3146:- - - - Part 1:1974 Part 2:1975	Investment castings in metal Carbon and low alloy steels Corrosion and heat resisting steels, nickel and cobalt base alloys
BS 3424:- - - - Part 5:1982	Testing coated fabrics Methods 7A, 7B and 7C. Methods for determination of tear strength (Part 5 is now partially replaced by BS EN ISO 4674.1:2003 Rubber- or plastics-coated fabrics. Determination of tear resistance. Constant rate of tear methods
Part 12:1996 Part 22:1983	Testing coated fabrics. Accelerated ageing process Method 25. Methods for determination of fusion of PVC coatings and the state of cure of vulcanized rubber coatings
BS 3870:- - - - Part 1:1991	Stitches and seams Classification and terminology of stitch types
BS EN 12373.1:2001	Aluminium and aluminium alloys. Anodizing. Method for specifying decorative and protective anodic oxidation coatings on aluminium

ISO STANDARDS

ISO 2411:2000	Rubber – or plastics-coated fabrics – Determination of coating adhesion
ISO 7854:1995	Rubber – or plastics-coated fabrics – Determination of resistance to damage by flexing
ISO 9227:1990	Corrosion tests in artificial atmospheres – Salt spray tests

NZS 5823:2005

NEW ZEALAND LEGISLATION

Maritime Rules made under the Maritime Transport Act 1994

OTHER PUBLICATIONS

CIE publication 39.2:1983 Recommendations for surface colours for visual signalling

International Maritime Organization Resolution A.658(16)
20 November 1989, Annex, Type I and Type II Classification

LATEST REVISIONS

The users of this Standard should ensure that their copies of the above-mentioned New Zealand Standards and referenced overseas Standards are the latest revisions or include the latest amendments. Such amendments are listed in the annual Standards New Zealand *Catalogue* which is supplemented by lists contained in the monthly magazine *Standards Update* issued free of charge to committee and subscribing members of Standards New Zealand.

REVIEW OF STANDARDS

Suggestions for improvement of this Standard will be welcomed. They should be sent to the Chief Executive, Standards New Zealand, Private Bag 2439, Wellington 6020.

FOREWORD

This Standard is a revision of NZS 5823:2001 *Specification for buoyancy aids and marine safety harnesses and lines*. All Standards are revised periodically as the need arises. This revision was initiated in response to concerns being raised in the sector that existing buoyancy aids were not always accompanied by enough information to ensure purchasers were able to select the most appropriate device for their intended use. In addition, this provided an opportunity to consider other international improvements and changes in the production of buoyancy aids, safety harnesses and lines. These included:

- Significant changes to the labelling requirements and the information required on swing tags – specifically in relation to what a jacket will or will-not do, as well as fitting and sizing instructions (including chest size in addition to weight);
- The ability to attach crotch straps to adult buoyancy aids accompanied by a recommendation that using these will reduce the risk of jackets riding up;
- That in-shore waters lifejackets (402s) should no longer be referred to as life jackets, but as personal flotation devices (PFDs), and should also carry appropriate warnings.

Also included was formalizing the current certification requirement to include 10 % more buoyancy material than specified, as a quality assurance buffer to compensate for variance in inherent buoyancy material batch consistency.

This Standard is intended to serve as a guide to manufacturers, purchasers and users of such safety equipment in ensuring that the equipment provides an effective standard of performance in use. Equally essential is the need for the designer to encourage the wearing of the equipment by making it comfortable and attractive for continuous wear, either on or near water, rather than for it to be stowed in a locker for emergency use.

This Standard provides a means of classifying the different types of buoyancy aids, and sets out minimum buoyancy requirements for each type of aid. Both the buoyancy and the classification are required to be marked on each type of buoyancy aid. In this way the consumer will be able to identify the required buoyancy aid. For instance, if a buoyancy aid is marked, 'IN-SHORE WATERS PERSONAL FLOTATION DEVICE', the user will know that this is an aid for persons who anticipate an early rescue, and need an aid to help maintain a safe floating position.

Also included in this Standard is a specification for marine safety harnesses and safety lines. Both a child's and an adult's size are specified, with a performance test using a specified dummy for each.

This Standard is based on Australian, European and CEN (European Committee for Standardization) Standards.

This revision highlighted an issue in relation to the use of buoyancy devices by kayakers. Kayaking buoyancy aids are often produced by specialist manufactures to meet the specific needs of the wide range of water environments utilized by kayakers. As a consequence, manufacturers are not always able to produce these devices in compliance with the current requirements of NZS 5823 – due to a number of factors including colour, design and buoyancy specifications. The specialist personal flotation devices section (406) has been amended to address these issues.

The Maritime Safety Authority of New Zealand has also recognized this issue and is working with the kayaking industry to put a solution in place.

In recognition of the significant changes between this edition of NZS 5823 and the previous, a transition period of six months from the public availability of this document is required to allow manufacturers and testing authorities to update their processes in order to meet compliance requirements.

NZS 5823:2001 (superseded) will remain current until the end of 2005.

NOTES