



NSAI
Standards

Irish Standard
I.S. EN ISO 12217-3:2017

Small craft - Stability and buoyancy
assessment and categorization - Part 3: Boats
of hull length less than 6 m (ISO 12217-
3:2015)

I.S. EN ISO 12217-3:2017

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN ISO 12217-3:2017

Published:

2017-08-09

This document was published under the authority of the NSAI and comes into effect on:

2017-08-27

ICS number:

47.080

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN ISO 12217-3:2017 is the adopted Irish version of the European Document EN ISO 12217-3:2017, Small craft - Stability and buoyancy assessment and categorization - Part 3: Boats of hull length less than 6 m (ISO 12217-3:2015)

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

EUROPEAN STANDARD

EN ISO 12217-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2017

ICS 47.080

Supersedes EN ISO 12217-3:2015

English Version

**Small craft - Stability and buoyancy assessment and
categorization - Part 3: Boats of hull length less than 6 m
(ISO 12217-3:2015)**

Petits navires - Évaluation et catégorisation de la
stabilité et de la flottabilité - Partie 3: Bateaux d'une
longueur de coque inférieure à 6 m (ISO 12217-
3:2015)

Kleine Wasserfahrzeuge - Stabilitäts- und
Auftriebsbewertung und Kategorisierung - Teil 3:
Boote unter 6 m Rumpflänge (ISO 12217-3:2015)

This European Standard was approved by CEN on 23 July 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

EN ISO 12217-3:2017 (E)

Contents	Page
European foreword.....	3
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU	4

European foreword

The text of ISO 12217-3:2015 has been prepared by Technical Committee ISO/TC 188 “Small craft” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 12217-3:2017.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 12217-3:2015.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 12217-3:2015 has been approved by CEN as EN ISO 12217-3:2017 without any modification.

Annex ZA (informative)

Relationship between this European Standard and the essential requirements of Directive 2013/53/EU

This European Standard has been prepared under a Commission's standardization request M/075 to provide one voluntary means of conforming to essential requirements of Directive 2013/53/EU of the European Parliament and of the Council of 20 November 2013 on recreational craft and personal watercraft and repealing Directive 94/25/EC (OJ L 354, 28.12.2013, p. 90–131).

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex I.A of Directive 2013/53/EU

Clause(s)/sub-clause(s) of this EN	Essential Requirements of Directive 2013/53/EU	Remarks/Notes
Clause 5; 6; 9; Annex G	I.A.1 - Watercraft Design Categories	EN ISO 12217-3 is applicable to boats of hull length less than 6 m, whether propelled by human or mechanical power, except habitable sailing multihulls. The evaluation of stability and buoyancy properties using EN ISO 12217-3 will enable boats of hull length less than 6 m to be assigned to a design category (C or D) appropriate to its design and maximum load. Design categories A, B, C and D defined in this standard correspond to design categories A, B, C and D of Directive 2013/53/EU.
Clause 5, 6, 7 Annexes A, B, C, D	I.A.3.2 - Stability and Freeboard	
Clause 6.2, 6.7, 6.8, 6.9, 7.4, 7.5, 7.8 Annexes C, D, E	I.A.3.3 - Buoyancy and flotation	EN ISO 12217-3 includes the flotation characteristics of craft susceptible to swamping. Habitable non-sailing multihulls susceptible to inversion shall also comply with the inverted buoyancy requirements of ISO 12217-2:2015, clause 7.12.

Clause 6.3, 7.2 Annexes A, B,	I.A.3.5 - Flooding	In respect of watertight integrity and downflooding openings including ventilation openings and fittings.
Clause 5	I.A.3.6 - Maximum recommended load	
Clause 6.2	I.A.3.8 - Escape	Habitable non-sailing multihulls susceptible to inversion shall also comply with the escape requirements of ISO 12217-2:2015, clause 7.13. This standard does not include means of escape in the event of fire.
Annex F	I.A.2.5 - Owner's manual	

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

This page is intentionally left blank

INTERNATIONAL
STANDARD

ISO
12217-3

Third edition
2015-10-15

**Small craft — Stability and buoyancy
assessment and categorization —**

**Part 3:
Boats of hull length less than 6 m**

*Petits navires — Évaluation et catégorisation de la stabilité et de la
flottabilité —*

Partie 3: Bateaux d'une longueur de coque inférieure à 6 m



Reference number
ISO 12217-3:2015(E)

© ISO 2015

ISO 12217-3:2015(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	v
Introduction	vii
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
3.1 Primary.....	2
3.2 Downflooding.....	4
3.3 Condition and mass.....	5
3.4 Other definitions.....	7
4 Symbols	9
5 Procedure	10
5.1 Maximum load.....	10
5.2 Sailing or non-sailing.....	10
5.3 Tests to be applied.....	11
5.3.1 General.....	11
5.4 Alternatives.....	11
5.5 Variation in input parameters.....	11
6 Tests to be applied to non-sailing boats	12
6.1 General.....	12
6.2 Habitable non-sailing multihull boats.....	13
6.3 Downflooding.....	13
6.3.1 Requirements for downflooding openings.....	13
6.3.2 Downflooding height with maximum load.....	15
6.3.3 Downflooding height — outboard boats when starting.....	18
6.4 Recess size.....	18
6.4.1 Application.....	18
6.4.2 Simplified methods.....	19
6.4.3 Direct calculation method.....	20
6.5 Offset-load test.....	20
6.5.1 General.....	20
6.5.2 Simplified procedure for offset-load test.....	22
6.5.3 Full procedure for offset load-test.....	24
6.5.4 Procedure for gunwale load test.....	26
6.6 Heel due to wind action.....	27
6.6.1 General.....	27
6.6.2 Calculation.....	27
6.6.3 Requirement.....	27
6.7 Level flotation test.....	27
6.8 Basic flotation test.....	28
6.9 Capsize-recovery test.....	28
6.10 Detection and removal of water.....	29
7 Tests to be applied to sailing boats	29
7.1 General.....	29
7.2 Downflooding.....	30
7.3 Recess size.....	31
7.4 Flotation tests.....	31
7.4.1 Level flotation test.....	31
7.4.2 Basic flotation test.....	31
7.5 Capsize-recovery test.....	31
7.6 Knockdown recovery test.....	32
7.7 Wind stiffness test.....	33
7.7.1 General.....	33

ISO 12217-3:2015(E)

7.7.2	Practical test.....	33
7.7.3	Compliance by calculation.....	34
7.7.4	Requirements.....	35
7.8	Inverted buoyancy.....	36
8	Safety signs.....	37
9	Application.....	37
9.1	Deciding the design category.....	37
9.2	Meaning of the design categories.....	37
Annex A	(normative) Full method for required downflooding height.....	38
Annex B	(normative) Methods for calculating downflooding angle.....	41
Annex C	(normative) Method for flotation tests.....	43
Annex D	(normative) Flotation material and elements.....	48
Annex E	(normative) Calculation method for basic flotation requirement.....	50
Annex F	(normative) Information for owner's manual.....	52
Annex G	(informative) Summary of requirements.....	57
Annex H	(informative) Worksheets.....	59
Annex I	(informative) Illustration of recess retention level.....	76
Bibliography	77

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#).

The committee responsible for this document is ISO/TC 188, *Small craft*.

This third edition cancels and replaces the second edition (ISO 12217-3:2013), of which it constitutes a minor revision. It incorporates the following modifications:

- Introduction and [Clause 9.2](#): the reference to the European Directive has been updated (2013/53/EU);
- [Clause 1](#), [subclauses 6.2](#), [6.3.1.5 d](#)) [3](#)) and [F.2 g](#)): vulnerable has been replaced with susceptible.
- [Clause 3](#): definitions [3.1.1](#), [3.3.5](#) and [3.4.9](#) have been amended;
- [Subclause 6.3.2.2](#) c): option 5 has been included;
- [Subclauses 6.4.2.3](#) and [6.4.2.4](#): the formulae coefficients have been corrected;
- [Subclauses 6.5.2.5](#) and [6.5.3.3 e](#)) [2](#)) and [Table G.1](#) have been slightly amended to remove inconsistencies.
- [Subclause 6.6.1](#) and [Table G.1](#): the formulae have been harmonised with ISO 12217-1;
- [Subclause 7.5.1 b](#)) has been aligned with the text in ISO 12217-2.
- [Subclause 9.2](#): the text has been amended;
- [Annex H](#): worksheets 2, 4, 6, 8 and 15 have been corrected to align with corrections listed above;
- [Annex I](#) has been added;
- Bibliography: reference to ISO 7010 has been added;
- Editorial and cross-referencing corrections have been made to definitions [3.2.2](#) and [3.2.3](#) and to [subclauses 6.4.1](#), [6.4.2.1](#), [6.4.2.2](#) and [6.4.2.3](#), to [Table G.2](#), and to [Annex H](#), worksheet 6.

ISO 12217 consists of the following parts, under the general title *Small craft — Stability and buoyancy assessment and categorization*:

ISO 12217-3:2015(E)

- *Part 1: Non-sailing boats of hull length greater than or equal to 6 m*
- *Part 2: Sailing boats of hull length greater than or equal to 6 m*
- *Part 3: Boats of hull length less than 6 m*

Introduction

This part of ISO 12217 enables the determination of the limiting environmental conditions to be determined for which an individual boat has been designed.

It enables the boat to be assigned to a design category appropriate to its design and maximum load. The design categories used align with those in the Recreational Craft Directive of the European Union, EU Directive 2013/53/EU.

[Annex H](#) provides worksheets to assist in the systematic assessment of a boat according to this part of ISO 12217.

Small craft — Stability and buoyancy assessment and categorization —

Part 3: Boats of hull length less than 6 m

CAUTION — Compliance with this part of ISO 12217 does not guarantee total safety or total freedom of risk from capsizing or sinking.

IMPORTANT — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

1 Scope

This part of ISO 12217 specifies methods for evaluating the stability and buoyancy of intact (i.e. undamaged) boats. The flotation characteristics of craft susceptible to swamping are also encompassed.

The evaluation of stability and buoyancy properties using this part of ISO 12217 will enable the boat to be assigned to a design category (C or D) appropriate to its design and maximum load.

This part of ISO 12217 is applicable to boats of hull length less than 6 m, whether propelled by human or mechanical power, except habitable sailing multihulls. Boats of hull length less than 6 m which are fitted with a full deck and quick-draining cockpit(s) complying with ISO 11812 may alternatively be assessed using ISO 12217-1 or ISO 12217-2 (for non-sailing and sailing boats, respectively), in which case higher design categories may be assigned.

In relation to habitable multihulls, this part of ISO 12217 includes assessment of susceptibility to inversion, definition of viable means of escape and requirements for inverted flotation.

This part of ISO 12217 excludes:

- inflatable and rigid-inflatable boats covered by ISO 6185, except for references made in ISO 6185 to specific clauses of ISO 12217;
- personal watercraft covered by ISO 13590 and other similar powered craft;
- aquatic toys;
- canoes and kayaks;
- gondolas and pedalos;
- sailing surfboards;
- surfboards, including powered surfboards;
- hydrofoils, foil stabilized boats and hovercraft when not operating in the displacement mode; and
- submersibles.

NOTE Displacement mode means that the boat is only supported by hydrostatic forces.

It does not include or evaluate the effects on stability of towing, fishing, dredging or lifting operations, which need to be separately considered if appropriate.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-