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# Paddles and oars for recreational boats — Safety requirements and test methods

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**National foreword**

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The UK participation in its preparation was entrusted to Technical Committee SW/136/8, Swimming pools and aquatic equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

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# Paddles and oars for recreational boats - Safety requirements and test methods

Pagaies et rames pour bateaux de loisirs - Exigences de sécurité et méthodes d'essais

Paddel und Ruder/Riemen für Freizeitboote - Sicherheitstechnische Anforderungen und Prüfverfahren

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EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: Avenue Marnix 17, B-1000 Brussels**



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# Foreword

This document (EN 16083:2012) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by July 2012, and conflicting national standards shall be withdrawn at the latest by July 2012.

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# 1 Scope

This European Standard specifies safety requirements and test methods for paddles and oars for non-rigid hull water crafts. Paddles and oars are classified in two performance levels A and B.

This standard is not applicable for paddles and oars for:

— training and competitive sports;

— white water;

— items covered by EN 71-1;

— folding/rigid framed boats/kayaks.

This standard does not apply to wooden paddles and oars.

# 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**2.1**
**paddle**
manually operated means of propulsion operated free-handed by a person

NOTE It consists of a shaft with a (paddle) blade at the end. The double paddle has a blade at each end of the shaft.

**2.2**
**oar**
manually operated means of propulsion consisting of a shaft and a blade at the end

NOTE The oar is pivot-mounted at the hull of a boat in eye lets or oarlocks. Oars can be operated by a person in pair or as single device.

# 3 Classes and types

## 3.1 Classes

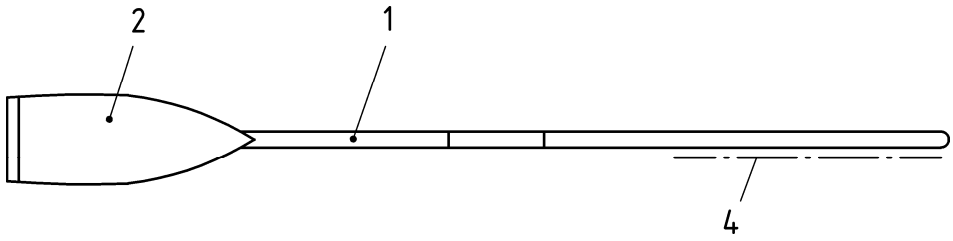
The following performance classes apply:

— class A: higher requirements, appropriate for touring purposes;

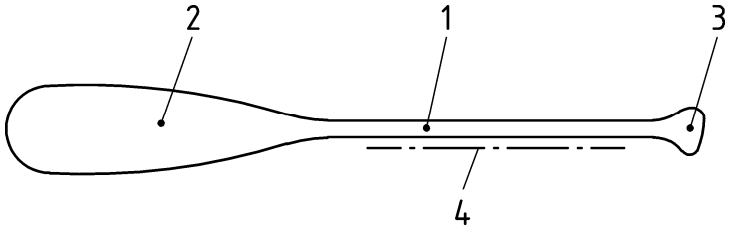
— class B: lower requirements, appropriate for bathing and leisure.

## 3.2 Types

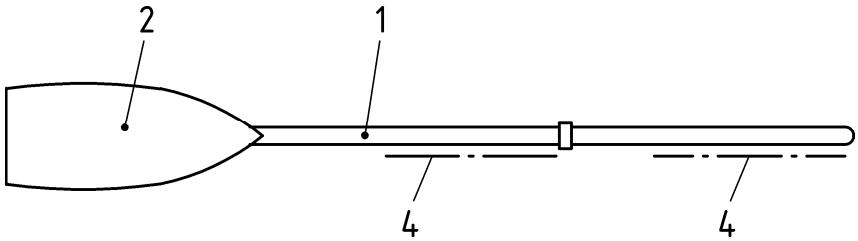
Depiction of examples of paddles and oars: see Figures 1a) to 1e).



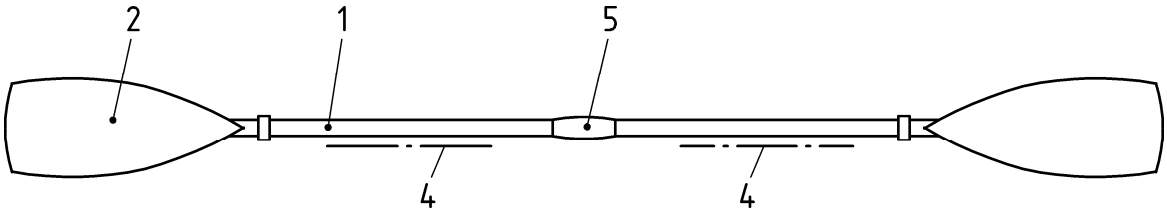

**a) Type O — Oar**



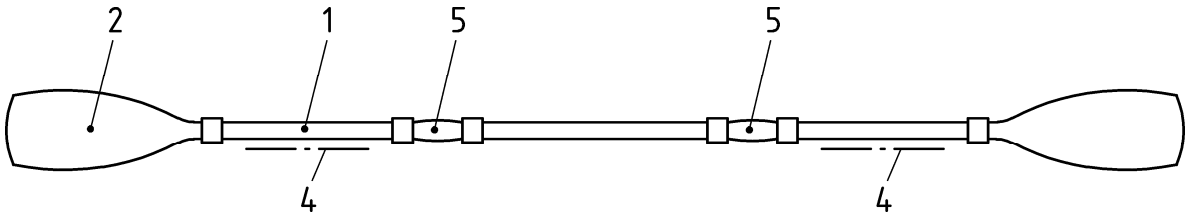

**b) Type S1 — Single paddle**




**c) Type S2 — Single paddle**




**d) Type D — Double paddle**




**e) Type K — Combined paddle (convertible single double paddle via couplings)**

**Key**
1 shaft
2 blade
3 knob handle
4 gripping area
5 coupling

**Figure 1 — Paddles and oars**

# 4 Safety requirements and testing

## 4.1 General

### 4.1.1 Requirement

Paddles and oars shall be entirely free from sharp edges, burrs or splinters. There shall be no irregularities which could cause injury.

### 4.1.2 Testing

Visual and tactile testing.

## 4.2 Temperature

Testing shall be done at an air temperature of (20 ± 3) °C.

## 4.3 Bending strength of paddles and oars

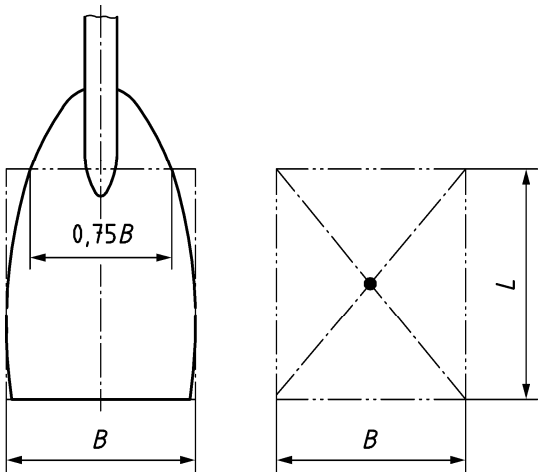
### 4.3.1 Requirements

When tested in accordance with 4.3.2 paddles and oars shall neither break (shaft and blade) nor permanently deform (shaft) in a way that function is impaired.

— Load for blades of class A paddles/oars: 0,45 N/cm$^2$;

— Load for blades of class B paddles/oars: 0,30 N/cm$^2$.

The determination of the blade surface shall be done according to Figure 2.




**Key**

*B* max. width of blade
*L* length up to 0,75 B

**Figure 2 — Loading point**

### 4.3.2 Testing

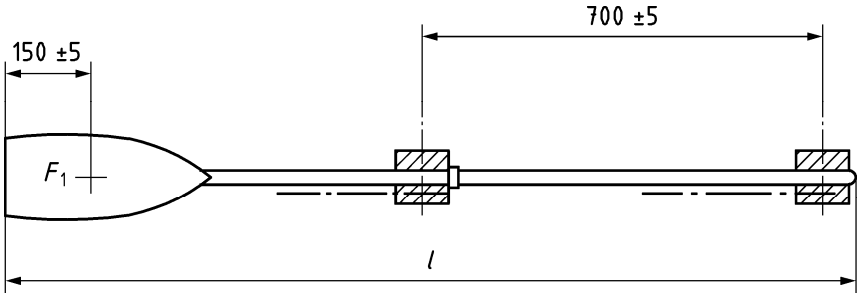
The shaft of the paddle/oar shall be clamped on a rigid surface as shown in Figure 3. The blade shall be loaded quasi statically ($F_1$) at a loading point on the centre line of the blade (150 ± 5) mm from its end with a vertical force as given in 4.4.1.

— Duration of each load application: 1 min;

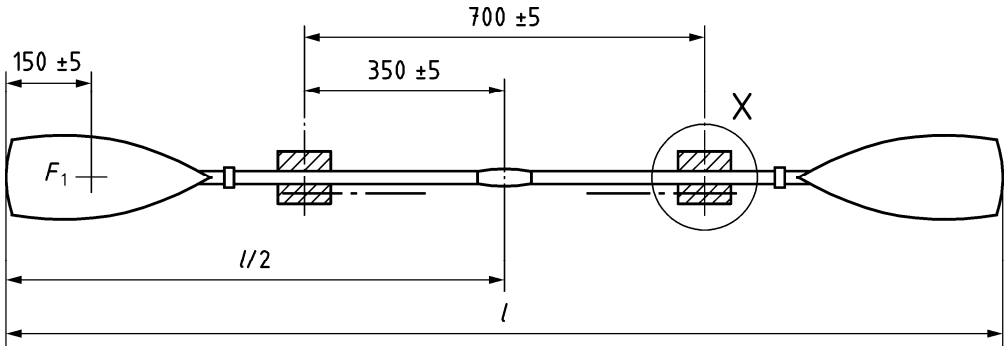
— Number of applications: 25;

In case of double paddles the testing force shall be applied on one blade side only.

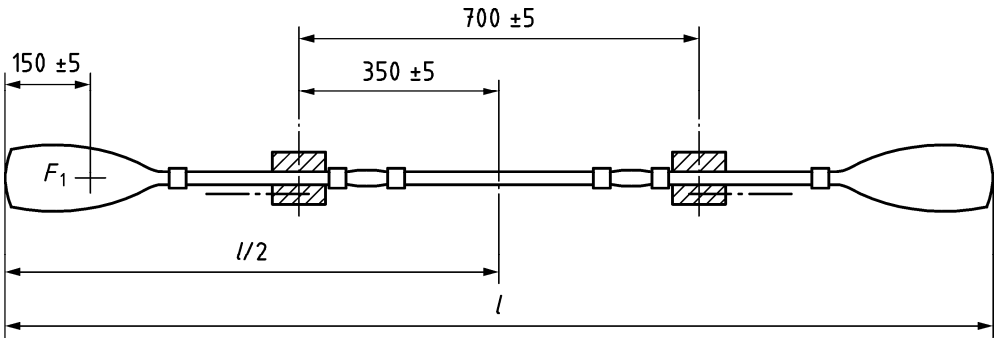
Dimensions in millimetres



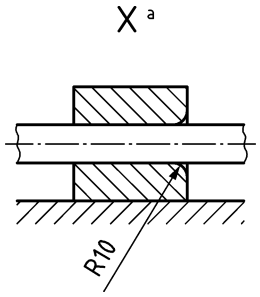

**a) Type S2**




**b) Type D**




**c) Type K**




**d) Example of the clamping**

**Key**

$F_1$ test force (see 4.3.1)
a sectional view; soft foam pad 80 mm x 80 mm x 20 mm (shore hardness A 10 to 20)
$l$ length

**Figure 3 — Testing of paddles / oars for bending strength**

Load speed for blades of class A paddles/oars: (0,45 N/cm²)/min.

Load speed for blades of class B paddles/oars: (0,30 N/cm²)/min.

## 4.4 Resistance against buckling of oars and paddles

### 4.4.1 Requirements

The blade of oars / paddles shall be resistant against buckling. When loaded with a force of

— 800 N class A or

— 400 N class B

in axial direction the blade shall not break, sliver or become permanently deformed (bended or buckled) in a way that impairs function.

### 4.4.2 Testing

The blade is loaded during (15 ± 1) s, then release for (15 ± 1) s. Thus, each load lasts 30 s, and there are 25 applications, so 13 min 30 s altogether.

The paddle/oar may be cut so that the shaft shall be built-in. A compression plate shall load the end of the blade. The blade shall not slip on the compression plate.

## 4.5 Combined parts, couplings

### 4.5.1 Requirements

After being tested in accordance with 4.5.2 all parts shall remain fully functional.

Couplings shall be capable of manual assembly, without the need for any tool, before and after testing in accordance with 4.5.2.

### 4.5.2 Testing

The shaft of paddle / oar shall be put on a rigid surface. The assembled coupling shall be loaded quasi statically with a force $F_2$ of:

— 0,45 N/cm² blade surface for class A;

— 0,30 N/cm² blade surface for class B.

The determination of the blade surface shall be done according to Figure 2.

Duration of load application: 2 s;

Number of applications: 1 000.

Inspection, practical check for functionality.

For the testing of coupling to bending see Figure 3.

Load speed for blades of class A paddles/oars: (0,225 N/cm²)/s.

Load speed for blades of class B paddles/oars: (0,15 N/cm²)/s.

### 4.6 Floatability

#### 4.6.1 Requirements

Paddles and oars shall remain at a distance less than 10 cm from water surface for a duration of not less than 10 min (separable types: each main part of the combined paddle).

#### 4.6.2 Testing

Practical test in fresh water.

## 5 Marking and labelling

Paddles, oars or their packaging shall be labelled with the following data:

— Name or logo of manufacturer respectively distributor;

— At least on the packaging: the intended use (sport or bathing/leisure);

— The conformity of paddles/oars with this standard may be declared in manufacturer's responsibility by marking the product with the number of this European Standard.

EN 16083 – Application; touring application

EN 16083 – Application; bathing/leisure

EXAMPLE EN 16083 – Bathing/leisure

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