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**Ships and marine technology —  
Full-scale test method for propeller  
cavitation observation and hull  
pressure measurement**

*Navires et technologie maritime — Méthode d'essai grandeur nature  
pour l'observation de la cavitation de l'hélice et le mesurage de la  
pression de la coque*



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Published in Switzerland

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## 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](http://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](http://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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 8, *Ship design*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

Cavitation is responsible for significant propeller performance degradation and occurs at nearly all propellers, causing often vibrations, noise and propeller blade erosion. It has been a common practice to evaluate the propeller cavitation behaviour and its related hull pressure through model tests. However, the model test might not show the full-scale cavitation phenomena.

Full-scale cavitation observations and hull pressure measurements are very helpful as feedback for propeller design and prediction of full-scale performance through model test. This full-scale test method is needed to establish more accurate model-ship correlation, to come up with better experimental methods and to identify the cause of unexpected problems such as blade damage.

This document was developed to provide a standardized full-scale test method for propeller cavitation observation and hull pressure measurement.



# Ships and marine technology — Full-scale test method for propeller cavitation observation and hull pressure measurement

## 1 Scope

This document specifies a full-scale test method for propeller cavitation observation and hull pressure measurement. The objective of the test is to investigate the propeller cavitation behaviour and its effects on the hull vibration problems.

The test method comprises the specification of the test instrumentation and implementation, construction requirements to ensure structural safety, test and measurement procedures, and reporting documentation.

This document is applicable to ships in the following stages:

- before or during sea-trial, prior to delivery stage (vessels under constructions), and
- after delivery stage.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### **measured ship speed**

ship's speed during a speed run derived from the headway distance between start and end position and the elapsed time of the speed run

### 3.2

#### **observation window**

transparent window allowing to observe and investigate the occurrence of cavitation of a ship propeller

### 3.3

#### **propeller plane**

plane normal to the shaft axis and containing the propeller reference line, i.e. contain the reference point of the root section

### 3.4

#### **ship speed**

speed of the ship that is realised under stipulated conditions

Note 1 to entry: See also *measured ship speed* (3.1).