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Ships and marine technology — High- pressure floating pneumatic rubber fenders

*Navires et technologie maritime — Éperons pneumatiques flottants à haute
pression*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

International Standard ISO 17357 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 9, *General requirements*.

Annex A of this International Standard is for information only.

Introduction

Throughout this International Standard, the minimum essential criteria are identified by the use of the key word “shall”. Recommended criteria are identified by the use of the key word “should”, and while not mandatory are considered to be of primary importance in providing serviceable, economical and practical connectors. Deviation from the recommended criteria should occur only after careful consideration, extensive testing and thorough service evaluation have shown alternative methods to be satisfactory.

Ships and marine technology — High-pressure floating pneumatic rubber fenders

1 Scope

This International Standard specifies the material, performance and dimensions of high-pressure floating pneumatic rubber fenders, which are intended to be used for the berthing and mooring of a ship to another ship or berthing structure. It also specifies the test and inspection procedures for high-pressure floating pneumatic rubber fenders.

This International Standard does not address any safety hazards associated with its use. It is the user's responsibility to establish appropriate safety and health practices and determine the applicability of regulatory limitations before using this standard.

The documents in the Bibliography provide information on the usage of the fenders.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 34-1:1994, *Rubber, vulcanized or thermoplastic — Determination of tear strength — Part 1: Trouser, angle and crescent test pieces*

ISO 37:1994, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 188:1998, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 815:1991, *Rubber, vulcanized or thermoplastic — Determination of compression set at ambient, elevated or low temperatures*

ISO 1382:1996, *Rubber — Vocabulary*

ISO 1431-1:1989, *Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static strain test*

ISO 7619:1997, *Rubber — Determination of indentation hardness by means of pocket hardness meters*

ISO 12236:1996, *Geotextiles and geotextile-related products — Static puncture test (CBR test)*

3 Terms and definitions

For the purposes of this International Standard, the definitions given in ISO 1382 shall apply, together with the following.

3.1

floating pneumatic rubber fender

fender which is made of synthetic-cord-reinforced rubber sheet with compressed air inside to enable it to float on the water and work as a shock absorber between two ships, or between ships and berthing structures when they come alongside each other on the water

NOTE The fenders have sometimes been colloquially referred to as “Yokohama fenders” or “Yokohama type fenders”. These are examples of suitable products available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of these products.

3.2

outer rubber

rubber layer that covers the outside of the fender to protect the cord layers and the inner liner rubber from abrasion and other external forces

3.3

inner rubber

liner of a rubber membrane that seals the pressurized air inside the fender

3.4

synthetic-tyre-cord layer for reinforcement

layer made of synthetic-tyre-cord fabric, which maintains the internal air pressure of the fender

NOTE As the main fibres of the synthetic-tyre-cord fabric are not braided like synthetic canvas fabric or synthetic belt fabric, there are advantages for its fatigue-resistance performance and pressure-holding performance. See annex A.

3.5

bead ring

steel ring which is placed at one end (or both ends) of the fender and holds the end of cord layers

3.6

flange opening

steel flange, which is mounted on the fender, to which an air valve or safety valve can be adapted

3.7

guaranteed energy absorption

energy that the fender can absorb without permanent deformation or failure

3.8

reaction force

force produced by a fender reacting to a compressive force

NOTE The reactive force is equal to the force of the air pressure of the fender multiplied by the area of the fender in contact with the ship or berthing structure.

3.9

initial internal pressure

air pressure at which an uncompressed fender operates

3.10

endurable pressure

inner pressure at which a fender bursts

3.11

net-type fender

fender which is covered by a protection net consisting of either chain, wire or fibre and usually with tyres or rubber sleeves