BRITISH STANDARD

BS EN 13573:2009

Inland navigation vessels — Anchoring, coupling, towing, hauling and mooring systems

ICS 47.020.50; 47.060

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National foreword

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

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Foreword

This document (EN 13573:2009) has been prepared by Technical Committee CEN/TC 15 “Inland navigation vessels”, 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of an identical text or by endorsement, at the latest by July 2009, and conflicting national standards shall be withdrawn at the latest by July 2009.

This document supersedes EN 13573:2001.

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1 Scope

This European Standard specifies safety requirements for the arrangement, accessibility and marking of anchoring, coupling, towing, hauling and mooring systems on inland navigation vessels.

Depending on the type, the dimensions, the intended use of the vessels as well as the waters on which they are operated, inland navigation vessels are equipped with anchoring, coupling, towing, hauling and mooring systems.

This standard does not apply to recreational craft according to Directive 94/25/EEC.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 790, *Inland navigation vessels — Polyamide stairs with inclination angles of 45° to 60° — Requirements, types*

EN 1261, *Fibre ropes for general service — Hemp*

EN 12339, *Inland navigation vessels — Rope tubs*

EN 13056, *Inland navigation vessels — Stairs with inclination angles of 30° to < 45° — Requirements, types*

EN 13281, *Inland navigation vessels — Safety requirements for walkways and working places*

EN 13574, *Inland navigation vessels — Permanently installed climbing devices with a length not exceeding 5 m*

EN 13711, *Inland navigation vessels — Winches for ship operation — Safety requirements*

EN 14330, *Inland navigation vessels — Studless anchor chain — Round steel link chain*

EN 14606, *Inland navigation vessels — Studless anchor chain — Accessories*

EN 14874, *Inland navigation vessels — Studless anchor chain — Cable lifter*

EN 15271, *Inland navigation vessels — Studless anchor chain — Anchor equipment*

EN 15272-1, *Inland navigation vessels — Equipment for rope leading — Part 1: General requirements*

EN 15272-2, *Inland navigation vessels — Equipment for rope leading — Part 2: Fairlead*

EN 15272-3, *Inland navigation vessels — Equipment for rope leading — Part 3: Roller fairleads*

EN 15272-4, *Inland navigation vessels — Equipment for rope leading — Part 4: Rope lead*

EN ISO 1140, *Fibre ropes — Polyamide — 3-, 4- and 8-strand ropes (ISO 1140:2004)*

EN ISO 1141, *Fibre ropes — Polyester — 3-, 4- and 8-strand ropes (ISO 1141:2004)*

EN ISO 1181, *Fibre ropes — Manila and sisal — 3-, 4- and 8-strand ropes (ISO 1181:2004)*

EN ISO 1346, *Fibre ropes — Polypropylene split film, monofilament and multifilament (PP2) and polypropylene high tenacity multifilament (PP3) — 3-, 4- and 8-strand ropes (ISO 1346:2004)*

EN ISO 6218, *Inland navigation vessels — Manually operated coupling devices for push tows — Safety requirements and main dimensions (ISO 6218:2005)*

ISO 2408, *Steel wire ropes for general purposes — Minimum requirements*

3 Terms and definitions

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

3.1
anchoring system
system used to drop and raise the anchor or to lie at anchor

3.2
coupling system
<inland navigation vessels> system used to connect vessels firmly to each other; it allows coupled vessels to be arranged either as push tows or vessels connected at the sides

3.3
towing system
<inland navigation vessels> system used to pull vessels

3.4
hauling and mooring system
system used as a securing or guide point for hauling and mooring ropes

3.5
readily accessible
<inland navigation vessels> unhampered access to systems arranged adjacent to walkways so that there are neither obstructions nor discontinuities on the walkways

4 Safety requirements, dimensions, strength

4.1 Anchoring system

4.1.1 General

Anchoring systems shall consist of anchor and anchor chain or anchor wire rope. If available, they may additionally consist of windlass according to EN 13711 with cable lifter according to EN 14874, equipment according to EN 15271 and anchor hawse or anchor pocket.

4.1.2 Anchor chain or anchor wire rope

The anchor chain should be designed as a studless round steel chain or even as a stud link chain.

Dimensions, materials and quality shall conform to the requirements for studless anchor chains according to EN 14330 including accessories according to EN 14606.

Materials and quality of anchor wire ropes shall conform to ISO 2408 or be equivalent.

4.1.3 Anchor swivel

Between the anchor and anchor chain or anchor wire rope, an anchor swivel according to EN 14606 shall be provided, the breaking force of which shall be at least 20 % higher than the minimum breaking force of the chain or anchor wire rope. It may also be designed as a swivel outboard shot or anchor shackle.

4.1.4 Windlass

Windlasses according to EN 13711 with cable lifter according to EN 14874 shall be available for anchors with a mass greater than 50 kg. For anchor masses exceeding 500 kg, the winch shall have a motor drive.

Windlasses may be set up in such a way that they can also be used as hauling winches.

4.1.5 Chain stopper

Chain stoppers shall meet the requirements of EN 15271.

The chain stopper shall be designed in such a way that it can be operated by one person without danger. This is achieved, for example, by ensuring that the operator is positioned outside the area where the chain runs out.

4.1.6 Anchor hawses and anchor pockets

The design and construction of anchor hawses and anchor pockets shall be such that the anchor is capable of being lowered or raised automatically and damage to other vessels due to raised anchors is prevented.

4.1.7 Chain lockers

Chain lockers shall meet the requirements of EN 15271. The end of the chain shall be capable of being secured firmly on the shipside. Access to the chain locker and the standing area for checking the chain shall meet the requirements of EN 13281.

4.1.8 End fastening

The end fastening shall meet the requirements of EN 15271.

4.2 Coupling system

4.2.1 General

The coupling system consists of a pushing system (pushing platform, pushing shoulder, pushing horns) and mechanical (ropes, coupling devices, bollards, fairleads) or hydraulic connecting devices.

The coupling system shall be designed so that no member of the crew is endangered when exposed to the most severe conditions to be expected resulting, for example, from the size of the push-tow, propulsion power, meteorological conditions, wave height, e. g. wire ropes or hydraulic equipment breaking, crush and shear points.

4.2.2 Requirements

The coupling system shall ensure that the coupled vessels remain in a fixed position in relation to each other.

The coupling system components shall not extend beyond the width of the push tow.

The coupling system shall be organized in such a way that it is possible to couple loaded and discharged vessels to each other.

If wire ropes are used for coupling, there shall be at least two coupling devices or equivalent devices to tension the wire ropes.

Coupling systems shall be arranged in such a way that wire ropes are led as close as possible to the deck and not over access hatchway covers.

4.2.3 Pushing system

Pushing vessels shall have a pushing system in the bow, pushed vessels in the stern.

4.2.4 Couplings

If rigid connecting elements are used, a single coupling may be provided, as long as this provides secure connection of the vessels.

For push tows consisting of a pushing and a pushed vessel, the coupling systems may also allow for controlled kinking. The necessary drives shall be able to take up the forces to be transmitted and to enable release from the kinked position to the normal position. The kinking equipment shall be capable of being locked in the normal position to avoid unintended kinking.

4.2.5 Cross-overs

Secure cross-overs with stair steps according to EN 790 or EN 13056 shall be provided between the coupled vessels. If this is not possible, cross-over aids according to EN 13574 shall be provided.

4.2.6 Coupling devices

Coupling devices shall meet the requirements of EN ISO 6218 and shall be arranged in such a way that they can be operated safely by one person.

4.2.7 Fairleads

Fairleads shall meet the requirements of EN 15272-2. They shall be arranged in such a way to ensure controlled leading of the wire rope into the coupling device.

4.2.8 Roller fairleads

Roller fairleads shall meet the requirements of EN 15272-3. They shall be arranged in such a way to ensure controlled leading of the wire rope into the coupling device.

4.2.9 Wire ropes

Steel wire ropes with required minimum breaking force according to ISO 2408 or equivalent with limited elongation and good ductility (flexible) shall be used for coupling.

Splices and steel wire rope ends shall be covered or wrapped.

4.3 Towing system

4.3.1 General

Towing systems shall consist, for example, of a towing hook or winch, towing beams with rope grabs or rubbing pieces, tow rope and stopper.

4.3.2 Requirements

Towing winches according to EN 13711 or towing hooks shall be provided as towing systems. These shall be located away from the propeller on vessels that are not controlled by the drive unit such as rudder propeller or cycloidal propeller.

It shall be possible to release the hook safely from the wheelhouse. This is assumed to be the case if the releasing force at the hook is not more than 150 N and that in the wheelhouse not more than 250 N.

There shall be a rope grab on both sides of the stern towing beam.

4.3.3 Cable stopper

The strength of the cable stopper shall correspond to at least the breaking load of the towing cables. The cable stopper shall be designed and constructed in such a way that it can be operated safely by one person. It shall be possible to release the stopper when loaded.

4.3.4 Steel wire ropes

Steel wire ropes shall meet the requirements at least of ISO 2408.

Splices and steel wire rope ends shall be covered or wrapped.

4.4 Hauling and mooring system

4.4.1 General

Hauling and mooring systems shall consist of bollards, cleats, fairleads according to EN 15272-2, roller fairleads according to EN 15272-3, rope leads according to EN 15272-4 and winches according to EN 13711; cable stoppers may also be provided.

4.4.2 Requirements for bollards and cleats

Every vessel shall be fitted with double or triple bollards on both sides of the vessel in the fore and aft areas. In between these, depending on the size of the vessel, there shall be the necessary number, but at least one, single bollard or double bollard, on each side of the vessel.

Where wire ropes are used, the minimum bollard diameter shall be 10 times the cable diameter; in the case of gangboards, it may be smaller.

Bollards may be replaced by cleats. Bollard heads shall be non-slip. Edges shall be rounded or broken.

4.4.3 Cable stoppers

The retention power of the cable stoppers shall correspond to at least the breaking load of the mooring cables. The cable stopper shall be arranged in such a way that it can be operated by one person. It shall be possible to release the cable stopper when loaded.

4.4.4 Ropes

Steel wire rope splices and steel wire rope ends shall be covered or wrapped.

Natural fibre ropes shall meet the requirements of EN ISO 1181 or EN 1261.

Man made fibre ropes shall meet the requirements of EN ISO 1140, EN ISO 1141 or EN ISO 1346.

NOTE 1 Ropes made of polyethylene are not suitable.

NOTE 2 Rope eyes of mooring ropes should be provided with toggle straps to prevent injuries when belaying bollards.

4.4.5 Rope tubs

Rope tubs shall meet the requirements of EN 12339.

4.4.6 Hauling winches

Hauling winches shall meet the requirements of EN 13711 and be arranged in such a way that they can be operated by one person.

4.4.7 Rope leading

Hauling systems shall be arranged so that ropes are not led over walkways or hatchway covers or in front of or above access points to the holds of the vessel.

Movement and chafing of ropes on deck shall be prevented by fairleads or similar devices.

5 Arrangement, accessibility, marking

5.1 Arrangement, accessibility

5.1.1 General

The requirements specified in EN 13281 shall be noted.

In order to facilitate safe operation of components, they shall be constructed and arranged in such a way that:

— their location and function are clearly recognizable;

— they are located within immediate reach of the operator being in an upright or stooped position;

— they can be operated without considerable forcing;

— there is no danger of injuries during operations, e.g. caused by sharp edges in adjacent areas, and no danger of faulty operation.

5.1.2 Anchoring system

The anchoring system shall be arranged in such a way that it is readily accessible and the clearance required for safe operation is available.

The chain stopper shall be arranged in such a way that it is readily accessible.

5.1.3 Coupling system

The coupling system shall be readily accessible to allow rapid coupling and uncoupling.

5.1.4 Towing system

The towing system shall be arranged in such a way that it is readily accessible and the clearance required for safe operation is available.

Cable stoppers shall be arranged in such a way that they are readily accessible.

5.1.5 Hauling and mooring system

Hauling and mooring systems shall be arranged on deck in such a way that there is sufficient freedom of movement and the ropes can be belayed safely. The systems shall not hamper the handling of the ropes.

In the area of the gangboards, the hauling and mooring systems shall be installed as close as possible to the ship's side.

Hauling and mooring systems shall be readily and safely accessible.

5.2 Marking

Locations where there is a risk of stumbling and where there is equipment such as bollard covers, cleats or fairleads shall be marked permanently with a colour that clearly sets them off from their environment; operating components shall be clearly identified by colour.

If structural features make it impossible to recognize when the chain is fully raised, appropriate marking at a suitable point on the chain shall indicate when the chain is almost fully raised.

This colouring shall be uniform on the deck.

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