



SLOVENSKI STANDARD

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Offshore containers and associated lifting sets - Part 2: Lifting sets - Design, manufacture and marking

Offshore-Container und zugehörige Anschlaggarnituren - Teil 2: Anschlaggarnituren - Auslegung, Herstellung und Kennzeichnung

ITeh STANDARD PREVIEW

Conteneurs pour utilisation en mer et dispositifs de levage associés - Partie 2: Dispositifs de levage - Conception, construction et marquage

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Ta slovenski standard je istoveten z: **EN 12079-2:2006**

ICS:

55.180.10 X^ } æ ^} •\ ã [] c b ^!ã General purpose containers

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English Version

Offshore containers and associated lifting sets - Part 2: Lifting sets - Design, manufacture and marking

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This European Standard was approved by CEN on 9 March 2006.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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

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Foreword

This document (EN 12079-2:2006) has been prepared by Technical Committee CEN/TC 280 "Offshore containers and associated lifting sets", the secretariat of which is held by BSI.

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 October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

EN 12079-1:2006 and EN 12079-3:2006 supersede EN 12079:1999.

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

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1 Scope

This part of EN 12079 specifies requirements for lifting sets for use with containers in offshore service.

Other parts of the standard are:

EN 12079-1, *Offshore containers and associated lifting sets - Part 1: Offshore container - Design, manufacture and marking*

EN 12079-3, *Offshore containers and associated lifting sets - Part 3: Periodic inspection, examination and testing*

2 Normative references

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

EN 818-4:1996, *Short link chain for lifting purposes — Safety — Part 4 — Chain slings — Grade 8*

EN 1677-1, *Components for slings — Safety — Part 1: Forged steel components, Grade 8*

EN 10045-1, *Metallic materials - Charpy impact test - Part 1: Test method*

EN 10204, *Metallic products - Types of inspection documents*

EN 13414-1, *Steel wire rope slings - Safety - Part 1: Slings for general lifting service*

EN 13889, *Forged steel shackles for general lifting purposes — Dee shackles and bow shackles - Grade 6 – Safety*

EN ISO 15613, *Specification and qualification of welding procedures for metallic materials - Qualification based on pre-production welding test (ISO 15613:2004)*

3 Terms and definitions

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

3.1

lifting set

items of integrated lifting equipment used to connect the offshore container to the lifting appliance. This can comprise one or multi leg slings (with or without a top leg) and shackles, whether assembly secured or not.

3.2**assembly secured shackle**

A shackle fitted to a sling leg and secured by a seal or similar device, so as to signal unambiguously, whether or not the shackle has been exchanged

4 Symbols

R the rating i.e. the maximum gross mass of the container including permanent equipment and its cargo, in kg but excluding the lifting set;

T the tare mass i.e. the mass of an empty container including any permanent equipment but excluding cargo and lifting set in kg;

P the payload i.e. the maximum permissible mass of cargo which may be safely transported by the container, in kg;

NOTE 1 $P = R - T$

NOTE 2 *R*, *T* and *P* are, by definition in units of mass, kilograms (kg). Where design requirements are based on the gravitational forces derived from these values, those forces are indicated thus: *R_g*, *T_g* and *P_g* the units of which are in newtons or multiples thereof.

T_D the design air temperature, i.e. a minimum reference temperature used for the selection of steel grades used in offshore containers and equipment expressed in degrees centigrade;

S mass of the lifting set, in kg

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5 Technical requirements**5.1 General requirements**

5.1.1 Slings shall be rated for their intended angle of use. In all cases four leg slings shall be rated as for three leg slings. In no case shall a sling be rated for an angle of the sling leg to the vertical in excess of 45 °

NOTE For specific angles less than 45 ° the sling may be rated at the WLL according to the particular angle of the legs to the vertical. This should be calculated by the formula: For two leg slings used at an angle β to the vertical, the working load limit should be given by the formula $WLL = 2 \times WLL$ for a single leg $\times \cos \beta$. For four leg slings used at an angle β of any leg to the vertical, the working load limit shall be given by the formula $WLL = 3 \times WLL$ for a single leg $\times \cos \beta$.

For chain slings this is in accordance with the alternative method of rating in EN 818-4:1996, Annex A.

5.1.2 Where two 2-leg slings are selected to function as a 4-leg sling, they shall be calculated as for a 4-leg sling.

5.1.3 Hinge type coupling components shall not be used.

NOTE This restriction is to avoid the possibility of the coupling seizing in the folded position due to corrosion and subsequently failing when forced straight under load.

5.2 Dimensions and strength of lifting Sets

5.2.1 To allow for the dynamic amplification that will be experienced in offshore lifting in adverse weather and sea states, the working load limit of the lifting sets for offshore containers shall be determined using Annex A. Except for containers with ratings below 2000 kg, the container rating R shall be multiplied by an enhancement factor to give the WLL min of the lifting set. For intermediate container ratings the working load limit values shall be interpolated.

5.2.2 The minimum working load limit (WLL min) from Annex A shall be used for determination of the nominal size of the lifting set.

NOTE It is recommended that the master link to be attached to the crane hook shall have minimum dimensions 270 mm x 140 mm, internal.

5.2.3 The minimum working load limit of each shackle (WLL_s) shall be calculated as given in Table 1.

Table 1 — Required minimum shackle working load limit (WLL_s)

Required minimum shackle working load limit (WLL _s)		
4 leg sling	2 leg sling	Single leg sling
WLL min / (3 x cos β)	WLL min / (2 x cos β)	WLL min

where β is the angle of the sling leg from the vertical and WLL min is the minimum WLL determined from Annex A

5.2.4 The lifting set shall be of sufficient length to allow easy handling by operators. The top link or master link shall be able to reach down to a height of no more than 1.3m above the container bottom when the sling hangs over the long side of the container.

5.3 Chain slings

5.3.1 Chain slings shall meet all requirements of EN 818-4.

5.4 Wire rope slings

5.4.1 Wire rope slings shall meet all requirements of EN 13414-1 with restrictions as applied in 5.4.2 and 5.4.3.

5.4.2 Wire rope shall be 6-stranded and of one of type 6 x 19 or 6 x 36.

5.4.3 The termination of wire rope shall be a ferrule secured thimble.

NOTE As an aid to in service inspection, ferrules which permit the tail end of the rope to be visible are recommended.

5.4.4 Wire rope grade 1770 or 1960 shall be used. The working load limit shall be calculated on the basis of the actual rope grade used.

NOTE This also applies when slings are rated and marked in accordance with the note in 5.1.1

5.5 Shackles

5.5.1 Shackles shall meet all requirements of EN 13889 or EN 1677-1 with the additional requirement that the tolerance on the nominal diameter of the shackle pin shall be $-0 + 3\%$.

5.5.2 Shackles shall be restricted to:

- bolt type pin with hexagon head, hexagon nut and split cotter pin;

5.6 Materials

5.6.1 Impact Testing

Steels shall be impact tested by the Charpy impact (V-notch) method in accordance with EN 10045-1. The impact test temperature shall be equal to the design air temperature T_D and the minimum average impact energy shall be 42 J. However, for welded components (chains, links, rings) it shall be sufficient only to take impact test samples in the weld with the notch centred in the fusion line. The position of the weld shall be accurately identified by etching with a suitable reagent before cutting the notches. The minimum average impact energy of the weld shall be 27 J.

Where the cross section of the material to be tested is too small to allow the standard test specimen to be taken (10 x 10 mm), the required energy values shall be reduced as follows:

- 10 mm x 7.5 mm : 5/6ths of the above value;
- 10 mm x 5.0 mm : 2/3rds of the above value.

NOTE For tests where the size of the test piece is too small (diameter less than 13 mm), tests may be carried out on sample material which shall be of the same specification and heat treatment.

5.6.2 Welding

In addition to the requirements of EN 818-4, qualification of the welding process shall be in accordance with EN ISO 15613.

5.6.3 Materials used in wire rope slings

Materials in wire ropes, ferrules and thimbles shall be in accordance with applicable standards.

5.6.4 Galvanising

Galvanising shall only be carried out under the control of the manufacturer of the component.

5.6.5 Material certificates.

The materials used in all components shall be supplied with an inspection certificate to either EN 10204 type 3.1 B or, in the case of materials in ferrules and thimbles, to EN 10204 type 2.2 with content as detailed in Clause 6.