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Offshore containers and associated lifting sets —

Part 3: Periodic inspection, examination and testing

iTeh STContaineurs offshore et dispositifs de levage associés — Partie 3: Inspection périodique, examen et test

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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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information. (standards.iteh.ai)

A list of all the parts of ISO 10855 can be found on the ISO website.

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Introduction

ISO 10855 (all parts) meets the requirements of IMO MSC/Circular 860^[11] for the design, construction, inspection, testing and in-service examination of offshore containers and associated lifting sets which are handled in open seas.

This document does not specify certification requirements for offshore containers which are covered by the IMO Circular 860 and SOLAS. IMO MSC/Circ.860 requires certification of offshore containers "by national administrations or organizations duly authorized by the Administration", which should take account of both the calculations and the testing, "taking into account the dynamic lifting and impact forces that can occur when handling such equipment in open seas". Further information about certification can be found in informative <u>Annex A</u> of this document.

ISO 10855 (all parts) does not cover operational use or maintenance, for which there are a number of industry guidelines which can be referred to. Some are listed in the Bibliography.

Under conditions in which offshore containers are often transported and handled, the 'normal' rate of wear and tear is high, and damage necessitating repair will occur. However, containers designed and manufactured according to ISO 10855 (all parts) will have sufficient strength to withstand the normal forces encountered in offshore operations, and will not suffer complete failure even if subject to more extreme loads.

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Offshore containers and associated lifting sets -

Part 3: **Periodic inspection, examination and testing**

1 Scope

This document specifies requirements for the periodic inspection, examination and testing of offshore freight and service containers, built in accordance with ISO 10855-1, with maximum a gross mass not exceeding 25 000 kg and their associated lifting sets, intended for repeated use to, from and between offshore installations and ships. Inspection requirements following damage and repair of offshore containers are also included.

Recommended knowledge and experience of staff responsible for inspection of offshore containers is given in <u>Annex B</u>.

Recommended knowledge and experience of staff responsible for inspection of lifting sets intended for use with offshore containers is given in <u>Annex C</u>.

2 Normative references **STANDARD PREVIEW**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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. https://standards.iteh.ai/catalog/standards/sist/5c85a54Fc7ae-42ce-9d64-

ISO 3834-2, Quality requirements for fusion welding of metallic materials — Part 2: Comprehensive quality requirements

ISO 5817, Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections

ISO 9712, Non-destructive testing — Qualification and certification of NDT personnel

ISO 17637, Non-destructive testing of welds — Visual testing of fusion-welded joints

ISO 3452-1, Non-destructive testing — Penetrant testing — Part 1: General principles

ISO 10855-1:2018, Offshore containers and associated lifting sets -- Part 1: Design, manufacture and marking of offshore containers

ISO 10855-2:2018, Offshore containers and associated lifting sets — Part 2: Design, manufacture and marking of lifting sets

ISO 23277, Non-destructive testing of welds — Penetrant testing — Acceptance levels

ISO 17638, Non-destructive testing of welds — Magnetic particle testing

ISO 23278, Non-destructive testing of welds — Magnetic particle testing — Acceptance levels

ISO 17636-1, Non-destructive testing of welds — Radiographic testing — Part 1: X- and gamma-ray techniques with film

ISO 17636-2, Non-destructive testing of welds — Radiographic testing — Part 2: X- and gamma-ray techniques with digital detectors

ISO 11666, Non-destructive testing of welds – Ultrasonic testing – Acceptance levels

ISO 17640, Non-destructive testing of welds — Ultrasonic testing — Techniques, testing levels, and assessment

ISO 10675-1, Non-destructive testing of welds — Acceptance levels for radiographic testing — Part 1: Steel, nickel, titanium and their alloys

ISO 10675-2, Non-destructive testing of welds — Acceptance levels for radiographic testing — Part 2: Aluminium and its alloys

ISO/IEC 17020, Conformity assessment — Requirements for the operation of various types of bodies performing inspection

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

EN 818-6, Short link chain for lifting purposes — Safety — Part 6: Chain slings — Specification for information for use and maintenance to be provided by the manufacturer

EN 13414-2, Steel wire rope slings — Safety — Part 2: Specification for information for use and maintenance to be provided by the manufacturer

3 **Terms and definitions**

For the purposes of this document, the terms and definitions given in ISO 10855-1 and the following 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
- .ai)
- IEC Electropedia: available at http://www.electropedia

3.1

ISO 10855-3:2018

https://standards.iteh.ai/catalog/standards/sist/5c85a54f-c7ae-42ce-9d64owner legal owner of the offshore container or the delegated nominee of that body

3.2

visual examination

examination in accordance with ISO 17637

Symbols 4

- WLLs minimum working load limit of each shackle
- **WLL**off maximum rating of an offshore container to which any given sling set may be attached
- R rating, i.e. the maximum gross mass, MGM, of the container including permanent equipment and its cargo, but excluding the lifting set, in kg
- Т tare mass, i.e. the mass of an empty container including any permanent equipment excluding cargo and lifting set, in kg
- payload, i.e. the maximum permissible mass of cargo which may be safely transported by Р the container, in kg

P = R - TNOTE 1

R, *T* and *P* are by definition, in units of mass, kilograms (kg). Where design requirements are based NOTE 2 on the gravitational forces derived from these values, those forces are indicated thus: Rg, Tg and Pg the units of which are in Newtons or multiples thereof. Container inspection plate.

5 Container inspection plate

5.1 General

Containers shall be fitted with a plate carrying the information specified in 5.2.

The plate shall be made of corrosion-resistant material securely attached externally in a manner designed to avoid unauthorized or accidental removal. The plates shall be fitted to a door, or on containers with no doors, in a prominent position.

Aluminium rivets have been found to be unsuitable as a fixing method in the offshore environment and shall not be used. The information on the plate shall be in the English language.

NOTE Provision for an additional language can be made.

The text shall be permanently and legibly marked on the plates in characters not less than 4 mm high.

5.2 Contents of inspection plate

The plate shall be headed 'OFFSHORE CONTAINER INSPECTION PLATE - ISO 10855-3'.

The plate shall contain the following information:

- a) owner's container number;
- b) owner's name; **iTeh STANDARD PREVIEW**
- c) date of last inspection.

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The date of last inspection shall be the date on which the most recent inspection was carried out to the satisfaction of the competent person. ISO 10855-3:2018

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To avoid confusion, the plate shall not carry the date of the next inspection. Provision shall be made on the plate to facilitate permanent marking to record a minimum of nine inspections.

NOTE 1 For marking of the inspection plate, see <u>Clause 10</u>.

NOTE 2 In some markets it is common practice to mark an initial inspection date on the inspection plate before the container is taken into use.

A recommended format for the plate is shown in <u>Figure 1</u>.

OFFSHORE CONTAINER INSPECTION DATA					
Co	Container no.:				
0 w	/ner:				
Ins	Inspections:				
1					
2					
3					
4					
10					

Figure 1 — Example of inspection plate

The inspection plate may be combined with the data plate by including the additional information specified in ISO 10855-1:2018, 10.2.

6 Schedule of periodic inspection/examination and test — Containers

Containers shall be periodically inspected, examined and, if necessary, tested in accordance with the schedule listed in Table 1.

Inspection bodies performing such inspections should ensure the quality of the inspection work through meeting the requirements for type B inspection bodies in ISO/IEC 17020.

Guidance as to the recommended knowledge and experience of staff responsible for inspections for the purposes of ISO/IEC 17020 is given in <u>Annexes B</u> and <u>C</u>.

When the schedule includes a lifting test, the non-destructive examination and visual inspection shall both be carried out after the lifting test.

The inspection body can require other or additional inspections, examinations and or tests. NOTE 2

	Inspection/examination/test			
Time or interval	Lifting test	Non-destructive ex- amination (NDE)	Visual inspec- tion	Suffix to be marked on plate
	iTeh S	TANDARD I	PREVIEW	7 See <u>Clause 10</u>
Initial certification		As required by I	ISO 10855-1	
At intervals not exceeding 12 months	Not applicable ^b	Standards.ite Not applicable ^b ISO 10855-3:2018	h.ai) Yes	V
At intervals not exceeding 48 months	https://standards.it Not applicable ^b	eh.ai/catalog/standards/sist/50 6dc951a6d¥€\$/iso-10855-	:85a54f-c7ae-42ce-9 3-2018 Yes	d64- VN
After substantial repair or alteration ^a	Yes	Yes	Yes	Т
^a A substantial repa	air or alteration means a	any repair and/or alterat	tion carried out, w	hich may, in the opinion

Table 1 — Schedule of periodic inspection, examination and testing of containers

of the offshore container, or eleme directly to its structural integrity.

b The inspection body may require other or additional inspections, examinations and or tests.

7 **Container lifting test**

7.1 General

The container shall be loaded to give a total mass of 2,5 *R* and lifted using all the pad eyes.

This total mass can be obtained by putting in an internal test mass of 2,5 *R*–*T*. NOTE

The test masses/test load shall normally be evenly distributed inside the container. If it is not possible to place the entire test mass inside the container, some of it may be placed outside or under the container, provided that this gives a loading on the structure similar to the distribution of the container loading in operating condition.

If the container has an additional cargo deck, the test mass/test load shall be evenly divided between the floor and the additional deck. If the additional deck is removable, it will be necessary to carry out the test with the test mass/test load divided between the additional deck and the floor, as well as with the whole test mass/test load on the floor.

The container shall be lifted by a lifting set with an angle to the vertical equal to the design angle and shall be held, clear of the ground, throughout the test.

Where the lifting set, intended for use with the container, is used for the lifting test, care should be taken to ensure that no overloading, deformation or distortion is induced in the lifting set. Should the lifting set normally fitted to the container be used for the lifting test it shall be visually inspected after the load test by an inspection body as per the requirements of this document.

The container shall be carefully lifted in such a way that no significant acceleration forces occur. It shall be held for 5 min before measurements are taken.

No deflections during testing shall be greater than $\frac{1}{300}$ of the span of the member. The offshore

container shall show no permanent deformation or other damage after testing.

Test equipment and calibration 7.2

The force shall be applied using calibrated weights and lifting the container by a lifting appliance or by means of a suitable test rig (see ISO 10855-1:2018, 7.3.2).

Non-destructive examination (NDE) of welds 8

8.1 General

The NDE of welds on pad eyes and adjoining structures shall be carried out in accordance with the schedule of examination and tests specified in Table 1 eh.ai)

NOTE Alternative or additional examination can be required by the inspection body.

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NDE methods https://standards.iteh.ai/catalog/standards/sist/5c85a54f-c7ae-42ce-9d64-8.2 6dc951a6d564/iso-10855-3-2018

NDE methods (see Table 2) shall be chosen with due regard to the conditions influencing the sensitivity of the methods. Structural welds shall be examined as stipulated in columns I to IV of Table 7 in ISO 10855-1: 2018 with the method in columns III or IV being employed in the event that such is relevant.

Visual	Magnetic particle	Dye penetrant	Ultrasonic	Radiography
150 17627	ISO 17638	ISO 3452-1	ISO 17640	ISO 17636-1 and
130 17037				ISO 17636-2a
Class B Improved radiographic techniques shall be used.				

Table 2 — Standards relevant to NDE methods

Visual	Magnetic particle	Dye penetrant	Ultrasonic	Radiography	
ISO 5817 ^a	ISO 23278	ISO 23277	ISO 11666	ISO 10675-1 ^b	
Level B	Level 1	Level 1	Level 2	Level 1	
^a For aluminium ISO 10042.					
For aluminium ISO 10675-2.					

8.3 Use of Eddy Current Testing at periodic inspections

For periodic inspections Eddy Current Testing (ET) can be accepted. ET can only be used on painted surfaces provided the surface to be investigated is free from damage. Structures with very rough and/ or damaged surfaces shall not be inspected by ET.