

Offshore Container Certification

What is an offshore container?

As per DNV (Det Norske Veritas) 2.7-1 standard, an offshore container is a portable unit which has a maximum gross mass not exceeding 25,000kg for repeated use in transportation of goods or equipment in open seas, to and from (or between) fixed and/or floating installation and ships.

In our industry, typical containers are, among others, power packs, units, workshop container, toolbox, cabins, and any transportation frame.

Is an ISO corner container an offshore container?

An ISO corner container is not an offshore container for the following reasons :

- It is not designed for high dynamic load
- It is not designed to be lifted by slings
- It has a shell construction that is not suitable for high impact loads
- It does not have pad eyes but ISO corners

What are the standards?

The relevant standards relating to the oil and gas industry's offshore platforms are :

- DNV 2.7-1 Standard for certification, offshore container, June 2013
- BS EN 12079-1 2006 : Offshore containers and associated lifting sets.
Offshore containers : Design, Manufacture and Marking.

BS7079: Document withdrawn.

Certification

Fully certified product

This certification is done in two steps. Firstly, product design shall be approved by the certification body according to DNV2.7-1 or BS EN12079. Then, after reviewing all documents, monitoring and inspecting manufacturing, and the certification body will issue the product certificate.

Pad eyes certification

For pad eyes certification, product design is done according to DNV2.7-1 or BS EN12079 standard, but is not approved by the certification body. Lifting and drop tests are performed with certification body as witness. Then the certification body issues a survey report/inspection certificate for pad eye only.

Most of time, the drop test is not performed but only the load test. Then the certification body issues a survey report/inspection certificate for pad eye only and load test according to the standard.

Certification process

Product certification according to DNV 2.7-1 and/or BS-EN12079 follows a very strict and defined process. For a product to become fully certified, the design must be reviewed and following documentation provided to the certification body inspectors.

Primary structure analysis

- Frame analysis
- Forklift pockets details
- Pad eyes calculations
- Lifting slings calculations
- Impact calculations
- 30-deg tilt check
- Review of detailed design drawings
- Review of material specifications : only material with certificates can be used with minimum thickness requirements
- Review of welding details : full penetration welding mandatory for primary structure, and all welders must be certified
- Marking plate to be submitted for approval
- Load test and drop test according to standard

Load test and drop test

Load test: each unit is individually tested with the maximum load. The container shall be lifted by lifting sets and held for 5 minutes. For 4-lifting point units, the maximum load is 2.5 times the maximum gross mass.

Drop test: each unit is individually tested. An offshore container shall have sufficient strength to allow loading and unloading in open seas, from ship deck with a sea state up to significant wave heights of 6 meters. Consideration shall be given in the design to local impact loads, e.g. from hitting other deck cargo or rigid parts of the ship structure, which may cause extreme loads in such conditions.

The container shall be dropped on to a workshop floor of concrete or other rigid structure. The floor maybe covered with a sheathing wooden plank with a thickness not exceeding 50mm. When released, the container shall be dropped freely for at least 50mm to give it speed at initial impact of at least 1m/s.

Periodic inspection under user responsibility

Maintaining DNV 2.7-1 and/or BS EN12079 certification, is the user's responsibility, requiring periodic inspection of pad eyes and full structure.

Only yearly visual inspection is required, with NDE non Destructive examination) and load test at the discretion of the inspector.

NDE is required every 5 years.

Load test (4-points test) and NDE required after substantial repair.

Prototype load tests may be required after any alteration which increases weight or changes the primary structure.

Frequently asked questions

Can I modify, weld support/protection or drill hole in the structure?

No. The primary structure cannot be modified, otherwise the certification is no longer valid. If any frame modification is required, please send a request to the container manufacturer.

Can I lift unit with any kind of slings?

No. The slings are fully part of the certified container. They must not be removed, except for replacement with exactly same model with certificates.

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INDEPENDENT REVIEW CERTIFICATE

Manufacturer: WILITEC PTE. LTD
Description: LUBRICATOR RACK W-1
Equipment ref.: LR-W1
Manufacturer's serial no: LR-W1-001

Performance criteria:

Design Gross Weight	: 3,500 kgf
Tare Weight	: 1,700 kgf
Pay Load	: 1,800 kgf
Service Temperature Range	: -20°C
Impact Loads	: 0.25 gw (Horizontal at Corner Posts) 0.25 gw (Horizontal at Bottom Side Rails) 0.15 gw (Horizontal at Top Side Rails) 0.25 gw (Vertical at Bottom Rails)

Note:

1. Sling angle to be 30 degrees to vertical.
2. Through thickness property of ITEM 16 (padeye base plate) needs to be checked as per the standard.
3. The material for the padeyes shall be certified by 3.2 inspection as per EN 10204-2004. Other primary members shall be certified by 3.1 inspection as per the same standard.
4. Sling set components are excluded from the scope of this review.
5. The analysis is carried out based on the assumption that the load distribution within the structure is uniform.
6. All the welds involving primary members to be full penetration.
7. Attending surveyor to check the impact energy requirements of material for primary structure as per Section 3 – DNV 2.7-1 (2013).

Material:

Primary Frame	: ASTM A 500 Grade B (min. yield > 317 MPa)
Fork Lift Pockets	: ASTM A 36 (min. yield > 248 MPa)
Padeyes	: ASTM A 36 (min. yield > 248 MPa)

Note: The above certificate is not valid until the Engineer and the Validator have signed the certificate

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