

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Windows**

with type designation(s)
IRW/ILW, ORW/OLW, NOW, ITW

Issued to

BOHAMET S.A.
Biale Blota, Poland

is found to comply with

DNV GL class programme DNVGL-CP-0094 – Type approval – Side scuttles and windows
DNV GL rules for classification – Ships
DNV GL rules for classification – High speed and light craft
DNV GL offshore standards
DNV Standards for Certification No. 2.21, Craft (2010)

Application :

Windows, welded.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2021-05-18**.

Issued at **Høvik** on **2016-05-19**

DNV GL local station: **Gdansk**

Approval Engineer: **Gisle Hersvik**

for **DNV GL**

Arnstein Gloppen
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

IRW/ILW, ORW/OLW, NOW, ITW; Windows, welded, based on ISO 3903, "Ships and marine technology - Ships' ordinary rectangular windows", and in the following constructions:

- **IRW/ILW**: Inwards opening side hinged windows, welded

Nominal size	Glass thickness [mm]	
$w_1 \times h_1$ [mm]	Type E	Type F
400x560	12	8
450x630	12	8
500x710	15	12
560x800	15	12

- **ORW/OLW**: Outwards opening side hinged windows, welded

Nominal size	Glass thickness [mm]	
$w_1 \times h_1$ [mm]	Type E	Type F
400x560	12	8
450x630	12	8
500x710	15	10
560x800	15	10

- **NOW**: Non-opening windows, welded

Nominal size	Glass thickness [mm]	
$w_1 \times h_1$ [mm]	Type E	Type F
300x425	10	8
355x500	10	8
400x560	12	8
450x630	12	8
500x710	15	10
560x800	15	10
900x630	19	12
1000x710	19	12
1100x800	-	15

- **ITW**: Inwards opening top-hinged windows, welded

Nominal size	Glass thickness [mm]	
$w_1 \times h_1$ [mm]	Type E	Type F
450x630	12	8
500x710	15	10
560x800	15	10
900x630	19	12
1000x710	19	12
1100x800	-	15

Maximum nominal sizes: 560 [mm] x 800 [mm] and 1100 [mm] x 800 [mm], as detailed above.

Other shapes are acceptable as long as the nominal area does not exceed 0.45 [m²] or 0.88 [m²], as relevant.

Application/Limitation

Glass panes to be in accordance with ISO 614:2012 (or as later amended), "*Ships and marine technology -- Toughened safety glass panes for rectangular windows and side scuttles -- Punch method of non-destructive strength testing*" and ISO 21005:2012 (or as later amended), "*Ships and marine technology -- Thermally toughened safety-glass panes for windows and side scuttles*".

Gaskets to be in accordance with ISO 3902:1990 (or as later amended), "*Shipbuilding and marine structures -- Gaskets for rectangular windows and side scuttles*".

Materials in main frame, glassholder and glass retaining ring to be in accordance with ISO 3903:2012 (or as later amended), "*Ships and marine technology -- Ships' ordinary rectangular windows*".

The windows may be fitted in external bulkheads above the freeboard deck, provided that side scuttles are not required by the International Convention on Load Lines or DNV GL Rules for Classification of Ships.

The windows are to be mounted in accordance with the mounting instructions provided by the Manufacturer.

The Type Approval does only cover the structural requirements for the windows' design.

Deadlights are to be fitted if the windows are located in positions where such are required either by the International Convention on Load Lines, DNV GL Rules for Classification of Ships or DNV GL Offshore Standards.

Thickness of the glass pane of the toughened safety glass is to comply with ISO 21005, where the design pressure is taken from DNV GL Rules for Classification of Ships and ISO 5779:1987 (or as later amended), "*Shipbuilding -- Ordinary rectangular windows -- Positioning*". The thickness of the glass pane will be approved on a case-by-case basis by DNV GL.

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

Marking of product

The window shall be marked with the letter corresponding to the window type (E or F).

The glass pane is to be marked in accordance with ISO 614. The product shall also be marked with;

- Manufactures name or trade-mark,
- Nominal size and
- DNV GL Type Approval Certificate number.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV GL Type Approval Certificate.

Periodical assessment



Job Id: **262.1-011599-4**
Certificate No: **TAS00000EC**

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical Assessment to be performed after 2.5 years (Certificate Retention) and at renewal after 5 years (Certificate Renewal).

The main elements of the Periodical Assessment are to:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV GL Type Approval Certificate.

END OF CERTIFICATE