DNV·GL

Certificate No:
**TAK00001VJ**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Plastic Pipes, Thermoplastic**

with type designation(s)
**"EXPERT" PE100-B Pipes and Fittings**

Issued to
## Jingjiang Haihong Plastics & Rubbers Science-Technology Co., Ltd
**Jingjiang, China**

is found to comply with
**DNV GL class programme DNVGL-CP-0072 – Type approval – Thermoplastic piping systems**
**DNV GL rules for classification – Ships**

## Application :

**Essential and non-essential systems for water and sea water up to 10 bar. Service temperature -40ºC to 60ºC. For installation in accordance with DNV GL Rules and Manufacturer's recommendations. The piping system is approved to Low Flame Spread in accordance with IMO Resolution A.653(16). The piping system is not tested w.r.t. Fire Endurance characteristics.**

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

Issued at **Høvik** on **2020-03-10**
This Certificate is valid until **2025-03-09**.
DNV GL local station: **Jiangyin NB & CMC**

Approval Engineer: **Gisle Hersvik**

for **DNV GL**

**Gustav Heiberg**
**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

**"EXPERT" PE100-B Pipes and Fittings**. Green marine plastic pipes and fittings.

- Polyethylene (PE100)
- B=Ballast
- Nominal Internal Pressure rating: 10 bar.
- Nominal External Pressure rating: 3 bar.

Pipes, PN10:

| Nominal external diameter, DN [mm] | Wall thickness, min. [mm] |
|---|---|
| | *Nominal Pressure, PN [bar]* |
| | **PN10** |
| 20 | 2.8 |
| 25 | 2.8 |
| 32 | 3.0 |
| 40 | 3.7 |
| 50 | 4.6 |
| 63 | 4.7 |
| 75 | 5.6 |
| 90 | 6.7 |
| 110 | 8.1 |
| 125 | 9.2 |
| 140 | 10.3 |
| 160 | 11.8 |
| 180 | 13.3 |
| 200 | 14.7 |
| 225 | 16.6 |
| 250 | 18.4 |
| 280 | 20.6 |
| 315 | 23.2 |
| 355 | 26.1 |
| 400 | 29.4 |
| 450 | 33.1 |
| 500 | 36.8 |
| 560 | 41.2 |
| 630 | 46.3 |

Fittings:
Elbows/bends, tees, flanges and sockets.

Joining techniques:
Hot fusion socket bonding: d20 – d110
Hot fusion butt bonding: d125 – d630

## Application/Limitation

The plastic piping system is type approved for application in piping systems as listed in "Table 1 - Fire endurance requirements matrix" of DNV GL Rules Pt.4, Ch.6, Sec.2 as follows:

| **Item** | **Piping system** [1)] | |
|---|---|---|
| **Seawater** | | |
| 19 | Non-essential systems | - Ballast water management systems [2)] |
| **Freshwater** | | |
| 22 | Non-essential systems | - Potable hot and cold water and bunkerlines |

| | | |
|---|---|---|
| | | - Potable water treatment systems (Osmosis and Evaporation)<br>- Chilled water and cooling water of air condition systems |
| **Sanitary drains and scuppers** | | |
| 24 | Sanitary drains (internal) | - Black and grey water including waste water treatment and discharge lines to shore |
| **Miscellaneous** | | |
| 29 | Service air (non-essential) | |
| 30 | Brine | |

**Notes**

1) Approved installation locations where "0" is specified in "Table 1 - Fire endurance requirements matrix". Appropriate footnotes are to be observed.

2) For installation location where "L3 and higher levels" is required, metallic isolation valves are to be fitted at the boundary to the ballast piping system of the ship.
The isolation valves shall be remotely controlled valves from outside the space, e.g. fire control station and the valve shall be a fail-safe-closing type valve.

For installation in accordance with DNV GL Rules and Manufacturer's recommendations.

Maximum service pressure: 10 bar.
Service temperature range: –40ºC to 60ºC.

**Fire Endurance**
The piping system is not tested with respect to Fire Endurance characteristics.

**Low Flame spread**
The piping system is tested with respect to Low Flame Spread performance in accordance with the test procedure in IMO Resolution A.653(16).

**Smoke Generation & Toxicity**
The piping system is not tested with respect to capability of producing excessive quantities of smoke and toxic products as defined in IMO FTP Code, Annex 1: Part 2.

**Electrical conductivity**
The piping system is non-conductive, not for installation in gas hazardous area, or used with non-conductive fluids.

**Passenger vessels**
For application on passenger vessels additional requirements specified in the Rules and Regulations of the appropriate flag state authority may have to be observed.

**Bulkhead and Deck Penetration**
Pipe penetration through watertight bulkheads or decks as well as through fire divisions shall be type approved unless the penetration pipe is welded into the bulkhead/deck.

When plastic pipes pass through watertight bulkheads or decks which are also a fire division and a fire may cause flooding of watertight compartments, the watertight integrity of the bulkhead or deck is to be maintained by a metallic shut-off valve fitted at the bulkhead or deck. The operation of this valve shall be provided from above the freeboard deck. Refer to DNV GL Rules Pt.4, Ch.6, Sec.3 – 1.4 Fittings on watertight bulkheads.

On passenger vessels, where the watertight bulkhead is also a fire division, the requirements of the SOLAS Chapter II - 1, Regulation 13.2.3. are to be observed.

## Type Approval documentation

## Tests carried out

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

## Marking of product

The product is to be marked with the *manufacturer's name*: **Jingjiang Haihong Plastics & Rubbers Science-Technology Co., Ltd., Jingjiang, China**, *type designation/material*, *pressure rating* and *temperature rating*.

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

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 assessments (for Certificate Retention and Certificate Renewal) shall be performed according to DNVGL-CP-0338.

This certificate is only valid if required Periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in https://approvalfinder.dnvgl.com

END OF CERTIFICATE