Certificate no.:
TAK00002MH

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Plastic Piping System, Thermoplastic

with type designation(s)
"EXPERT" PP-R Pipes and Fittings

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

is found to comply with
DNV class programme DNV-CP-0072 – Type approval – Thermoplastic piping systems
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems

Application:

For non-essential service.
External pressure rating: 3 bar
Surface flame spread characteristics according to ASTM D635 classification HB.

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

Issued at **Hamburg** on **2026-03-25**
This Certificate is valid until **2031-03-24**.
DNV local unit: **Jiangyin NB & CMC**

Approval Engineer: **Joachim Rehbein**

for **DNV**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Pipes and Fittings made of polypropylene random copolymer (PP-R).

Pressure class: PN10, PN16

Pipes

Outer Diameter, nominal **DN** [mm]	Pipe series	
	S5	S4
	Internal pressure, nominal **PN**[1] [bar]	
	10	**16**
	Wall thickness, nominal e [mm]	
20	2.8	2.8
25	2.8	2.8
32	2.9	3.6
40	3.7	4.5
50	4.6	5.6
63	5.8	7.1
75	6.8	8.4
90	8.2	10.1
110	10.0	12.3
140	12.7	-
160	14.6	-

Notes:
1: PN class based on internal pressure – short term tests for pipe with SF 4.0

Fittings

Elbows 45°/90°, tees, reducers, caps, flanges.

Joining methods

Hot melt butt connection for DN140 and DN160
Hot melt socket connection for DN20 up to DN110

Service parameters

Service temperature range[1]	-10°C up to +95°C
Nominal external pressure rating	3 bar

Notes:
1: Pressure reduction at elevated temperature to be observed.

Permissible working pressure and temperature limits [1]

Nominal pressure PN [bar]	**Permissible working pressure for non-essential systems [bar]**							
	-10°C to 0°C	30°C	40°C	50°C	60°C	70°C	80°C	95°C
10	8.7	8.7	7.6	6.7	6.0	5.2	4.5	4.0
16	14.0	14.0	12.4	10.9	9.6	8.4	7.4	6.3

Notes:
1: According to manufacturer's instructions. Pressure reduction and reduced lifetime at elevated temperature to be observed.

Assessed production site

Jingjiang Haihong Plastics & Rubbers Science-Technology Co., Ltd
Industrial Park of Shengci Town, Jingjiang City, Jiangsu Province, 214531, China

Application/Limitation

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

The PP-R piping system is approved for application in piping systems as listed in the table below.
Reference DNV-RU-SHIP Pt.4 Ch.6 Sec.2 – 1.7 Plastic pipes "Table 2 - Fire endurance requirements matrix".

The installation is not approved in locations where “NA” or “X” is indicated. The PP-R piping system is not approved for installation in gas hazardous areas.

Item	Piping system[1]	
Freshwater		
22	Non-essential systems	Potable hot and cold water and bunker lines Potable water treatment systems (Osmosis and Evaporation) Chilled water and cooling water of air condition systems
Sanitary and drains and scuppers		
24	Sanitary drains (internal)	Black and grey water including wastewater treatment and discharge lines to shore

Notes:
[1] Approved installation locations where “0” is specified in “Table 2 - Fire endurance requirements matrix”. Appropriate footnotes are to be observed.

Extent of Type Tests applicable to piping system dependent on application

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

Flame spread
Surface flame spread characteristics is confirmed according to ASTM D635:14, Classification HB.

Smoke and toxicity
The piping system is not tested with respect to smoke or toxic products generation in case of fire as defined in IMO FTP Code, Annex 2 - 2.2.

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

Additional remarks

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.

Installation
Designing and installation of the piping system according to manufacturer’s instructions.

In addition, installation requirements specific to the ship as specified by the shipyard as well as DNV-RU-SHIP Pt.4 Ch.6 Sec.9 and 10 are to be observed.

Bulkhead 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-RU-SHIP 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
Testing carried out in accordance with **Type Approval documentation**.

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

Product	Scope	Example
Pipes and fittings	Brand	EXPERT
	Material grade	PP-R
	Standard	GB/T18742.1-2017
	Nominal outside diameter and nominal wall thickness	32*3.6
	Pressure rating	PN16
	Temperature rating	95°C
	Colour	Green
	Manufacturer information/traceability code/date of production	xxxxxxxxxx

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 / Certificate Renewal) shall be performed according to DNV-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.dnv.com.

END OF CERTIFICATE