DNV·GL

Certificate No:
TAK00001VM

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Plastic Pipes, Thermoplastic

with type designation(s)
MF-PPR Pipes and Fittings; PN12.5, PN16, PN20 and PN25

Issued to
Zhejiang Weixing New Building Materials Co.,Ltd
Linhai, Zhejiang, 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 piping systems for water and sea water up to 25 bar. Service temperature 0ºC to 95ºC. For installation in accordance to DNV GL Rules and Manufacturer's recommendations. The piping system is not tested w.r.t. Fire Endurance. The piping system is tested to Low Flame Spread characteristics, as per ASTM D635.

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

Issued at **Høvik** on **2020-03-26**
This Certificate is valid until **2025-03-25**.
DNV GL local station: **Ningbo**

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.

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Job Id: **262.1-033017-1**
Certificate No: **TAK00001VM**

Product description

MF-PPR Pipes and Fittings; PN12.5, PN16, PN20 and PN25

- Fibre Reinforced Polypropylene Random Copolymer Composite (MF-PPR). Green color.
- MF = Modified Fiber-Reinforced
- Nominal Internal Pressure rating (PN): 12.5, 16, 20 and 25 bar.
- Nominal External Pressure rating (EP): 1 bar.

Pipes, PN12.5 – PN 25:

Nominal diameter, DN [mm]	Wall thickness, nominal [mm]			
	Pipe Series, S			
	S5	**S4**	**S3.2**	**S2.5**
	Nominal Pressure, PN [bar]			
	12.5	**16**	**20**	**25**
20	--	2.3	2.8	3.4
25	--	2.8	3.5	4.2
32	--	3.6	4.4	5.4
40	3.7	4.5	5.5	6.7
50	4.6	5.6	6.9	8.3
63	5.8	7.1	8.6	10.5
75	6.8	8.4	10.3	12.5
90	8.2	10.1	12.3	15.0
110	10.0	12.3	15.1	18.3
125	11.4	14.0	17.1	20.8
140	12.7	15.7	19.2	23.3
160	14.6	17.9	21.9	26.6

- Minimum thickness of fibre layer as per Manufacturer's specification.

Fittings:
Elbows, tees, sockets, end caps and male thread connectors.

Joining techniques:
Butt fusion, socket fusion, electrofusion and flanged.

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 and bilge water management systems [2)]
Freshwater		
22	Non-essential systems	- Potable hot and cold water and bunkerlines - Potable water treatment systems (Osmosis and Evaporation) - 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: 25 bar.
Service temperature range: 0ºC to 95ºC.

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

Low Flame Spread
The piping system is tested to Low Flame Spread characteristics, as per ASTM D635-18 (Classification HB).

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.

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 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*: **Zhejiang Weixing New Building Materials Co., Ltd., China**, *pressure rating*, *temperature rating* and *type designation*.

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