



# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAK00000U5**  
Revision No:  
**2**

## This is to certify:

**That the Plastic Piping System, Thermoplastic**

with type designation(s)  
**PE100 Pipes and Fittings; PN6, PN8, PN10 and PN12.5**

Issued to  
**Zhejiang Weixing New Building Materials Co.,Ltd**  
**Linhai, Zhejiang, China**

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

## Application :

**For use in non-essential piping systems for water and sea water up to 12.5 bar. Service temperature -40°C to 60°C. For installation in accordance to DNV 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 D635-14.**

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

Issued at **Høvik** on **2021-12-08**

This Certificate is valid until **2024-04-13**.

DNV local station: **Ningbo CMC**

Approval Engineer: **Gisle Hersvik**

for **DNV**

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**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.

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 300,000 USD.



## Product description

### PE100 Pipes and Fittings.

- Material: Polyethylene (PE100)
- Nominal Internal Pressure rating: 6 bar / SDR21
  - o Nominal External pressure rating; 1.33 bar (collapse resistant).
- Nominal Internal Pressure rating: 8 bar / SDR17, 10 bar / SDR13.6 and 12.5 bar /SDR11
  - o Nominal External pressure rating; 1.66 bar (collapse resistant)

### Pipes:

Nominal diameter, DN [mm]	Wall thickness, min. [mm]			
	Standard Size Ratio, SDR			
	SDR21	SDR17	SDR13.6	SDR11
	Nominal Pressure, PN [bar]			
	6	8	10	12.5
20	--	--	--	1.9
25	--	--	--	2.3
32	--	--	--	3.0
40	3.5	--	--	3.7
50	3.5	--	--	4.6
63	3.5	--	4.7	5.8
75	3.6	4.5	5.6	6.8
90	4.3	5.4	6.7	8.2
110	5.3	6.6	8.1	10.0
125	--	7.4	9.2	11.4
140	6.7	8.3	10.3	12.7
160	7.7	9.5	11.8	14.6
180	--	10.7	13.3	16.4
200	9.6	11.9	14.7	18.2
225	--	13.4	16.6	20.5
250	--	14.8	18.4	22.7
280	--	16.6	20.6	25.4
315	--	18.7	23.2	28.6
355	--	21.1	26.1	32.2
400	--	23.7	29.4	36.3
450	--	26.7	33.1	40.9
500	--	29.7	36.8	45.4
560	--	33.2	41.2	50.8
630	--	37.4	46.3	57.2
710	--	42.1	52.2	64.5
800	--	47.4	58.8	72.6

### Fittings:

Elbows, tees, sockets, caps and male thread connectors.

### Joining techniques:

Butt fusion, socket fusion, electrofusion and flanged.

## Manufacture

Linhai Weixing New Building Materials Co., Ltd., No.688, Jiangshi West Road, Economic Development Zone of Linhai, Linhai, Taizhou, Zhejiang, China

## 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 Rules Pt.4, Ch.6, Section 2, where "0" is specified. Appropriate footnotes are to be observed.

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

Maximum service pressure: 12.5 bar.  
Service temperature range: -40°C to 60°C.

#### **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 D635-14 (Classification: HB. Average horizontal burning rate: 22.8 mm/min).

#### **Smoke Generation & Toxicity**

The piping system is not tested with respect to Smoke Generation & Toxicity characteristics.

#### **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 penetration pipe is welded into the bulkhead/deck.

When plastic pipes pass through watertight bulkheads or decks, 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 Rules Pt.4, Ch.6, Sec.3 – 1.4 Fittings on watertight bulkheads.

Penetration of pipes without external pressure capability through watertight bulkheads is not approved.

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 and address*: **Zhejiang Weixing New Building Materials Co., Ltd., China**, *brand name*: **VASEN**, *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 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 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>



Job Id: **262.1-016374-6**  
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END OF CERTIFICATE