

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Plastic Piping System, Thermoplastic**with type designation(s)
PVC-U Pipes & Fittings, PN10, DN40 up to DN160

Issued to

**Jiangsu Jinhong Plastics Technology Ltd.
Jingjiang, China**

is found to comply with

**DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0072 – Type approval – Thermoplastic piping systems****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2020-06-23**This Certificate is valid until **2025-06-22**.DNV GL local station: **Jiangyin**for **DNV GL**Approval Engineer: **Joachim Rehbein**

**Thorsten Lohmann
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.



Job Id: **262.1-028172-1**
Certificate No: **TAK00001ST**

Product description

PVC – U Pipes and Fittings: Unplasticized polyvinyl chloride (PVC-U)

Pipes:

Outer Diameter, nominal d_N [mm]	Wall thickness, nominal e_n [mm]
	Pressure, nominal PN ¹ [bar]
	10
40	2.0
50	2.4
63	3.0
75	3.6
90	4.3
110	4.2
140	5.4
160	6.2

Notes :

1: PN class based on internal pressure – short term tests for pipe with SF 4.

Fittings:

Elbow 90°, elbow 45°, straight tee 90°, reducing tee 90°, straight joint, reducing joint 90°.

Joining method:

Glue bonding

Service parameter

Service temperature range	0°C up to + 60°C
Nominal internal pressure	10 bar
Nominal external pressure rating	1.0 bar

Permissible working pressure and temperature limits ¹

Temperature	0°C up to 20°C	30°C	40°C	50°C	60°C
Maximum allowable working pressure (bar)	10	7.5	6	-	-

Note:

1: According to DNVGL-CP-0072

Application/Limitation

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

The pipes and fittings are type approved for application in piping systems as listed in "Table 1- Fire endurance requirements matrix" of DNVGL Rules Pt.4, Ch.6, Section 2. as follows:

Item	Piping system ¹	
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 and drains and scuppers		
24	Sanitary drains (internal)	- Black and grey water including waste water treatment and discharge lines to shore

Notes

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

Not approved for installation locations where "NA" or "X" is indicated.
Not approved for installation in gas hazardous area.

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

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

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

For designing and installation of the piping system the instructions of manufacturer are to be observed. In addition the installation requirements specific to the ship as specified by the ship yard as well as DNVGL Rules Pt.4, Ch.6, Section 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, 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 Section 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.

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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 product is to enable traceability to this Type Approval Certificate.

Product	Scope	Example
Pipes and fittings	Brand	SHUHANG
	Material grade	PVCU
	Standard	GB/T10002.1-2006
	Dimension OD and nominal wall thickness	63*3
	Pressure rating	PN10
	Colour	grey
	Manufacturer information/traceability code	-

Periodical assessment

A condition for retention of the TA certificate in its validity period is that periodical assessments are successfully carried out.

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after 2 years and after 3.5 years to verify that the conditions for the Type Approval are complied with. Refer to DNVGL-CP-0338, Sec.4.

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