Certificate No: LR2068570TA
Issue Date: 30/11/2020
Expiry Date: 29/11/2025

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	**Zhoushan Huasu Marine Fittings Co., Ltd**
Address	Dinghai District, Wuji Garden Baiquan Town Dinghai, District, Zhoushan, 316000, China
Place of Production	Zhoushan Huasu Marine Fittings Co., Ltd Dinghai District, Wuji Garden Baiquan Town Dinghai, District, Zhoushan, 316000, China
Type	Plastic Pipes
Description	Glassfibre Reinforced Epoxy Pipes and Fittings
Trade Name	HS10/HS10C HS16/HS16C
Application	Marine and offshore piping systems for sea water, fresh water, sanitary/drains/ scuppers and non-essential services in locations listed in Part 5, Chapter 12, Table 12.5.1 of Lloyd's Register's Rules and Regulations for the Classification of Ships where a "0" and "L3" is indicated.
Specified Standard	LR Rules and Regulations for the Classification of Ships, July 2019 IMO Resolution A.753(18), as amended by IMO Resolution MSC.313(88) IMO 2010 FTP Code ASTM D1599 ASTM D2992 ASTM D2924 ASTM D257

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Qing Dong

Specialist to Lloyd's Register Classification Society (China) Co Ltd
A member of the Lloyd's Register group

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ASTM D2444
ISO 75-2 : 2013
ASTM D2105
ASTM D2412
ASTM D2143
ASTM C581

Ratings

Nominal Diameter (mm):	DN25~DN1200 (HS10/HS10C) DN25~DN1200 (HS16/HS16C)
Nominal Pipe Thickness (mm):	5.0~32
Nominal Internal Pressure Rating (bar):	10 (HS10/HS10C) 16 (HS16/HS16C)
Nominal External Pressure Rating (bar):	5 (HS10/HS10C) 5 (HS16/HS16C)
Maximum Working Temperature (˚C):	110
Joint Method:	Adhesive-bonded Spigot with O-ring Flanged connection

Additional Tests

Fire endurance test Level 3 conducted according to IMO Resolution A.753(18), as amended by IMO Resolution MSC.313(88).
Flame spread test conducted according to IMO Resolution A.653(16).
Smoke generation & Toxicity test conducted according to IMO 2010 FTP Code.
Electrical conductivity test conducted according to ASTM D257.

Other Conditions

1. Plastic pipes and fittings intended for application in Class I, Class II and Class III systems for which there are Rule requirements, are to be manufactured in accordance with Chapter 14 of LR Rules for Materials and to be manufactured and tested in accordance with Part 5, Chapter 12, Section 5 of the Rules and Regulations for the Classification of Ships.
2. In the case of pipes intended for essential services each qualified

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person is, at the place of construction, to make at least one test joint, representative of each type of joint to be used. The joined pipe section is to be tested to an internal hydrostatic pressure of four times the design pressure of the pipe system and the pressure held for not less than one hour, with no leakage or separation of joints. The bonding procedure test is to be witnessed by the Surveyor.

3. Electrical conductivity test is to be carried out after installation on board.
4. The use of plastics pipes may be restricted by statutory requirements of the National Authority of the country in which the ship is to be registered.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Classification Society (China) Co Ltd of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document LR2068570TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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