DNV·GL

Certificate No:
TAK00000GX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Plastic Pipes, Thermoplastic

with type designation(s)
Uponor Pipes and Uponor Fittings / Couplings see page 2

Issued to
Uponor GmbH
Hassfurt, Germany

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

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2021-10-23**.

Issued at **Hamburg** on **2016-10-31**

for **DNV GL**

DNV GL local station: **Augsburg**

Approval Engineer: **Peter Gierhan**

Olaf Drews
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Product description

Pipes:

- Uponor Uni Pipe PLUS, PE-RT Type II /AI/ PE-RT Type II, seamless, (16-32 mm)
- Uponor MLC, PE-RT Type II /AI/ PE-RT Type II, overlapped welded (16-32 mm)
- Uponor MLC, PE-RT Type II /AI/ PE-RT Type II, but welded (40-110 mm)

Polyethylene inner and outer liner, continuously overlapped aluminium core pipe. The different layers are adhesively bonded to each other.

Legends:

PE-RT: Polyethylene - Temperature Resistant
Al: Aluminium

Fittings/Couplings:

Pipes to be joined with UPONOR's tin-plated brass screw and press fittings, or PPSU fittings.

- S-Press PPSU: OD 16 up to 50 [mm]
- RTM-Fittings (PPSU): OD 16 up to 25 [mm]
- RTM-Fittings (brass): OD 16 up to 32 [mm]
- S-Press (SS): OD 40 up to 50 [mm]
- S-Press (ALU): OD 16 up to 32 [mm]
- RS Modular Fittings: OD 63 up to 110 [mm]

Remarks:

Fittings are manufactured by:

Uponor GmbH, Hassfurt, Germany (press/screw type),
Uponor Suomi Oy Proplast, Nastola, Finland (PPSU-II type fittings) and
Cocomech/Higashio Mech. Co., Ltd., Osaka, Japan (RTM-Fittings).

Dimensions Pipes:

Diameters, wall thicknesses and maximum service temperature/pressure:

Type	OD [mm]	Wall thickness (mm)	PN [bar]	Maximum Working pressure
				95°C
PE-RT/AI/PE-RT- , PE-RT Type II /AI/ PE-RT Type II- PIPES	16	2,0	10	10,0
	20	2,25	10	10,0
	25	2,5	10	8,5
	32	3,0	10	8,5
	40	4,0	10	8,0
	50	4,5	10	9,5
	63	6,0	10	9,5
	75	7,5	10	9,5
	90	8,5	10	9,5
	110	10,0	10	9,5

Note:

The maximum long-term working pressure for temperatures between 70ºC and 95ºC have been determined based on the long-term internal tests carried out. A safety factor > 1,5 has been applied w.r.t. the 97.5% fractile, for establishing the tabulated values.

Manufactured by

Uponor GmbH, Am Köhlersgehäu 17, D-98544 Zella-Mehlis, Germany

Responsibility

The Holder of Certificate takes the responsibility that both design and production are in compliance with Rules, Standards and Regulations listed on page 1 of this Certificate.

Application/Limitation

Non-essential sanitary and drainage systems for hot and cold fresh and sea water up to 10 bar and 70ºC. Also for heating applications. The temperature limit may be extended (from 70ºC) up to 95ºC for shorter periods at 10 bar, however, the longterm working pressure shall be as per above table.

The piping system is non-conductive, not for installation in gas hazardous area.
The installation and application of the pipes shall be in accordance with the Manufacturer's recommendations.

Test standard IMO Resolution A.753 (18) except fire endurance, flame spread, smoke generation and toxicity test. The Fire Endurance and Low Flame Spread characteristic of the piping system have not been determined.

Installation:

The installation of the piping system is to be carried out in acc. with the instructions of the manufacturer respectively the installation requirements of the IMO Resolution as applicable.
If necessary, pipes and plastic fittings are to be protected against ultraviolet radiation.
Cold water piping systems are to be adequately protected against heat sources and condensation.
Hot water piping systems are to be adequately protected against heat loss, including circulation pipes.
The pipes and fittings are not to be used in submerged condition.

Type Approval documentation
Tests carried out

Type Testing carried out according to **Type Approval documentation**
DNV GL Ref.-No.: 12-062635

Marking of product

The pipes and fittings shall be marked with:

- Trade name
- Maximum working temperature (Tmax=70ºC in DNV GL classified objects)
- Maximum working pressure
- Dimensions, outer diameter and wall thickness
- Material designation
- Production code

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 Assessment to be performed after two and a half year (2.5 years, certificate retention) and prior to renewal after five (5 years, certificate renewal).
The objective of the periodical assessment is to verify that the design and production conditions for the hose assemblies covered by this type approval have not been altered.
Main scope of the assessment:

— verification of the production and quality control system
— review of quality control documentation of recent deliveries
— review of the type approval documentation and that this is still the basis for the production
— review of design changes , pre- material and performance of the product
— verification of the product marking

END OF CERTIFICATE