

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Plastic Pipes, Thermoplastic**with type designation(s)
SMARTLINE®

Issued to

Pipelife Norge AS
SURNADAL, Norway

is found to comply with

DNV GL class programme DNVGL-CP-0072 – Type approval – Thermoplastic piping systems
DNV GL rules for classification – Ships**Application :****For use in non-essential sanitary and drainage systems up to 0.5 bar and 20°C. Installation of the piping system shall be in accordance with Manufacturer's recommendations. The piping system is not tested with respect to Fire Endurance, Low Flame Spread and Smoke Generation & Toxicity characteristics.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2019-07-01**This Certificate is valid until **2024-06-30**.DNV GL local station: **Kristiansund N**for **DNV GL**Approval Engineer: **Gisle Hersvik**

Rikard Törnqvist
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.



Product description

SMARTLINE®; Polypropylene (PP) Pipes and Fittings.
Nominal Diameter (OD) range: 40 - 110 mm
Nominal internal pressure: 0.5 bar
Nominal external pressure: None

Pipes and Fittings - Dimensions:

Ø [OD]:	Minimum wall thickness in mm	
	Pipes	Fittings
40	2,0	1,9
50	2,0	1,9
75	2,3	2,3
110	3,4	3,4

Fittings and Jointing:

- As per **SMARTLINE®** Product Catalogue.

Application/Limitation

Approved only for installation of piping systems onboard ships which will not be exposed to vacuum inside the pipes and not exposed to external pressure outside the pipes.

Non-essential sanitary and drainage systems;

- the piping system is not under pressure and maximum working pressure under operating conditions is zero, and
- the piping system must not be shaped in such a way that the internal pressure exceeds 0.5 bar during an eventual blockage.

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

Maximum service pressure: 0.5 bar.

Service temperature range:

- continuous flow up to +45°C,
- flow for longer periods up to +60°C and
- intermittent flow up to +95°C.

Fire Endurance

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

Low Flame Spread

The piping system is not tested with respect to Low Flame Spread characteristics.

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 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 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.

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

Marking of product

The pipes and fittings are to be marked. The marking shall at least include the following information:

- *Manufacturer's Name:* (Pipelife)
- *Material:* (PP)
- *Pipe dimensions:* (Outer diameter/wall thickness)

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 2 and 3.5 years (Certificate Retention) and at renewal after 5 years (Certificate Renewal).

The main elements of the Periodical Assessment are to:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV GL Type Approval Certificate.

END OF CERTIFICATE