

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

Det Norske Veritas' Rules for Classification of Ships**Det Norske Veritas' Type Approval Programme 1-501.2, 2011, Thermoplastic Pipes****Application :****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 and Flame Spread characteristics.**This Certificate is valid until **2019-06-30**.Issued at **Høvik** on **2015-05-18**DNV GL local station: **Kristiansund N**Approval Engineer: **Gisle Hersvik**for **DNV GL****Martin Strande
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.

Certificate No: **K-6318**
File No: **332.31**
Job Id: **262.1-009785-2**

Product description

SMARTLINE®; Polypropylene (PP) Pipes and Fittings.

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

Non-essential sanitary and drainage systems up to 0.5 bar and 20°C;

- 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.

Maximum usage temperatures:

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

The piping system is Non-Conductive, not for conveying conductive fluids in gas hazardous areas.

Fire Endurance and Flame Spread characteristics of the piping system have not been determined.

Installation of the piping system shall be in accordance with Manufacturer's recommendations.

Type Approval documentation

1. Previous Type Approval Certificate No. K-4605.
2. Periodical Assessment Report from DNV GL Kristiansund of 2015-05-12, and the following supporting documents:
 - SMARTLINE® Product Catalogue (March 2013), and
 - SP Reports 2014-09-04 and 2013-09-09 (audit tests for PP pipes and fittings).
 - TDS for the Polypropylene material,
3. Email from Pipelife Norge AS of 2010-09-21, including:
 - Application for Type Approval of 2010-09-21,
 - Survey Report from DNV Kristiansund of 2010-04-21,
 - Letter from Pipelife Norge AS of 2010-03-15, and
 - SMARTLINE® Product Catalogue.

Tests carried out

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

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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 two (2) years (Certificate Retention) and at renewal after four (4) 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