

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Plastic Pipes, Thermoplastic**with type designation(s)
Pexal® Piping System and Fittings

Issued to

VALSIR S.P.A.
Vestone BS, Italy

is found to comply with

DNV GL class programme DNVGL-CP-0072 – Type approval – Thermoplastic piping systems**DNV GL rules for classification – Ships****DNV GL rules for classification – Offshore units****IMO Resolution A.753(18). Guidelines for the Application of Plastic Pipes on Ships****Application :****For use in systems for water and sea water up to 10 bar. Service Temperature -60°C to 95°C.
For installation in accordance to DNV GL Rules and Manufacturer's Specification. The piping
system is not tested w.r.t. Fire Endurance. The piping system is tested w.r.t. Low Flame
Spread characteristics.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.**Issued at **Høvik** on **2017-09-11**This Certificate is valid until **2022-09-10**.DNV GL local station: **Milan**for **DNV GL**Approval Engineer: **Stefan Marion**

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.



Product description

Pexal® multilayer pipes connected with Pexal Easy® and Bravopress® fittings. Pexal® multilayer pipes PE-Xb/Al/PE-Xb consist of crosslinked Polyethylene (PE-Xb) inside and outside with an intermediate layer of aluminium (Al) alloy with longitudinal butt welding as permanent oxygen and light barrier.

Fitting systems: Pexal Easy® (OD 16-75), Bravopress® (OD 16-63)
Fitting material: Polyphenylsulphone

Maximum operating temperature: 95°C
Nominal internal pressure rating: 10 bar

Pipe dimension DN [mm]	16	16	18	20	20	26	32
Wall thickness [mm]	2	2.25	2	2	2.5	3	3

Pipe dimension DN [mm]	40	50	63	75
Wall thickness [mm]	3.5	4	4.5	5

Manufactured by

Valsir S.p.A, Localita Merlaro, 2; 25078 Vestone (BS), Italy

DNV GL local station: Milano

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.

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

For use in non-essential sanitary and drainage systems for hot and cold fresh and sea water up to max. 10 bar and 95°C. Also for heating applications. The temperature limit may be extended up to 100°C for shorter periods at 10 bar, otherwise the longterm working pressure shall be reduced as per Manufacturer's Specification.

Maximum service pressure: 10 bar
Service temperature range: -60°C to 95°C (for shorter periods up to 100°C)

Fire Endurance

The piping system is not tested w.r.t. Fire Endurance characteristics

Low Flame Spread

The piping system is tested w.r.t. Low Flame Spread characteristics in accordance with ASTM D635 (accepted as an alternative to IMO FTP Code, Annex 1, Part 5).

Smoke Generation & Toxicity

The piping system is not tested w.r.t. Smoke Generation & Toxicity characteristics.

For application on passenger vessels additional requirements specified in the Rules and Regulations of the appropriate Flag State authority may have to be observed.

The piping is non-conductive, not for installation in gas hazardous areas.

The pipes and fittings are not to be used in submerged condition.

Type Approval documentation

Tests carried out

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

Performed burst tests indicate that the max. design pressure may be increased to 16 bar (for OD 16-63) and 14 bar (for OD75), however, please consult with the maker

Marking of product

The product is to be marked with:

- manufacturer's name; **Valsir S.p.A, Italy**
- manufacturing plant address
- type designation; PEXAL
- pressure rating
- nominal pressure
- dimensions
- production date/Batch no.

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 DNV GL Type Approval Certificate.

END OF CERTIFICATE