

Certificate No:

**K-6152**

File No:

**332.31**

Job Id:

**262.1-009220-2**

## TYPE APPROVAL CERTIFICATE

### This is to certify:

**That the Plastic Pipes, Thermoplastic**

with type designation(s)

**SDP TERRAIN PB; PN10 Polybutylene Pipes and Fittings**

Issued to

**NUEVA TERRAIN, S.L.**

**Vitoria-Gazteiz, Spain**

is found to comply with

**Det Norske Veritas' Type Approval Programme 1-501.2, 2011, Thermoplastic Pipes**

**Det Norske Veritas' Rules for Classification of Ships**

### Application :

**Essential and non-essential systems for hot and cold fresh and sea water up to 10 bar. Service temperature range 0°C to 70°C. For installation in accordance with DNV Rules and Manufacturer's Specification. The piping system is tested to Low Flame Spread in accordance with ASTM D635. The piping system is not tested with respect to Fire Endurance characteristics.**

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2014-11-06**

DNV GL local station: **Bilbao**

Approval Engineer: **Gisle Hersvik**

for **DNV GL**

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**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. If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

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## Product description

**SDP TERRAIN PB**; PN10 Polybutylene Pipes and Fittings.

### Dimensions:

OD15 to OD110 as per NUEVA TERRAIN S.L.'s Product Specification.

	Outside diameters (OD) and minimum wall thickness (t)													
OD [mm]	15	16	16	20	22	25	28	32	40	50	63	75	90	110
t [mm]	1,7	1,8	2,2	2,3	2,0	2,3	2,5	2,9	3,7	4,6	5,8	6,8	8,2	10,0
S	4	4	3,15	4	5	5	5	5	5	5	5	5	5	5

### Fittings:

PB pipes to be joined with approved/tested PB fittings.

### Joining techniques:

Joining technique	Diameters [mm]	PN [bars]
Push-fit	15-16-20-22-25-28-32-40-50	10
Socket fusion	16-20-25-32-40-50-63	10
Electro fusion	63-75-90-110	10
Butt fusion	63-75-90-110	10

### Legends:

PB: Polybutylene  
OD: Outside Diameter  
S: Pipe series  
PN: Nominal Pressure rating

## Application/Limitation

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

The approval covers application such as essential and non-essential systems, hot and cold water systems chilled and brine water systems, cooling systems (air condition), black and grey water systems, water treatment, fresh and waste water, osmosis systems and evaporation, fresh water bunker lines, etc.

Maximum service pressure 10 bar. Service temperature range 0°C to 70°C. Maximum service temperature 95°C for short period of time.

The piping system is approved to Low Flame Spread in accordance with ASTM D635 (accepted as an alternative to IMO Resolution A.653(16)).

The piping system is not tested with respect to Fire Endurance characteristics, i.e. the piping system shall be installed where there are no specified requirements to Fire Endurance, ref. the Fire Endurance matrix of the IMO Resolution A.753(18) and DNV Rules for Ships, Pt.4 Ch.6 Sec.2.

## 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*; **NUEVA TERRAIN S.L.** and/or

Certificate No: **K-6152**  
File No: **332.31**  
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- *Trade mark / type designation; Terrain SDP (pipes) or SDP (fittings)*
- *Dimensions*
- *Pressure rating*
- *Temperature rating*

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