DNV·GL

Certificate No:
TAK00000XS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Plastic Pipes, Thermoplastic

with type designation(s)
Compound Pipes PE-Xc/Al/PE-RT (HD), PE-Xc/Al/PE-Xc, PE-RT/Al/PE-RT

Issued to
Becker Plastics GmbH
Datteln, 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.

Issued at **Hamburg** on **2017-11-10**
This Certificate is valid until **2022-11-09**.
DNV GL local station: **Essen**

Approval Engineer: **Hagen Markus**

for **DNV GL**

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.

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Product description

PE-Xc/Al/PE-RT (HD) Cross-linked polyethylene with butt TIG or Laser welded aluminium sheet and an outer layer of polyethylene with raised temperature resistance (PE-RT type II).

PE-Xc/Al/PE-Xc Cross-linked polyethylene with butt TIG or Laser welded aluminium sheet and an outer layer of cross-linked Polyethylene.

PE-RT/Al/PE-RT High density polyethylene of raised temperature resistance (PE-RT type II) with a butt TIG or Laser welded aluminium sheathing and a top coat of polyethylene (PE-RT type II).

Size range

Pipe type	**Outer diameter O.D. in mm**
PE-Xc/Al/PE-RT (HD)	14 up to 63
PE-RT/Al/PE-RT	14 up to 63
PE-Xc/Al/PE-Xc	14 up to 63

Service parameter

Service temperature range	0°C up to + 70°C
M.A.W.P.	10bar
External pressure rating	None

Dimensions of Pipes

PE-RT/Al/PE-RT		**PE-Xc/Al/PE-RT**		**PE-Xc/Al/PE-Xc**	
O.D. mm	Pipe wall thickness mm	O.D. mm	Pipe wall thickness mm	O.D. mm	Pipe wall thickness mm
14/16/17/18	2	14	2	14/16/20	2
20/20	2/2.25	16/16/16/16.2	2/2.2/2.6/2.6	25	2.5
25/26	2.5/3	17/17	2/2.8	26	3
32	3	18	2	32	3
40/40	3.5/4	20/20/20/20	2/2.25/2.8/2.9	40	3.5
50/50	4/4.5	21/21	3.4/3.5	50	4.0
63/63	4.5/6	25/25/25	2.5/2.7/3.7	63	4.5
		26/26	3/4		
		32/32/32/32/33	3/3.2/4/4.7/4.9		
		40/40/40/42	3.5/4/6/4.6		
		50/50/52	4/4.5/5.6		
		63/63	4.5/6.0		

Application / Limitation

The Becker Plastics PE piping systems are type approved for application in sanitary cold and hot water piping systems, for unprotected installation in locations where "0" or "NA" is specified in Table 1- Fire endurance requirements matrix of DNVGL Rules Pt.4, Ch.6, Section 2.

Surface flame spread characteristics determined by DIN 4102-1, Section 6.2:1998-05.

The piping system is not tested with respect to fire endurance, smoke and 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 system is not approved for installation within tanks and vacuum applications (service pressure below - 0.1bar gauge) or for installation in gas hazardous area.

Installation

For installation of the pipes the instructions of the piping system manufacturer are to be observed. In addition the installation requirements specific to the ship as specified by the ship yard as well as specified by IMO Res. 753 (18) are to be observed.

When plastic pipes pass through watertight bulkheads or decks, the watertight integrity of the bulkhead or deck is to be maintained by fitting remotely operated shut-off valves at bulkhead and deck penetrations. These valves shall be operable from above the freeboard deck.

On passenger vessel where the watertight bulkhead is also a fire division the requirements of SOLAS Ch.II-1, Regulation 13.2.3. are to be observed.

Type Approval documentation

Tests carried out

Marking of product

Scope to be at least	Example
Manufacturers name and/or logo	Becker Plastics
Type designation	PE-RT/Al/PE-RT
Design standard	EN ISO 21003-2
Material of which the pipe is made	PE-RT/Al/PE-RT
Size/dimension	14/2
Pressure rating nominal (internal)	10 bar
Temperature rating	70°C

Periodical assessment

For retention of the type approval certificate periodical assessments shall be carried out at production places by DNVGL surveyor.
The objective of the periodical assessment is to verify that the design and production conditions for the 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 drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.