

TYPE APPROVAL CERTIFICATE

Certificate no.:
TAK00001W8
Revision No:
2

This is to certify:

that the **Plastic Piping System, Thermoplastic**

with type designation(s)
Sanfix-P

issued to

Viega GmbH & Co. KG
Attendorn, Germany

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021
DNV class programme DNV-CP-0072 – Type approval – Thermoplastic piping systems
ISO 21003-2:2008 "Multilayer piping systems for hot and cold water installations inside buildings – Part 2: Pipes"
ISO 21003-5:2008 "Multilayer piping systems for hot and cold water installations inside buildings – Part 5: Fitness for purpose of the system"

Application:

Surface flame spread characteristics is confirmed by ASTM D635-06, class HB.

External pressure resistance up to 4bar.

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Issued at **Hamburg** on **2025-07-23**

This Certificate is valid until **2030-07-22**.

for **DNV**

DNV local unit: **Essen**

Approval Engineer: **Hagen Markus**

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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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

The Sanfix-P composite plastic piping system consists of:

Polyethylene multilayer pipes made of type PE-Xc/Al/PE-Xc and PE-RT/Al/PE-RT, brand name Sanfix Fosta

Press fittings of type Sanfix-P with Viega SC-Contour

Pressing machines and tools released by VIEGA

Reference: VIEGA "Sanfix-P Sortiment" and "Sanfix und Sanfix Fosta Gebrauchsanleitung"

Technical data

Pipes Sanfix Fosta

	PE-Xc/Al/PE-Xc				PE-RT/Al/PE-RT		
Nominal internal pressure bar	PN16					PN12.5	
Nominal diameter	DN12	DN15	DN20	DN25	DN32	DN40	DN50
Dimensions O.D. x Wall thickness (mm)	16x2.2	20x2.8	25x2.7	32x3.2	40x3.5	50x4.0	63x4.5

Nominal external pressure rating	up to 4.0 bar
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Temperature range according to ISO 21003 and DNV CP-072	0°C up to 80°C
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Press fittings

Materials

Body	Red brass, CUSn5Zn5Pb2-C
O-Ring	
SC-contour	Stainless steel

Types

Couplings, T-pieces, Bends, Adapters/-bends and connecting fittings (press fitting - screwed connection), Socket plugs, Caps.

Reference: VIEGA "Sanfix-P Sortiment" and "Sanfix und Sanfix Fosta Gebrauchsanleitung"

Permissible service pressure and temperature limits

According to standard ISO 21003 series – Multilayer piping systems for hot and cold-water installations inside buildings.

Classes	Class 1	Class 2	Class 4	Class 5
Service pressure	10bar	10bar	10bar	10bar
Max. service temperature	60°C	70°C	60°C	80°C
Applications				
Class 1	Hot water supply			
Class 2				
Class 4	Underfloor heating and low temperature radiators			
Class 5	High temperature radiators			

Application/Limitation

The Sanfix-P piping system is type approved for application in piping systems as listed in the table below. Reference DNV RU SHIP Rules Pt.4 Ch.6 Piping systems, Section 2 – 1.7 Plastic pipes “Table 2- Fire endurance requirements matrix”.

Approved installation locations where “0” is specified, appropriate footnotes are to be observed.

Not approved for installation locations where “NA” or “X” is indicated and not approved for installation in gas hazardous areas.

Reference heading to table 2	Item	Piping system
Freshwater	22	Non-essential systems: - Potable water generating and treatment systems - Potable hot and cold water, wash water systems (internal) - Cooling and heating system of air condition systems
Sanitary and drains and scuppers	24	Sanitary drains (internal): - Condensate from air conditioning systems
Miscellaneous	29	Service air (non-essential)

Extent of Type Tests applicable to piping system dependent on application

Fire endurance Level

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

Flame spread

Surface flame spread characteristics is confirmed by ASTM D635-06, class HB.

Smoke and toxicity

The Sanfix-P piping system is not tested with respect to smoke and toxicity characteristics.

Electrical conductivity

Not applicable.

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.

Installation

For installation of the piping system the instructions and list of released pressing tools specified in the VIEGA “Sanfix und Sanfix Fosta Gebrauchsanleitung” are to be observed.

In addition, the installation requirements specific to the ship as specified by the shipyard as well as DNV RU-SHIP Rules Pt.4 Ch.6, Section 10 – 4 Joining of plastic pipes.

Bulkhead and Deck Penetration

Pipe penetration through watertight bulkheads or decks as well as through fire divisions shall be type approved unless the penetration 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 RU-SHIP Rules Pt.4 Ch.6 Section 3 – 1.4 Fittings on watertight bulkheads.

Passenger vessels – SOLAS Ch. II-1 – Reg. 13.2.3

On passenger vessels, where the watertight bulkhead is also a fire division, pipe penetration design shall comply to MSC.429(98), Section Reg. 13.2.3 are to be observed.

Reference DNV CP-0165, Section 2 - 5 Watertightness and gas tightness - particular cases

Type Approval documentation

Tests carried out

- Internal pressure test short term
- Resistance to internal pressure at elevated temperatures acc. to ISO 22391-2 and ISO 15875-2
- External pressure test acc. to ASTM D 2924, Figure 1,
- Vicat softening temperature and Impact resistance
- Flame spread test acc. to ASTM D 635,
- Type tests acc. to ISO 21003-1, -2, -5.

Production Testing

According to "Viega Quality Plans" based on CEN ISO/TS 21003-7 "Guidance for the assessment of conformity".

Marking of product

Component	Scope	Example
Pipes (white colour)	- Manufacturer name and or trademark - Nominal outside diameter and wall thickness - Composition - Application class with design pressure - Manufacturer information	- Viega Sanfix-P - 16x2,2 - PE-Xc/Al/PE-Xc or PE-RT/Al/PE-RT - Class 1,2,4,5/10bar - batch + gt → Viega or BPD → Becker
Fittings	- Manufacturer name - Nominal outside diameter - Manufacturer information	- Viega - 16 - batch number

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNV-CP-0338, Section 4.

In addition, burst pressure testing on pipe spools made of different pipe/fitting sizes and fitting types to be carried out in the course of renewal of the certificate. The burst tests are to be witnessed by DNV surveyor.

Reference: DNV – CP 072 Thermoplastic piping systems

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

Manufactured by:

Pipes

Viega GmbH & Co. KG, D-94559 Niederwinkling- Germany Pipes O.D.: 16, 20, 25, 32, 40mm
Becker Plastics GmbH, Am Bahnhof 3, D-45711 Datteln, Germany Pipes O.D.: 50, 63mm

Fittings

Viega GmbH & Co. KG, D-57439 Ennest - Attendorn, Germany
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Responsibility

Viega GmbH & Co. KG, Attendorn takes the responsibility that design and production are in compliance with the Rules, Standards and Regulations listed on page 1 of this certificate

End of certificate