

TYPE APPROVAL CERTIFICATECertificate No:
TAK00001W8
Revision No:
1**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 GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNV GL class programme DNVGL-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 :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2021-02-15**for **DNV GL**This Certificate is valid until **2025-06-28**.DNV GL local station: **Essen**Approval Engineer: **Hagen Markus****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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Job Id: **262.1-033246-2**
 Certificate No: **TAK00001W8**
 Revision No: **1**

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
 Press fittings of type Sanfix-P with Viega SC-Contur
 Pressing machines and tools released by VIEGA¹

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
Nominal external pressure rating	Up to 4.0 bar						
Dimensions D x Wall thickness (mm)	16x2.2	20x2.8	25x2.7	32x3.2	40x3.5	50x4.0	63x4.5
Temperature range according to ISO 21003	0°C up to 80°C						
Press fitting							
Materials	Red brass, CUSn5Zn5Pb2-C						
Types ¹	Couplings, T-pieces, Bends, Adapters/-bends and connecting fittings (press fitting - screwed connection), Socket plugs, Caps.						

Notes

¹ Refer to the VIEGA "Sanfix-P Sortiment" and "Sanfix-P 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			

Production places

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

Responsibility

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

Job Id: **262.1-033246-2**
Certificate No: **TAK00001W8**
Revision No: **1**

Application/Limitation

The Sanfix-P piping system is type approved for application in piping systems as listed in the table below. Reference DNV GL Rules Pt.4 Ch.6, Section 2 – 1.7 Plastic pipes “Table 1- 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 area.

Reference heading to Table 1	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-P Gebrauchsanleitung” are to be observed.

In addition the installation requirements specific to the ship as specified by the ship yard as well as DNVGL Rules Pt.4, Ch6, Section 9.

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 GL Rules Pt.4, Ch.6 Section 3 – 1.4 Fittings on watertight bulkheads.

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

Job Id: **262.1-033246-2**
Certificate No: **TAK00001W8**
Revision No: **1**

Type Approval documentation

Actual TAK00000W8, Rev.1

Test reports

- Excel spread sheet "Test report overview", 2021-02-02
- Summarised test report issued by Kiwa, report 200300549-1, 2021-01-08
- Individual test reports issued by Kiwa, MPA NRW, SKZ Würzburg and IMA Dresden
- Dokument "Modification Viega Sanfix-P"
- ISO 9080 Long-term hydrostatic strength test reports for pipe and fitting materials

Miscellaneous documents

- DNVGL Assessment report, 2020-11-03

Previous TAK00000W8

- Type Approval documentation, DNV GL Ref.-No.: 11-027981
- Flame spread test report SKZ Würzburg 133703/18, 2018-12-18 Sanfix Fosta;
- Test report "External pressure" IMA Dresden V142/18.1A, 2018-04-23
- Test report acc. to ISO 21003: IMA Dresden V171 – 18.3, 2019-02-25
- Test report "Thermal stability under internal pressure" acc. to ISO15876-2/
(proof of Vicat softening temp.) IMA Dresden V142/18.1A, Point 4.1.6, 2018-04-23
- Test report „Internal Pressure Short Term“ MPA-Test Report 122000139, 05-06-2020
- Test report „Impact Resistance Test“ MPA-Test Report 122000139, 05-06-2020
- Test report „Internal Pressure Long Term“ IMA Dresden V142/18.1A, point 4.1.5, 2018-04-23
- VIEGA "Sanfix-P Gebrauchsanleitung"
- VIEGA "Sanfix-P Sortiment"
- DNV GL Assessment reports of audits carried out at "Ennest" dated 2020-05-04
and "Niederwinkling" dated 2020-05-19

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)	<ul style="list-style-type: none">- Manufacturer name and or trademark- Nominal outside diameter and wall thickness- Composition- Application class with design pressure- Manufacturer information	<ul style="list-style-type: none">- 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	<ul style="list-style-type: none">- Manufacturer name- Nominal outside diameter- Manufacturer information	<ul style="list-style-type: none">- Viega- 16- batch number

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Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNVGL-CP-0338, Sec.4.

End of certificate