



# Type Approval Certificate

[ Thermoplastic Pipes, Fittings & Valves ]

**Initial Approval** 19 April 2017  
**Manufacturer** FIP - Formatura Iniezione Polimeri S.p.A.  
 Localita Pian di Parata, 16015 Casella, Genova, Italia  
**Product Description** TemperFIP100® PVC-C Pipes, Fittings and Valves.  
 " See Appendix 1 "



**Approval Condition** " See Appendix 1 "

**THIS IS TO CERTIFY** that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.

Pt 5, Annex 5-6 of the Rules for the Classification of Steel Ships, ISO 9393-2, ISO 15493 and Ch 3, Sec 16 of Guidance for Approval of Manufacturing Process and Type Approval, Etc.

This Certificate is valid until 18 April 2027

Issued at Busan, Korea on 26 July 2022



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No(ME22021644570) and certificate No.(MIL36563-GP001).



**KOREAN REGISTER**

*General Manager of  
Marine & Ocean Equipment Team*

- Note :**
1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
  2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
  3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
  4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

## Product Description and/or Approval Condition

Date of Issue : 26 July 2022

### A. Product Description

#### 1. Product Specification

- 1) Type: TemperFIP100® PVC-C Pipes, Fittings and Valves
- 2) Raw Materials Specification
  - Fittings, valves, clamps saddles: PVC-C CORZAN™
  - Sealings depending on type: EPDM, FPM
- 3) Specification of Pipes, Fittings and Valves
  - (1) Pipes
    - TemperFIP100® PVC-C Pipes in accordance with DIN 8079/8080 and ISO 15493
    - PN16 Pipes (Series S6.3 SDR13.6)

DN [mm]	15	20	25	32	40	50	65	80	100	150
OD [mm]	20	25	32	40	50	63	75	90	110	160
MWT [mm]	1.5	1.9	2.4	3.0	3.7	4.7	5.6	6.7	8.2	11.8

- PN10 Pipes (Series S10 SDR21)

DN [mm]	100	150
OD [mm]	110	160
MWT [mm]	5.3	7.7

- (2) Fittings
  - TemperFIP100® PVC-C ISO UNI Fittings & ISO-BSP Fittings
  - Kind: elbows, tees, reducers, flanges, couplers, end caps, unions, stubs, transition fittings
  - Dimensions : DN10/d16 to DN150/d160 for PN10/16
- (3) Valves

Type	Designation	DN [mm]	Max. Working Press. [bar]
VXE PVC-C	Easyfit 2-way ball valve	10 - 100	16
VKD PVC-C	Dual block 2-way ball valve	10 - 100	16
TKD PVC-C	Dual block 3-way ball valve	10 - 50	16
FK PVC-C	Butterfly valve	40 - 300	16 - 8
SXE PVC-C	Easyfit check valve	10 - 100	16
VM PVC-C	Diaphragm valve	15 - 100	10
CM PVC-C	Compact diaphragm valve	12 - 15	6
RV PVC-C	Sediment strainer	15 - 50	16

Note : Nominal internal diameter and maximum working pressure shall be in accordance with manufacturer's specifications

- 4) Service Temperature Range (°C) : 0 - 80

#### 2. Approved Drawings and Documents

- 1) FIP Catalogue - PVC-C pipes, fittings and valves
  - PVC-C Pipes and Fittings TemperFIP100®
  - PVC-C Valves (Type: VKD, TKD, VXE, FK, VM, CM, RV, SXE)

#### 3. Test Reports, etc.

- 1) Type test report No. GEN-13-0105-1 dated 20 Aug. 2013.

### B. Approval Condition

#### 1. Application & Limitation

- 1) The Installation of Plastic Pipes is to be in accordance with the KR Rules and the Manufacturer's instruction.
- 2) The products are approved for Class III water piping system of non-essential services where fire endurance test is not required according to IMO Resolution A.753(18).
  - Hot and cold water systems, chilled and brine water systems, cooling systems (air condition), black and grey water systems, watertreatment fresh and waste water, osmosis systems and evaporation, fresh water bunker lines, etc.
- 3) The products are tested with respect to Low Flame Spread performance in accordance with ASTM D635 (accepted as an alternative to IMO Resolution A.653(16)).
- 4) The valves are not to be used as ship side valves.
- 5) Where Plastic pipes pass through watertight bulkheads or decks, the watertight integrity and strength integrity of the bulkhead or deck is to be maintained using Pipe Penetration method approved by the Society.

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Date of Issue : 26 July 2022

- 6) Not to be used for any installation within tanks or other locations which may be subject to a head of liquid on the outside of the pipe.
- 7) Not to be used to convey fluids with a conductivity of less than 1000 pico-siemens per meter, not for installation in hazardous areas (regardless of conveyed fluid).
- 8) Detailed drawings of piping system for each application on board ships are to be submitted for review.
- 9) At elevated temperatures higher than 20 °C, pressure reductions have to be considered.
- 10) In addition to this Type Approval, Type Approval for mechanical joint of ISO-UNI FITTINGS (BIC, EFC, F/BIC) & ISO-BSP FITTINGS (BIFC, BIFOC, BIROC, BIFXC, BIRXC, EFC, F/BIC) is required separately to use the products in accordance with Pt 5, Ch 6, Sec 104. 5 of the Rules for the Classification of Steel Ships.

### 2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual Product Certification is not required.

### 3. Marking

- 1) The products are to be permanently marked with the following items.
  - Manufacturer's name, Type of product
  - Mark to prove that the product is approved by the Society
  - Dimensions, Pressure rating, Temperature rating.

### 4. Others

- Nil

< End of Certificate >

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