

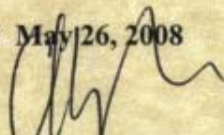
TYPE APPROVAL CERTIFICATE
No. MAC187203CS




This is to certify that the product identified below is in compliance with the applicable requirements of the RINA type approval system.

<i>Description</i>	Plastic pipes and fittings
<i>Type</i>	INSTAFLEX
<i>Applicant</i>	GEORG FISCHER +GF+ Management Unit Industrial Systems SH EBNATSTRASSE 111, POSTFACH CH-8201 SCHAFFHAUSEN SWITZERLAND
<i>Manufacturer</i>	GEORG FISCHER +GF+ Management Unit Industrial Systems
<i>Place of manufacture</i>	SH EBNATSTRASSE 111, POSTFACH CH-8201 SCHAFFHAUSEN SWITZERLAND
<i>Reference standards</i>	Part C, Chapter 1 Appendix 3 of RINA Rules

Issued in **Genoa** on **May 26, 2003**. This Certificate is valid until **May 26, 2008**



RINA



This certificate consists of this page and 1 enclosure

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INSTAFLEX

Reference documents

INSTAFLEX Technical Manual LITGF0472 (11/01)

INSTAFLEX product range 2002

Materials/Components

Pipes, Fittings and Valves: +GF+INSTAFLEX (Polybutylene PB)

Technical characteristics

Maximum allowable working pressure 10 bar at 20 °C and pipe dimensions in compliance with the following table:

External diameter	Wall Thickness (mm)
(mm)	NP10
16	2.2
20	2.8
25	2.3
32	2.9
40	3.7
50	4.6
63	5.8
75	6.8
90	8.2
110	10.0

For working temperatures higher than 20 °C the maximum working pressure must be reduced as per the Manufacturer's instructions.

Fields of application

Sanitary systems

Heating-cooling systems.

Potable water systems



Non essential systems listed in Table 1 of Part C, Chapter 1, Appendix 3 of RINA Rules.

Acceptance Conditions

Pipes are acceptable on open decks, within tanks, cofferdam, accommodation service and control spaces, pipe tunnels, ducts and further location where flame spread is required and area where fire endurance is not required in accordance with a. m. Table 1 of Appendix 3 of RINA Rules.

Test carried out

According to Para. 4.1.2 of Appendix 3 of RINA Rules, except fire endurance test, toxicity and smoke generation test. Flame spread test according to ASTM D635-91.

Remarks

The installation of the piping system is to be carried out in accordance with the instructions of the Manufacturer and of the RINA Rules as applicable.

Where pipes pass through "A" and "B" class divisions, arrangements are to be made to ensure that fire endurance is not impaired. These arrangements are to be tested in accordance with "Recommendations for Fire Test Procedures for "A" and "B" and "F" Bulkheads" (IMO Resolution A754(18) as amended).

When the piping pierces watertight bulkhead or decks, the watertight integrity of the bulkhead or deck is to be maintained. If the destruction by fire of plastic pipes may cause the inflow of liquid from tanks, a metallic shut-off valve operable from above the freeboard deck is to be fitted at the bulkhead or deck.

For systems connected to the hull requirements of (3.7.1) of above mentioned Appendix 3 are to be complied with.

Joining techniques are to be in accordance with Manufacturer's installation guidelines.

Pipes and fittings are to be permanently marked in compliance with (2.1.2) of above mentioned Appendix 3.

Before installation on board pipes and fittings are to be tested by the Manufacturer as per



para. 4.2 and after installation on board according to para. 4.3 of the same Appendix 3.
The installation on board ships built according to the "Rules for the construction and Classification of high speed crafts" of RINA is subject to the satisfactory outcome of tests foreseen by IMO Resolution A.753(18).

Genoa 26/05/2003

