

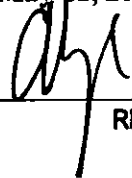
**TYPE APPROVAL CERTIFICATE**  
No. MAC155103CS/03



**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>	<b>Plastic pipes and fittings</b>
<i>Type</i>	<b>FUSIOTHERM-FASER COMPOSITE PIPE</b>
<i>Applicant</i>	<b>AQUATHERM GMBH - KUNSTSTOFF EXTRUSIONS-UND SPRITZGIEBTECHNIK BIGGEN 5 D- 57439 ATTENDORN GERMANY GERMANY</b>
<i>Manufacturer</i>	<b>AQUATHERM GMBH - KUNSTSTOFF EXTRUSIONS-UND SPRITZGIEBTECHNIK BIGGEN 5 D- 57439 ATTENDORN GERMANY GERMANY</b>
<i>Place of manufacture</i>	<b>BIGGEN 5 D- 57439 ATTENDORN GERMANY GERMANY</b>
<i>Reference standards</i>	<b>Part C, Chapter 1 Appendix 3 of RINA Rules</b>

*Issued in Genoa on May 12, 2003. This Certificate is valid until May 11, 2008*

  
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RINA



This certificate consists of this page and 1 enclosure

**TYPE APPROVAL CERTIFICATE**  
**No. MAC155103CS/03**  
**Enclosure - Page 1 of 2**  
**FUSIOTHERM-STABI-VERBUND**

**Reference documents**

Aquatherm catalogue D 18181 Stand 08/00

**Materials/Components**

Fusiole PP-R 80 and special fibre filling which is included as media layer in the pipe  
(PP-R 80/PP-R 80-GF/PP-R 80)

**Technical characteristics**

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

<b>External diameter</b>	<b>NP16</b>
<b>(mm)</b>	<b>Thickness (mm)</b>
20	2.8
25	3.5
32	4.4
40	5.5
50	6.9
63	8.6
75	10.3
90	12.3
110	15.1
125	17.1

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 and heating-cooling systems.

**Acceptance Conditions**

Pipes are acceptable on open decks, within tanks, cofferdam, pipe tunnels, ducts and further location where flame spread is required and area where fire endurance is not required in accordance with Table 1 of Part C, Chapter1, Appendix 3 of RINA Rules.



## 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 A753(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 bulkhead or deck is also a fire division and 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 12/05/2003

