

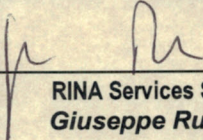


TYPE APPROVAL CERTIFICATE
No. **MAC244218XG**

This is to certify that the product identified below is in compliance with the regulations herewith specified.

<i>Description</i>	Plastic pipes, fittings and ball valves
<i>Type</i>	PP-R, PP-RCT & PP-RCT-GF
<i>Applicant</i>	BANNINGER KUNSTSTOFF - PRODUKTE GMBH BANNINGERSTRASSE, 1 35447 REISKIRCHEN GERMANY
<i>Manufacturer</i>	BANNINGER KUNSTSTOFF - PRODUKTE GMBH
<i>Place of manufacture</i>	BANNINGERSTRASSE 1 35447 REISKIRCHEN GERMANY
<i>Reference standards</i>	Part C, Chapter 1 Appendix 3 of RINA Rules

Issued in **Hamburg** on **February 18, 2019**. This Certificate is valid until **February 17, 2024**


RINA Services S.p.A.
Giuseppe Russo

This certificate consists of this page and 1 enclosure.



TYPE APPROVAL CERTIFICATE

No. MAC244218XG

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PP-R, PP-RCT & PP-RCT-GF

Reference documents:

Product Catalogue filed for information under RINA dwg no. HMMC-11882
Test Reports filed for information under RINA dwg. no. HMMC-12964

Technical characteristics:

Model PP-R (Polypropylene-Random-Copolymerisate):

Nominal Size: from 10 mm (pipe outer diameter 16 mm) to 40 mm (pipe outer diameter 63 mm)

Operating Pressure: 2,0 MPa at 20°C, 1,0 MPa at 70° C

Joining technology: socket-welding, electrofusion socket-welding, flange connection

Model PP-RCT (Polypropylene-Random-Copolymer Temperature resistant):

Nominal Size: from 15 mm (pipe outer diameter 20 mm) to 200 mm (pipe outer diameter 250 mm)

Operating Pressure: 2,0 MPa at 20°C, 1,0 MPa at 70° C

Joining technology: socket-welding, butt-welding, electrofusion socket-welding, flange connection.

Fields of application:

This product is intended to be used for hot and cold fresh water piping systems being installed on ships and other units classed by the RINA.

Acceptance conditions:

This product is allowed to be applied on open decks, within tanks, cofferdams, pipe tunnels, ducts and further locations where fire endurance is not required as per RINA Rules Pt C, Ch 1, App 3 Art 2.3.1 Table 1.

This product has been satisfactory tested in view of a low surface flame spread characteristic as per ASTM D635 standard. Such testing may not be acceptable by some ship registry administrations. Therefore, this product is to be tested as per IMO Res. A.653(16) with regard to the modifications due to the curvilinear pipe surfaces as listed in Appendix 3 of Res. A.753(18).

This product passing through hazardous areas is to be electrically conductive as per RINA Rules Pt C, Ch 1, App 3, Art 2.3.3.

This product is to be subjected to the satisfactory workshop tests as per RINA Rules Pt C, Ch 1, App 3, Art 4.2 and tests after installation on board as per RINA Rules Pt C, Ch 1, App 3, Art 4.3.

Remarks:

The arrangement on board is to be made in accordance with the instructions of the Manufacturer and as per the RINA Rules Pt C, Ch 1, App 3, Art 3.

The marking of this product is to be made as per the RINA Rules Pt C, Ch 1, App 3, Art 2.1.2.

This Certificate has replaced the Type Approval Certificate no. MAC470910CS.

Hamburg February 18, 2019



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