



CERTIFICATE NUMBER 22-2232598-1-EUMR-TA
EFFECTIVE DATE 13-FEB-2023
EXPIRATION DATE 20-MAR-2027
ABS TECHNICAL OFFICE Singapore Engineering Services

CERTIFICATE OF

European Union Recognised Organisation (EU RO) Mutual Recognition Type Approval

(in accordance with Article 10.1 of EU Regulation 391/2009)

This is to certify that a representative of this Bureau did, at the request of

GF HAKAN PLASTIK BORU VE PROFIL SANAYI TICARET A.S.

who maintains a plan at

**GF HAKAN PLASTIK, CERKEZKOY ORGANIZE SANAYI BOLGESI,
GAZIOSMANPASA MAHALLESİ, CADDE, NO 11-13, CERKEZKOY, TURKEY-
59500**

after evaluation of design and prototype data for the below listed product and model

Product Thermoplastic Pipe, Fittings and Joints

Model +GF+ Aquasystem PP-R

as per EU RO Design Evaluation Certificate no. 22-2232598-1-EUMR-DE dated 13 February 2023, has been inspected for the Manufacturer, pursuant to the relevant requirements of the ABS Rules & Guides and the European Union Recognised Organisation Mutual Recognition procedure, required by Article 10.1 of EU Regulation 391/2009, and has been found in accordance with those requirements.

The manufacturer presented a sample or specimen of the product, representative of the “type” approved, for the purpose of verifying that the “type” has been manufactured in conformance with the aforementioned Design Evaluation Certificate.

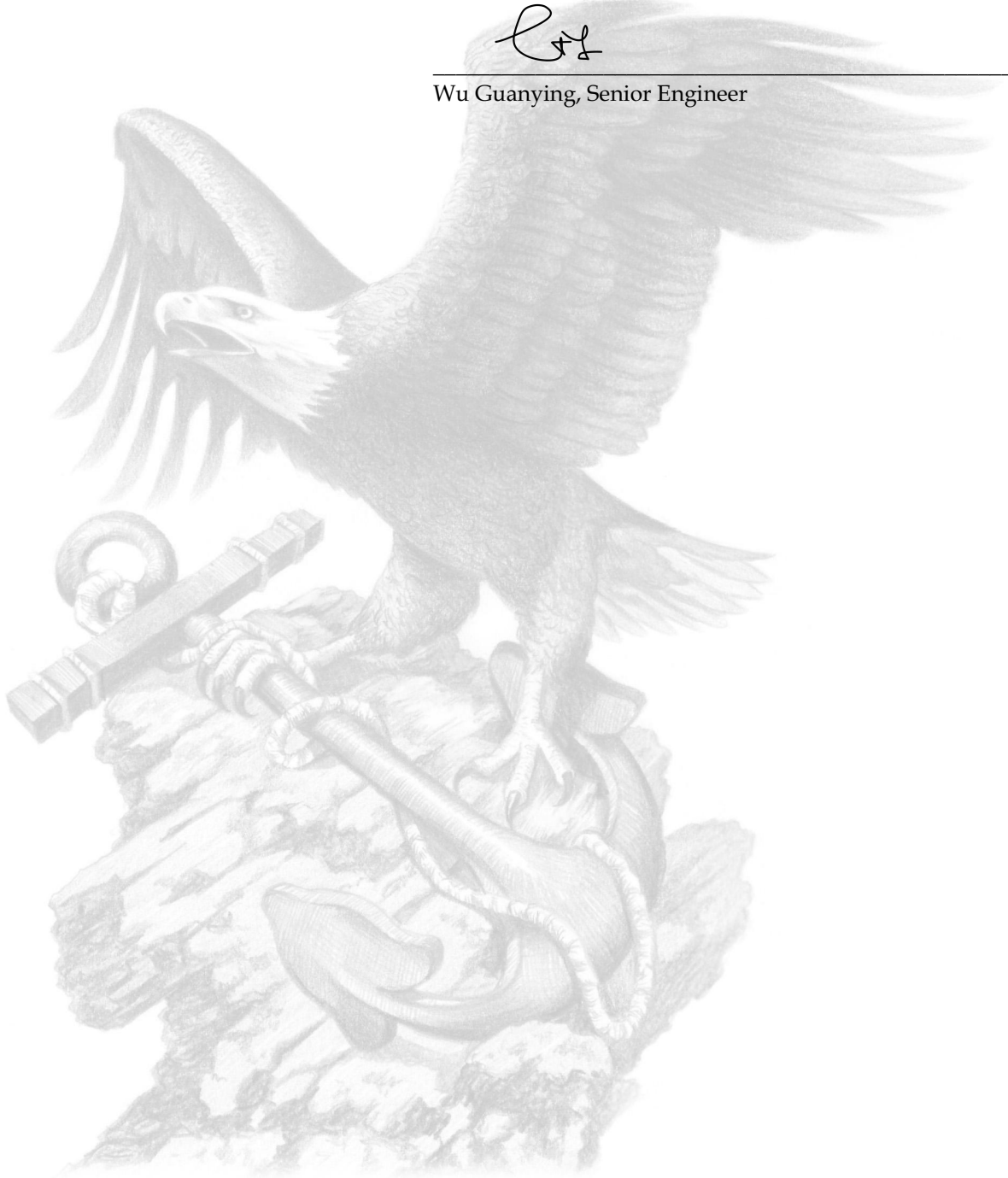
This certificate is an evaluation of the design and manufacture alone and is neither an approval nor a rejection of the product described above. Unless cancelled, expired or revoked, this certificate remains valid subject to annual audits. Consult the ABS Type Approval website to confirm the continued validity of this certificate and the status of the particular products being manufactured.

NOTE: This certificate evidences compliance with one or more of the ABS Rules and the EU Regulations 391/2009. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product or manufacturing process without approval from ABS will result in this certificate becoming null and void. This certificate is governed by the terms and conditions as contained in ABS Rules and Conditions of the request for EU Product Type Approval and Agreement.



American Bureau of Shipping

Wu Guanying, Senior Engineer



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Product	Thermoplastic Pipe, Fittings and Joints
Model	+GF+ Aquasystem PP-R
Intended Service	Class III piping system applications in accordance to Section 1.c (a) of EU RO MR Technical Requirements for Plastic Piping Systems (Components)
Description	Polypropylene pipes and fittings for hot and cold water installations.
Ratings	Outside diameter (mm): 20, 25, 32, 40, 50, 63, 75, 90, 110, 125, 140, 160, 200 Internal pressure: PN10, PN16 and PN 20 External pressure: 2.1 bar (PN10), 3.2bar(PN16) and 3.9bar(PN20) Operating temperature: 5degC to 70degC Joint type: Socket, Threaded Instantaneous temperature not to exceed 95°C.
Restrictions	<ol style="list-style-type: none">1. Each length of pipe is to be tested to a hydrostatic pressure not less than 1.5 times of design pressure.2. Product is not tested for fire endurance. Installation is to be limited to locations where fire endurance testing is not required.3. Surface flame spread testing in accordance with ASTM D635 is considered.4. Plastic pipes and fittings are to be permanently marked with identification in accordance with Section 4 of EU RO MR Technical Requirements for Plastic Piping Systems (Components).5. The installation is to be in accordance with the manufacturer's guidelines.6. The materials of construction are to be suitable for the intended service and consistent with the manufacturer's recommendations.7. This PDA covers only PP-R (also known as type 3) material as defined in section 5.1 EN ISO 15874-1:2013. Drawing titles and notes in drawing may refer other materials.8. The scope of Type Approval is to comply with MSC.1/Circ.1221 dated 11 December 2006.
Notes and Documentation	<p><u>Drawings:</u></p> <p>Drawing No. Pipe: PP-RC, PP-RC Clean Water Pipes, Revision: 03, Pages: 1 Drawing No. Pipe: PP-RC-UV, PP-RC UV Pipes, Revision: 02, Pages: 1 Drawing No. Pipe: PP-RCT, PP-RCT Clean Water Pipes, Revision: 12, Pages: 1 Drawing No. Pipe: PP-RC-Fiberglass, PP-RC Fiberglass Pipes, Revision: 05, Pages: 1 Drawing No. Pipe: PP-R-Al Perf., PP-R Perf. Al Foil Pipes, Revision: 01, Pages: 1 Drawing No. Pipe: PP-R-Al Ext., PP-R Ext. Al Foil Pipes, Revision: 01, Pages: 1 Drawing No. Pipe: PP-RC-Al+, PP-RC Alu Plus Pipes, Revision: 01, Pages: 1 Drawing No. Fitting: PP-R Ela, PP-R Elbows, Revision: 01, Pages: 1 Drawing No. Fitting: PP-R Elb, PP-R Elbows, Revision: -, Pages: 18 Drawing No. Fitting: PP-R Red.Elb, PP-R Reduction Elbow - Tailed Elbow, Revision: -, Pages: 4 Drawing No. Fitting: PP-R Thr.Elb, PP-R Threaded Elbow, Revision: -, Pages: 12 Drawing No. Fitting: PP-R Tee, PP-R Tee, Revision: -, Pages: 10 Drawing No. Fitting: PP-R Thr.Tee, PP-R Threaded Tee, Revision: -, Pages: 7 Drawing No. Fitting: PP-R Red.Tee, PP-R Reduction Tee, Revision: -, Pages: 20 Drawing No. Fitting: PP-R Cap, PP-R Cap/Closing Head, Revision: -, Pages: 9 Drawing No. Fitting: PP-R Curve, PP-R Curve, Revision: -, Pages: 5 Drawing No. Fitting: PP-R Sleeve, PP-R Curve, Revision: -, Pages: 10 Drawing No. Fitting: PP-R Nipple, PP-R Nipple, Revision: -, Pages: 23 Drawing No. Fitting: PP-R Union, PP-R Union, Revision: -, Pages: 6 Drawing No. Fitting: PP-R Red., PP-R Reducer, Revision: -, Pages: 23 Drawing No. Fitting: PP-R Plug, PP-R Plug, Revision: -, Pages: 2 Drawing No. Fitting: PP-R Socket, PP-R Socket, Revision: 01, Pages: 1 Drawing No. Fitting: PP-R BC, PP-R Battery Connection, Revision: -, Pages: 3</p>

Drawing No. PP-R Clamp, PP-R Clamp, Revision: -, Pages: 5

Drawing No. PP-R Valve, PP-R Valve, Revision: -, Pages: 5

Test Reports:

GF Hakan Test Report-Pipe, Mass flow rate, short/long term pressure and impact resistance dated 24-Jun-2020, Revision: -, Pages: 1

GF Hakan Test Report-Fitting, Mass flow rate and short/long term pressure dated 23-Jun-2020, Revision: -, Pages: 1

GF Hakan Test Report-Red.Tee1, Long term pressure dated 20-Apr-2021, Revision: -, Pages: 1

GF Hakan Test Report-Red.Tee2, Short term pressure dated 13-Apr-2021, Revision: -, Pages: 1

GF Hakan Test Report-Valve, Pressure Test dated 02-Feb-2022, Revision: -, Pages: 1

CEIS Report No. PLA-0107/19-1, Axial strength, internal pressure, impact resistance and opacity, Revision: -, Pages: 18

Exova Test Report No 2017-1536, Flame spread test ASTM D635 dated 30-May-2017, Revision: -, Pages: 5

TSE Report No. AB-0001-T/491590/10-19, ISO 15874-3 tests dated 01-Aug-2019, Revision: -, Pages 2

TSE Report No. AB-0001-T/618808/07-21, Smoke and toxicity test dated 05-July-2021, Revision: -, Pages 4

SKZ Report No. RA4441.223483.22, Dimension, Long-term pressure and material properties dated 20-May-2022, Revision: -, Pages 6

Datasheets:

Drawing No. BU400-117-01, Heat distortion and electrical conductivity rating, Revision: -, Pages 1

Drawing No. UL94 HB vs ASTM D635, Flame Spread Test Gap Analysis, Revision: -, Pages: 2

Drawing No. AB-1344-T, Technical Catalogue, Revision: -, Pages: 52

Georg Fischer Letter of Conformity, ISO-75-1 Heat Deflection vs ISO 9080 Long-Term Hydrostatic Strength, Revision: -, Pages 5

Certificates:

Certificate No. 1-LE149, CEIS-ISO 17025 Certification, Revision: 69, Pages: 58

Certificate No. AB-0001-T, TSE-ISO 17025 Certification, Revision: -, Pages: 35

Certificate No. AB-1344-T, GF Hakan-ISO 17025 Certification, Revision: -, Pages: 3

Certificate No. D-PL-18354-01-00, Exova-ISO 17025 Certification, Revision: -, Pages: 16

Certificate No. D-PL-19033-01-02, SKZ - Testing GmbH-ISO 17025 Certification, Revision: -, Pages: 2

Rules and Standards

EU Mutual Recognition Technical Requirements for Plastic Piping Systems (Components)
Version 0.3 dated 01 April 2016