TYPE APPROVAL CERTIFICATE
No. **MAC036323CS**

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

Description	**Non metallic flexible hoses**
Type	**ALFAGOMMA Alfabiotech Evolution xK** **DUNLOP Hiflex Powerflexbio Extra xK** **E4K EVOLUTION** **E5K EVOLUTION** **E5KP EVOLUTION PLUS** **E6K EVOLUTION**
Applicant	**ALFAGOMMA HYDRAULIC SPA** **VIA ENRICO MATTEI 6** **64020 CASTELNUOVO VOMANO (TE)** **ITALY**
Manufacturer *Place of manufacture*	**ALFAGOMMA HYDRAULIC SPA** **VIA ENRICO MATTEI 6** **64020 CASTELNUOVO VOMANO (TE)** **ITALY**
Reference standards	**Part C, Ch 1, Section 10 of RINA Rules for the Classification of Ships and RINA Rules for the Type Approval of Flexible Hoses and Expansion Joints**

Issued in **Genova** on **July 12, 2023**. *This Certificate is valid until* **July 11, 2028**

RINA Services S.p.A.
Rosario Pitruzzo

This certificate consists of this page and 1 enclosure

RINA Services S.p.A.
Via Corsica, 12 - 16128 Genova
Tel.+39 010 53851

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ALFAGOMMA Alfabiotech Evolution xK
DUNLOP Hiflex Powerflexbio Extra xK

Reference documents

Technical drawings and test approved and filed with letter PPVT/2023/434/CRLVA

Technical characteristics

Temperatures range: -40 °C / +120 °C

Materials/Components As per document PPVT-40683

Fields of application

Hydraulic systems with hydraulic fluid having a flash point higher than 150 °C (closed cup test)
Pneumatic systems
Compressed air systems
Fresh water systems
Sea water
Sanitary systems

Tests carried out

As per document PPVT -40686 filed with letter PPVT/2023/434/CRLVA

Places of manufacture:

Hose:
Alfagomma Hydraulic – via E. Mattei,6 – 64020 Castelnuovo Vomano (TE)
Alfagomma Hydraulic - Area Industriale Piano Lago – 87050 Figline Vegliaturo (CS)
Alfagomma MALAYSIA Sdn Bhd - PLO 344, Jalan PERAK 4 - 81700 PASIR GUDANG JOHOR MALAYSIA

Coupling:
Alfagomma Hydraulic - Area Industriale Piano Lago – 87050 Mangone (CS)
Alfagomma (NINGBO) co Ltd - Zhejiang315311 - CHINA

Acceptance conditions

Flexible hoses are only to be used in short lengths where it is necessary due to vibrations or flexible
mounting of the machinery. The hoses shall not replace/be used where permanent piping is
possible/required.
The hose assemblies must only be fitted in places where they are always accessible. Flexible hoses of
these types are not to be used on boiler fronts.
Hose assemblies covered by this certificate shall not be used in system subject to pressure below
atmospheric or vacuum condition.
The cover of hoses for gaseous applications shall be pin-pricked.
This Type Approval Certificate is valid for hoses connected to the machinery/system with flange and/or threaded connection (in accordance with limitation in Pt. C, Ch. 1, Sec. 10, Tab. 15 of RINARules) only. Other fitting defined as mechanical joints (Rina Rules Pt. C, Ch. 1, Sec. 10, Para. 2.4.5 Fig. 2), could be accepted upon satisfactory result of prototype tests performed on hose/fitting assemblies.
All hose assemblies delivered under the RINA type approval scheme shall be subject to a pressure test
at 1.5 times the maximum working pressure and shall be delivered with the pressure test report with
reference to this type approval certificate.
Validity of this Certificate is subject to positive outcome of periodical Audit as per Rules for Testing and Certification of Marine Materials and Equipment

Genova July 12, 2023