中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
GB26PTB00026

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

Dunlop Hiflex AB

地址/Address

Seldonsvagen 2, Halmstad

产品名称/Product

挠性软管组件
Flexible hose assembly

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 中国船级社《钢质海船入级规范》第3篇第2章
Chapter 2, Part Three of China Classification Society Rules for Classification of Sea-Going Steel Ships

用于/Intended for

船舶/Ships

证书有效期至/This Certificate is valid until **2031年09月07日/ Sep. 07,2031**

发证机构 Issued by 中国船级社哥德堡办事处 CSC Gothenburg Office

签发日期 Date 2026年06月18日 Jun. 18,2026

本证书根据中国船级社规范和相关规定签发。所有证书页为一个整体，必须同时使用。纸质证书每页均须由本社盖章方为有效，电子证书含数字签名方为有效，本证书复印件无效。任何单位和个人均不应摘录或节选本证书的部分内容。有关方对所持证书的真实性有疑问时，可以向我社检验机构咨询。**本证书凡是未注明版本的规范，其（发证时）最新版本适用于本证书。**
This Certificate is issued pursuant to the Rules of the Society and related regulation. All pages of the certificate are taken as a whole and are used simultaneously. No paper certificate page is valid without bearing the stamp of the Society, no electronic certificates is valid without the digital signature, and no copied form of the certificate is regarded as valid. Any part of the certificate is not to be extracted or abridged by any unit or individual in any form. Related parties who are doubted about the authenticity of the certificate may inquire of the Society or its offices. **For Rules with no version indication, their latest version (at the time of issuance of the certificate) applies to the certificate.**

产品明细/Product Description

挠性软管组件/Flexible Pipe Set(M0001)

名称/Name	属性（值）/Value	单位/Unit
型号/Type	详见附页|Refer to the additional pages	
规格/Specification	详见附页|Refer to the additional pages	
公称直径/Nominal Diameter	详见附页|Refer to the additional pages	
设计压力/Design Pressure	详见附页|Refer to the additional pages	
工作温度/Working Temperature	详见附页|Refer to the additional pages	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No.: NP18A02946, NP18A03735, NP24PPP01674

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No.： 525/527/528/530/531.0ISO110/04
试验报告日期/ Test Report Date： 2004-06-18
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 156/158/159.0ISO110/05
试验报告日期/ Test Report Date： 2005-02-16
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 216/218/222.0ISO110/05
试验报告日期/ Test Report Date： 2005-03-07
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 270/271/274/276/277.0ISO110/05
试验报告日期/ Test Report Date： 2005-03-08
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 436/2010
试验报告日期/ Test Report Date： 2010-02-15
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A
试验单位地址/ Test Address: Castelnuovo Vomano(TE),Italy

试验报告编号/ Test Report No.： 1666/1667/1668/1669/1670/1671.0ISO110/10
试验报告日期/ Test Report Date： 2010-11-26
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 33/34/35/36/37/38/2010
试验报告日期/ Test Report Date： 2010-12-16
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A
试验单位地址/ Test Address: Castelnuovo Vomano(TE),Italy

试验报告编号/ Test Report No.： 191/10，192/10，427～435/2010，437～444/2010
试验报告日期/ Test Report Date： 2010-11-15
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A
试验单位地址/ Test Address: Castelnuovo Vomano(TE),Italy

试验报告编号/ Test Report No.： 206/13, 083/13, 053/14, 068/16, 138/15, 186/12,
试验报告日期/ Test Report Date： 2013-11-08
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A
试验单位地址/ Test Address: Castelnuovo Vomano(TE),Italy

试验报告编号/ Test Report No.： 169/15, 257/14, 217/15A, 071/13
试验报告日期/ Test Report Date： 2013-11-19
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A

试验单位地址/ Test Address: Castelnuovo Vomano(TE), Italy

试验报告编号/ Test Report No.： 001/2014，002/2014，003/2014
试验报告日期/ Test Report Date： 2014-08-01
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A
试验单位地址/ Test Address: Castelnuovo Vomano(TE), Italy

试验报告编号/ Test Report No.： 1964/16/AC
试验报告日期/ Test Report Date： 2016-12-12
试验单位/ Laboratory: Lapi laboratorio prevenzione incendi spa
试验单位地址/ Test Address:

试验报告编号/ Test Report No.： 008/2024, 009/2024, 010/2024, 015/2024, 016/2024
试验报告日期/ Test Report Date： 2024-02-01
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A
试验单位地址/ Test Address: Castelnuovo Vomano(TE),Italy

试验报告编号/ Test Report No.： 079/2021-087/2021
试验报告日期/ Test Report Date： 2021-10-27
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A
试验单位地址/ Test Address: Castelnuovo Vomano(TE),Italy

试验报告编号/ Test Report No.： 087/2023-121/2023
试验报告日期/ Test Report Date： 2023-09-20
试验单位/ Laboratory: Alfagomma Hydraulic S.p.A
试验单位地址/ Test Address: Castelnuovo Vomano(TE),Italy

试验报告编号/ Test Report No.： 2204.0IS0110/23
试验报告日期/ Test Report Date： 2024-01-16
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 1621.0IS0110/22, 096.0IS0110/22, 097.0IS0110/22, 098.0IS0110/22, 099.0IS0110/22, 100.0IS0110/22, 101.0IS0110/22, 104.0IS0110/22, 106.0IS0110/22
试验报告日期/ Test Report Date： 2022-03-14
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 614.0IS0110/22, 616.0IS0110/22, 617.0IS0110/22, 618.0IS0110/22, 620.0IS0110/22, 621.0IS0110/22,
试验报告日期/ Test Report Date： 2022-04-21
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 1622.0IS0110/22
试验报告日期/ Test Report Date： 2022-09-28
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 619.0IS0110/22
试验报告日期/ Test Report Date： 2022-05-04
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

试验报告编号/ Test Report No.： 1823.0IS0110/22, 1824.0IS0110/22
试验报告日期/ Test Report Date： 2022-11-17
试验单位/ Laboratory: LAPI
试验单位地址/ Test Address: I-59100 Prato,Italy

认可后的产品检验方式/ Method of Product Inspection after Approval

按规范认可后应进行产品检验的产品/The product should be inspected in term of the rules：
认可后的产品检验应由本社验船师根据本社规范规定按批准的产品检验计划进行检验，经检验合格后由本社颁发船用产品证书。
After approval, product inspection should be carried out by the Surveyor of the Society in accordance with the approved product inspection scheme, and the Marine Product Certificate will be issued by the Society upon satisfactory inspection.

认可保持条件/ Maintenance Requirements of Approval

1.型式认可后，如果产品及其重要零部件的设计、所用材料或制造方法有所改变，且影响到产品的主要特性、特征；或产品的性能指标有所更改，且超过认可的范围，则有关图纸和文件应经检验机构审批。并在检验机构认为必要时，经本社检验人员见证有关试验和进行检查，其结果应能证实仍符合认可条件。
After type approval, if there are changes to the design, materials used or manufacturing method of the product and important components and such changes affect major characteristics and properties of the product, or property indexes of the product are changed and exceed the scope of approval, related drawings and documents are to be examined and approved by the concerned survey office. Where deemed necessary by the survey office, the surveyor to the Society will go to witness relevant tests and conduct inspection and the results should be able to demonstrate compliance with the approval conditions.
2.工厂的质量管理体系应保持有效运行，并且与认可时一致。如果质量管理体系发生改变，应经原体系认证机构审核并报本社批准。
The quality management system of the factory shall be ensure effective operation, and shall be the same as the situation of approval. If there are any changes to the quality management system, auditing of the original certification organization for quality management system and the society's approval shall be obtained.
3.认可证书有效期内，如果出现可能导致本社取消认可的情况，工厂应及时采取有效的纠正措施。
Within the validity of the approval certificate, if cases occur that may cause the Society to withdraw the approval, the manufacturer should take corrective actions in a prompt and effective manner.
4.在认可证书有效期内，本社检验人员可在未经事先通知的情况下对工厂的产品制造过程进行审核，以验证产品的生产是否符合业经本社批准的图纸和文件。工厂应予以配合。
Within the validity of the approval certificate, the surveyor to the Society may pay unannounced audit to the manufacturing process of the product in order to confirm whether it is in compliance with the drawings and documents approved by the Society. The factory should provide an active cooperation and necessary for the surveyor.

备注/Remarks

1. 本社已审核了产品厂无石棉声明，但本社的审核不免除产品厂按照合同关系向订货方保证产品无石棉的责任。
The declaration of asbestos-free submitted by manufacturer has been reviewed by the Society. However, liability of the manufacturer to guarantee the products are asbestos-free to purchaser under contract will not be exempted.

2. 本证书由原型式认可证书（No. GB24PTB00035）变更并换新。
This certificate is modified and renewed from the previous Type Approval Certificate No. GB24PTB00035.

3. Limitation
1) 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.
2) The hoses are to be mounted in accordance with the manufacturer's instructions.
3) 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.
4) Hose assemblies covered by this certificate shall not be used in system subject to pressure below atmospheric or vacuum condition.
5) The cover of hoses for gaseous applications shall be pin-pricked.
6) The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:
- Flanged ends shall be according to a recognized standard
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in Section 5 [2.5.1.2], Chapter 2, Part Three of CCS Rules for Classification of Sea-Going Steel Ships to be followed.
- If these outer ends are going to be part of a mechanical joint as covered by Table 2.5.3.1, Section 5, Chapter 2, Part Three of CCS Rules for Classification of Sea-Going Steel Ships, then they shall be separately type approved.

中国船级社哥德堡办事处
CCS Gothenburg Office

注：本证书含有附页，共4页
Note: The certificate is attached with additional 4 page(s)

1. Type Designation: Dunlop Hiflex SP33 Series (TUFLEX)

Application	Hyd. Systems with petroleum or water/glycol based fluids, fuel, lubricating oils	
Tube	Oil resistant synthetic rubber	
Reinforcement	3 High tensile steel braids	
Cover	Weather, oil, abrasion and ozone resistant synthetic rubber	
Coupling	Material grade: 11sMnPb30 / H1100404. AISI 316 / H3100404.	
Working temp. range(℃)	Ambient: -40 ~ +80, Fluid: -40 ~ +100	
Drawings Approval No.	NP18A03735	
Nominal Diameter (mm), Design Pressure (bar), and Bend Radius (mm)		
DN (mm)	DP (bar)	Min. Bend Radius(mm)
10	500	120
12	470	160
16	410	210
20	375	260
25	327	310
32	240	410

2. Type Designation:

1) Dunlop Hiflex DH122 Series,

2) Dunlop Hiflex Greenline Plus 122 Series (HITUFF) / Alfagomma Flexor 1SN/1AT HF(MINETUFF)

Application	High pressure hydraulic lines, fuel oil, antifreeze solutions, air and water. The sizes from 1/4 ~3/4 inches maybe used as connection between valves and manifolds on high pressure CO_2 systems.	
Tube	Oil resistant synthetic rubber	
Reinforcement	1 High tensile steel braid (1B)	
Cover	Abrasion, ozone and hydrocarbon resistant synthetic rubber	
Coupling	Material grade: 11sMnPb30 / H1200AD1. AISI 316 / H3200AD1 (1" AD2).	
Working temp. range(℃)	Ambient: -40 ~ +80, Fluid: -40 ~ +100 (Tmax air = +70)	
Drawings Approval No.	NP18A03735	
Nominal Diameter (mm), Design Pressure (bar), and Bend Radius (mm)		
DN (mm)	DP (bar)	Min. Bend Radius(mm)
5	250	90
6	225	100
8	215	115
10	180	130
12	160	180
16	130	200
20	105	240
25	88	300
32	63	420
38	50	500
51	40	630
63	50	760
76	35	900

3. Type Designation:

1) Dunlop Hiflex DH222 Series,

2) Dunlop Hiflex Greenline Plus 222 Series (HITUFF) / Alfagomma Flexor 2SN/2AT HF(MINETUFF)

Application	High pressure hydraulic lines, fuel oil, antifreeze solutions, air and water	
Tube	Oil resistant synthetic rubber	
Reinforcement	2 High tensile steel braids (2B)	
Cover	Abrasion, ozone and hydrocarbon resistant synthetic rubber	
Coupling	Material grade: 11sMnPb30 / H1200AD2. AISI 316 / H3200AD2.	
Working temp. range(℃)	Ambient: -40 ~ +80, Fluid: -40 ~ +100 (Tmax air = +70)	
Drawings Approval No.	NP18A03735	
Nominal Diameter (mm), Design Pressure (bar), and Bend Radius (mm)		
DN (mm)	DP (bar)	Min. Bend Radius(mm)
5	420	90
6	400	100
8	350	115
10	330	125
12	275	175
16	250	200
20	215	240
25	165	300
32	125	420
38	90	500
51	80	630

4. Type Designation: Dunlop Hiflex DH241 Series, 241X / Alfagomma Flexopak 2 (SUPERTUFF) EN 857 2SC – SAE 100 R16

Application	High pressure hydraulic lines, fuel oil, antifreeze solutions, air and water	
Tube	Oil resistant synthetic rubber	
Reinforcement	2 High tensile steel braids (2B)	
Cover	Abrasion, ozone and hydrocarbon resistant synthetic rubber	
Coupling	Material grade: 11sMnPb30 / H1200AD1. AISI 316 / H3200AD1 (1" AD2).	
Working temp. range(℃)	Ambient: -40 ~ +80, Fluid: -40 ~ +100 (Tmax air = +70)	
Drawings Approval No.	NP18A03735	
Nominal Diameter (mm), Design Pressure (bar), and Bend Radius (mm)		
DN (mm)	DP (bar)	Min. Bend Radius(mm)
6	420	51
8	375	57
10	350	64
12	310	90
16	280	101
20	240	121
25	210	152
32	145	360
38	125	430
51	100	550
63	75	720
76	70	880

5. Type Designation:

ALFABIOTECH 4000 Evolution (Alfagomma branding**)/ POWERFLEXBIO 4000 EXTRA (**Dunlop branding**)**

Application	very high pressure hydraulic lines, fuel, oil, lubricants, antifreeze solution, air and water.	
Tube	Synthetic rubber resistant to oil and Biodegradable Hydraulic Fluids	
Reinforcement	Four high tensile steel spirals (4S)	
Cover	Abrasion, ozone, and hydrocarbon resistant synthetic rubber – MINETUFF and Supertuff cover	
Coupling	Material grade: 11sMnPb30/ H1100404, H14, H17. AISI 316/H3100404, H34, H37.	
Working temp. range(℃)	Ambient: -40 ~ +80 Fluid: -40 ~ +120	
Drawings Approval No.	NP24PPP01674	
Nominal Diameter (mm), Design Pressure (bar), and Bend Radius (mm)		
DN (mm)	DP (bar)	Min. Bend Radius(mm)
12	280	90
16	280	100
19	280	120
25	280	150
32	280	210
38	280	250
51	280	318

6. Type Designation:

ALFABIOTECH 5000 Evolution (Alfagomma branding**)/ POWERFLEXBIO 5000 EXTRA (**Dunlop branding**)**

Application	very high pressure hydraulic lines, fuel, oil, lubricants, antifreeze solution, air and water.	
Tube	Synthetic rubber resistant to oil and Biodegradable Hydraulic Fluids	
Reinforcement	Four High Tensile Steel Spirals(4S) up to DN32, Six Spirals(6S), over DN32	
Cover	Abrasion, ozone, and hydrocarbon resistant synthetic rubber – MINETUFF and Supertuff cover	
Coupling	Material grade: 11sMnPb30/ H1100404, H14, H17. AISI 316/H3100404, H34, H37.	
Working temp. range(℃)	Ambient: -40 ~ +80 Fluid: -40 ~ +120	
Drawings Approval No.	NP24PPP01674	
Nominal Diameter (mm), Design Pressure (bar), and Bend Radius (mm)		
DN (mm)	DP (bar)	Min. Bend Radius(mm)
19	350	120
25	350	150
32	350	210
38	350	250
51	350	318

7. Type Designation:

ALFABIOTECH 5000 Plus Evolution (Alfagomma branding**)/POWERFLEXBIO 5000 Plus EXTRA (**Dunlop branding**)**

Application	very high pressure hydraulic lines, fuel, oil, lubricants, antifreeze solution, air and water.	
Tube	Synthetic rubber resistant to oil and Biodegradable Hydraulic Fluids	
Reinforcement	Four High Tensile Steel Spirals(4S)	
Cover	Abrasion, ozone, and hydrocarbon resistant synthetic rubber – MINETUFF and Supertuff cover	
Coupling	Material grade: 11sMnPb30/ H1100404, H14, H17. AISI 316/H3100404, H34, H37.	
Working temp. range(℃)	Ambient: -40 ~ +80 Fluid: -40 ~ +120	
Drawings Approval No.	NP24PPP01674	
Nominal Diameter (mm), Design Pressure (bar), and Bend Radius (mm)		
DN (mm)	DP (bar)	Min. Bend Radius(mm)
19	380	120
25	380	150

8. Type Designation:

ALFABIOTECH 6000 Evolution (Alfagomma branding**)/ POWERFLEXBIO 6000 EXTRA (**Dunlop branding**)**

Application	very high pressure hydraulic lines, fuel, oil, lubricants, antifreeze solution, air and water.	
Tube	Synthetic rubber resistant to oil and Biodegradable Hydraulic Fluids	
Reinforcement	Four High Tensile Steel Spirals(4S) up to DN25, Six Spirals(6S), DN32 and above	
Cover	Abrasion, ozone, and hydrocarbon resistant synthetic rubber – MINETUFF and Supertuff cover	
Coupling	Material grade: 11sMnPb30/ H1100404, H14, H17, H1T. AISI 316/H3100404, H34, H37, H3T.	
Working temp. range(℃)	Ambient: -40 ~ +80 Fluid: -40 ~ +120	
Drawings Approval No.	NP24PPP01674	
Nominal Diameter (mm), Design Pressure (bar), and Bend Radius (mm)		
DN (mm)	DP (bar)	Min. Bend Radius(mm)
6	450	60
10	445	75
12	420	90
16	420	100
19	420	120
25	420	150
32	420	225
38	420	305
51	420	380

*All flexible hose assemblies are able to withstand not less than four times its design pressure without indication of failure or leakage during prototype burst testing.