



**TYPE APPROVAL CERTIFICATE**  
No. **MAC338322CS**

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

<i>Description</i>	<b>Non metallic flexible hoses</b>
<i>Type</i>	<b>ALFAGOMMA 2SN HF - 2SN Minetuff DUNLOP HIFLEX GREENLINE PLUS 222 / 2SN HI TUFF</b>
<i>Applicant</i>	<b>ALFAGOMMA HYDRAULIC SPA VIA ENRICO MATTEI 6 64020 CASTELNUOVO VOMANO (TE) ITALY</b>
<i>Manufacturer</i>	<b>ALFAGOMMA HYDRAULIC SPA</b>
<i>Place of manufacture</i>	<b>VIA ENRICO MATTEI 6 64020 CASTELNUOVO VOMANO (TE) ITALY</b>
<i>Reference standards</i>	<b>Part C, Chapter 1, Section 10 of RINA Rules</b>

*Issued in* **Genova** on **April 17, 2023**. *This Certificate is valid until* **April 13, 2028**

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**RINA Services S.p.A.**  
**Rosario Pitruzzo**

This certificate consists of this page and 1 enclosure

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**ALFAGOMMA 2SN HF - 2SN Minetuff**  
**DUNLOP HIFLEX GREENLINE PLUS 222 / 2SN HI TUFF**

**Reference documents**

Alfagomma data sheet edition 257 15/03/2010 (2 SN-HF).

Alfagomma data sheet edition 307 15/04/2015 (2SN MINETUFF).

Technical drawings and test approved and filed with letter PPVT/2022/760/CRLVA

Hose-Fitting Combination tab Filed with dwg PPVT-41146 filed with letter PPVT/2023/287/CRLVA

**Technical characteristics**

Temperatures range: -40 °C / +100 °C

Maximum working pressure according to the following table:

mm	inch	dash	Flexor 2SN-HF, 2SN-HF Minetuff; DUNLOP HIFLEX 2SN Greenline PLUS / Hi Tuff	
			Steel / Stainless Steel	CuNi -BzAl
6	1/4	4	400	40
8	5/16	5	350	40
10	3/8	6	330	40
12	1/2	8	275	40
16	5/8	10	250	40
19	3/4	12	215	40
25	1	16	165	40
32	1 1/4	20	125	40
38	1 1/2	24	90	40
51	2	32	80	40

**Materials/Components**

Inner Tube:	oil resistant synthetic nitrile rubber
Reinforcement:	two braids of high tensile steel wire
Cover:	chloroprene rubber, weather, oil and abrasion resistant
Ferrule:	Carbon steel (11SMnPb30 EN 10277-1-:2008); Stainless steel (X5CrNiMo17-12-2 AISI316 EN 10216-5/04).
Insert:	Carbon steel (11SMnPb30 EN 10277-1-:2008); Stainless steel (X5CrNiMo17-12-2 AISI316 EN 10216-5/04); CuNi 90/10 - 70/30; BzAl 11.

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**ALFAGOMMA 2SN HF - 2SN Minetuff**  
**DUNLOP HIFLEX GREENLINE PLUS 222 / 2SN HI TUFF**

**Fields of application**

Hydraulic systems with hydraulic fluid having a flash point higher than 150 °C (closed cup test)  
Pneumatic systems  
Compressed air systems  
CO2 Fire extinguishing systems  
Fresh water systems  
Sea water  
Sanitary systems

**Tests carried out**

Dimensional check, change in length, burst pressure, proof pressure , impulse test, oil resistance test, ozone resistance test, cold flexibility test, cover adhesion test, fire test.

■ Burst test and change in length test reports numbers 13/2015, 14/2015, 15/2015 & 16/2015 dated 2015-07-20 witnessed by DNV GL surveyor (2SN/1AT HF with AD2 couplings DN6, 12, 25 & 51)  
■ Burst test and change in length test reports numbers 05/2015, 06/2015, 07/2015 & 08/2015 dated 2015-07-20 witnessed by DNV GL surveyor (2SN MINETUFF with AD2 couplings DN6, 12, 25 & 51)  
■ Burst test reports (@-65°C) numbers 001/2014, 002/2014 & 003/2014 dated 2014-08-01 witnessed by DNV GL surveyor (1SN/1AT HF – DN6, 12 & 20)  
■ Burst test reports (@-65°C) numbers 17/2015, 18/2015 & 19/2015 dated 2015-07-21 witnessed by DNV GL surveyor (1SN MINETUFF – DN6, 12 & 20)  
■ Burst test test reports numbers n. 111/2019, 112/2019 & 113/2019 dated 2019-09-18 witnessed by RINA surveyor (2SN/2AT HF DN 6, 25 & 51)  
■ Impulse test reports numbers: 074/09 (1SN – DN6), 094/10 (1SN-DN12), 090/09 (1SN – DN25), 080/09 (1SN –DN38), 128/10 (2SN – DN5), 120/09 (2SN – DN10), 106/09 (2SN – DN19) & 076/09 (2SN – DN38)  
■ Burst test and change in length test reports numbers 38/2010, 36/2010, 16/2010 & 37/2010 dated 2010-12-16 witnessed by DNV surveyor (2SN/2AT – DN5, 10, 20 & 38)  
■ Fire test reports (done by LAPI) numbers: 1669.0IS0110/10 (2SN/2AT – DN6), 1670.0IS0110/10 (2SN/2AT – DN16) & 1671.0IS0110/10 (2SN/2AT – DN51) with H1100204 type fittings / dated 2010-11-26  
● Change in length, dimensional check, abrasion resistance, cover adhesion test, oil resistance test, cold flexibility test, ozone resistance test reports numbers: 427-10, 428-10, 429-10, 430-10, 431-10, 432-10, 433-10, 434-10, 435-10, 436-10, 437-10, 438-10, 439-10, 440-10, 441-10, 442-10, 443-10, 444-10, 191-10 & 192-10  
● Change in length, dimensional check, abrasion resistance, cover adhesion test, oil resistance test, cold flexibility test, ozone resistance test reports numbers: 01/2015, 02/2015, 03/2015, 04/2015, 05/2015, 06/2015, 07/2015, 08/2015, 09/2015, 10/2015, 11/2015, 12/2015, 13/2015, 14/2015, 15/2015 & 16/2015 dated 2015-07-04  
■ Impulse test reports number 228/14, 223/14, 240/14 & 012/14 (2SN MINETUFF – DN6, 12, 25 & 51) with AD2 couplings  
■ Fire test reports (done by LAPI) numbers: 770.0IS0110/15 (2SN MINETUFF – DN6), 771.0IS0110/15 (2SN MINETUFF – DN16) & 772.0IS0110/15 (2SN MINETUFF – DN51) with AD2 type fittings / dated 2015-06-01

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**ALFAGOMMA 2SN HF - 2SN Minetuff**  
**DUNLOP HIFLEX GREENLINE PLUS 222 / 2SN HI TUFF**

**Marking of product**

*Alfagomma type designation:*

Flexor 2SN HF / MINETUFF acc. 2SN-EN 853

*Dunlop Hiflex type designation:*

2SN Greenline Pluss / HI TUFF - acc. 2SN-EN 853

For traceability to this Type Approval, the products are at least to be marked with:

- hose manufacturer's name or trademark;
- date of manufacture (month/year);
- designation type reference;
- nominal diameter;
- pressure rating;
- temperature rating.

**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. - Zhejiang, China 315311

**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 connections (in accordance with limitation in Pt. C, Ch. 1, Sec. 10, Tab. 15 of RINA Rules) only. Other fittings 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 April 17, 2023**