DNV·GL

Certificate No:
TAP00000U9

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s)
marsoflex® MDO,

Issued to
Alfons Markert & Co. GmbH
Neumünster Schleswig-Holstein, Germany

is found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

Application :

The PTFE hose assemblies of type marsoflex® MDO are type approved for application in heavy fuel oil, gas and marine diesel oil, lubricating and hydraulic oil, fresh water and sea water systems. Refer to certificate.
Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Type:	Temperature range:	Max. working press.:	Sizes:
marsoflex® MDO	-50° C up to 150° C	16 bar	DN 16, 20, 32, 38, 50
	-50° C up to 150° C	30 bar	DN 25

Issued at **Hamburg** on **2017-02-21**
This Certificate is valid until **2022-02-20**.
DNV GL local station: **Hamburg**

Approval Engineer: **Martin Zeller**

for **DNV GL**

Olaf Drews
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Job Id: **262.1-024354-1**
Certificate No: **TAP00000U9**

Product description

The marsoflex® MDO hose assembly consist of a helically convoluted PTFE hose with an AISI 304 high tensile stainless steel braid protected by a fire sleeve.

PTFE hose manufacturer:	Xtraflex
Fire sleeve manufacturer, type:	Alfons Markert, marsoflex® PY
Coupling Manufacturer:	Alfons Markert

Couplings and Ferrules are made of stainless steel or carbon steel.

Application/Limitation

The PTFE hose assemblies of type marsoflex® MDO are type approved for application in heavy fuel oil, gas and marine diesel oil, lubricating and hydraulic oil, fresh water and sea water systems.

For application in sea water systems hose end fittings are to be made of stainless steel grades with pitting resistance equivalent number PREN =%Cr+3,3x%Mo+16%N > 25.

Size and pressure range

DN	Hose I.D.		Maximum working pressure (bar)
	inch	mm	
16	5/8"	16.0	16
20	¾"	20.0	16
25	1"	25.0	30
32	1 ¼"	32.0	16
38	1 ½"	38.0	16
50	2"	50.0	16

Temperature range

-50°C up to +150°C

All hose assemblies delivered under the DNV GL 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 the type approval certificate.

Flexible hoses are only to be used in short lengths (up to 2m) 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 hoses shall be fitted in places where they are always accessible.

The hoses are to be mounted in accordance with the manufacturer's instructions.

It must be possible to shut off from the system all flexible hoses used in systems for compressed air, lube oil, fuel oil and petroleum base hydraulic oil.

Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalised.

Hoses assemblies covered by this certificate shall not be installed in systems subject to pressure below atmospheric.

Tests carried out

Dimensional check, change in length, cold flexibility, vibration, impulse, static pressure, fire and burst testing.

Marking of product

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

- Manufacturer's name or trade mark
- Type designation
- Maximum working pressure
- Size
- Additional marking at manufacturer’s option

Periodical assessment

For retention of the type approval certificate periodical assessments shall be carried out by a DNV GL surveyor at the production places. The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:
- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking

Tests shall be performed in accordance with procedures given in DNV GL-CP-0183 or another recognised standard.
The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.

Periodical assessment is to be performed after 2 years and after 3.5 years.
A renewal assessment will be performed at renewal of the certificate.

End of certificate