



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14425**

This is to certify that the  
**Flexible Hoses of Metallic Material with permanently fitted couplings**

with type designation(s)  
**MFH**

Manufactured by  
**DK Tech Corp**  
Kyungnam -, Republic of Korea

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships**  
**Det Norske Veritas' Standards for Certification 2.9 No. 5-791.80**

Application  
**May be used in systems for: Lubrication oil, fresh water, steam and compressed air**

**Temperature range:** -40°C to +454°C  
**Max. working press.:** 151 to 248 bar (Depending on size, see certificate)  
**Sizes:** 1/4" to 1/2"

This Certificate is valid until **2016-12-31**.

Issued at **Høvik** on **2013-08-09**

DNV local station: **Changwon**

Approval Engineer: **Tom Berg-Nielsen**

for **Det Norske Veritas AS**

.....  
**Marianne Spæren Marveng**  
**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.  
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

## Product description

Corrugated stainless steel hose with one layer of stainless steel wire braid reinforcement. Permanently fitted couplings with front and back ferrules.

### Materials:

Hose, braid and coupling body: Stainless steel S316L

Front- and back ferrule and nut: Stainless steel S316

## Application/Limitation

Maximum working pressures:

Nominal hose size	Pressure
1/4"	248 bar
3/8"	172 bar
1/2"	151 bar

At elevated temperatures the maximum allowable pressure has to be reduced according to the table given below:

Temperature [°C]	-40 to +37	50	100	150	200	250	300	350	400	454
Factor	1.0	0.95	0.85	0.77	0.71	0.67	0.63	0.60	0.57	0.56

Flexible hoses are only to be used in short lengths (up to 2 m) where it is necessary due to vibration of flexible mounting of the machinery. They are not to be used where fixed piping is possible/ required

The hoses are not to be used in systems where pressure impulses may occur.

The hoses must only be fitted on places where they are always accessible for inspection.

It must be possible to shut off from the system all hoses used in the fuel oil, lubricating oil and compressed air systems.

The hoses are to be mounted according to the manufacturer's instructions, and the hoses are to be supplied with end couplings from the manufacturer.

Minimum bending radius is to be ensured according to the manufacturer's instructions/specifications.

The Rules Pt.4 Ch.6 Sec.6 D, and the respective Government Authorities Regulations are to be complied with.

Each hose is to be hydraulically pressure tested to 1, 5 times the maximum working pressure before installation/delivery.

## Type Approval documentation

### Tests carried out

Burst-, elongation-, bend- and bending fatigue test.

## Marking of product

For traceability to this type approval each hose is at least to be marked with:

- Manufacturers name or trade mark
- Type designation

Certificate No.: P-14425  
File No.: 791.80  
Job Id.: 262.1-014734-1

### **Certificate retention survey**

For retention of the Type Approval, DNV Surveyor shall perform a survey - every second year and before the expiry date of this certificate - to verify that the conditions for the type approval are complied with and to witness a burst test on a selection of sizes.

Obtained burst pressure shall at least be 4 times the maximum design pressure.

The tests are to be performed with the type of couplings fitted that is Type Approved with the hoses.

END OF CERTIFICATE