

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Flexible Hoses for CO2 Systems**with type designation(s)
G119-8K

Issued to

Han Wool H&P Co., Ltd.
Yongsan-si, Gyeongsangnam-do, Republic of Korea

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses**Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.****Temperature range:** -60°C to 100°C**Max. working press.:** 175 bar**Sizes:** 1/2"Issued at **Høvik** on **2019-08-21**This Certificate is valid until **2024-06-30**.for **DNV GL**DNV GL local station: **Busan**Approval Engineer: **Adel Samiei**

Zeinab Sharifi
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.



Product description

Flexible rubber hose with permanently fitted couplings. The inner tube is made of NBR, and the hose has one braid of steel wire reinforcement. The outer cover is made of an oil and weather resistant rubber.

End fittings: Han Wool Series H1

Materials: Carbon steel ASTM A576 1020/ JIS G4051 S20C

Stainless steel ASTM A276 304/316/316L/ JIS G4318 304/316/316L

Hoses manufacturer: Parker Hannifin Connectors Ltd., 77, 4-gil Yusangongdan, Yangsan-si, Gyeongsangnam-do, Republic of Korea

End fitting manufacturer: Han Wool H&P Co., Ltd., Yangsan-si, Gyeongsangnam-do, Republic of Korea

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate.

Approved for use for high pressure CO₂ fire extinguishing system and Nitrogen applications.

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 and shall be mounted in accordance with the manufacturer's instructions.

Hose assemblies covered by this certificate shall not be used in system subject to pressure below atmospheric or vacuum condition.

The hoses shall be pin pricked according to manufacturer's written procedure.

The outer end of the pipe coupling (performing the connection to the fixed piping) are 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 DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed. If these outer ends are going to be part of a mechanical joint as covered by Table 10 DNVGL RU SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

Production testing

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 this type approval certificate.

Type Approval documentation

Tests carried out

Dimensional check, Change in length, Cold bend, Cover adhesion, Ozone resistance, Impulse test, Burst (and Burst test at -60°C), Pin pricking & Endurance test

Marking of product

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.



Job Id: **262.1-018103-2**
Certificate No: **TAP00001VJ**

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.