

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe Flange, Welded Connection**with type designation(s)
Flangelok - 1 1/2"

Issued to

Freudenberg Oil & Gas Technologies Ltd
Port Talbot, West Glamorgan, United Kingdom

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNV GL rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers****DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018****DNVGL-OS-E101 – Drilling facilities, Edition January 2018****DNVGL-OS-E201 – Oil and gas processing systems, Edition January 2017****Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.****Temperature range: -89°C to 80°C****Max. working press.: 420 bar @60°C**Issued at **Høvik** on **2019-03-08**This Certificate is valid until **2024-03-07**.for **DNV GL**DNV GL local station: **Manchester**Approval Engineer: **Adel Samiei**

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.



Job Id: **262.1-030160-1**
Certificate No: **TAP00001S5**

Product description

Integral flange with hub (size 1.5") made of A182-F51 or A182-F316L with Techlok sealings (11R or 13R) made of A564-630/PTFE and bolts of A193-B8M
Design according to ASME Section VIII Division 2 - 2017

Application/Limitation

Flanges covered by this certificate are approved for use in ship piping, machinery piping, cargo piping systems, topside processing unit and drilling units.

Certification

Flanges installed in drilling systems shall be delivered with a DNV GL product certificate – reference to DNVGL-OS-E101 Ch.3 Sec.3 Table 15.

Flanges installed in oil and gas processing systems shall be delivered with a DNV GL product certificate, if they are used in piping for steam, toxic fluid thermal oil, flammable gas or liquid with flash point below 100°C, flammable fluids with $T > 150^{\circ}\text{C}$ and other fluids with $T > 220^{\circ}\text{C}$. Otherwise, manufacturer product certificate would be acceptable - reference to DNVGL-OS-E201 Ch.3 Sec.3 Table 15.

For flanges installed in DNV GL classed LNG/LPG carriers, used material shall have a work certificate (Material certificate issued by the manufacturer) from an approved manufacturer of DNV GL – reference to DNV GL Ship Rules Pt.5 Ch.7 Sec.1 Table 8.

Type Approval documentation

Marking of product

Each device shall be permanently marked indicating the following:

- manufacturer's name or trademark;
- manufacturer's designation;
- Pressure class;
- Size;

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.