DNV·GL

Certificate No:
TAP0000252

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flexible Hoses of Metallic Material with permanently fitted couplings

with type designation(s)
Coredux PARADE®

Issued to
CoreDux France
Epaux-Bezu, France

is found to comply with
DNV GL class programme DNVGL-CP-0184 – Type approval – Flexible hoses with permanently fitted couplings
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems

Application :

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.

Temperature range:	**-189°C / +550°C**
Max. working press.:	**15 to 25,5 bar**
Sizes:	**DN 32 to DN 100**

Issued at **Høvik** on **2020-08-26**

This Certificate is valid until **2025-08-25**.

for **DNV GL**

DNV GL local station: **France CMC**

Approval Engineer: **Andreas Hansen**

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.

Job Id: **262.1-032456-1**
Certificate No: **TAP0000252**

Product description

Annular corrugated metallic flexible hoses with one-layer single braided reinforcement attached to end pipes, manufactured from austenitic stainless steels listed below.

Maximum allowable working pressure:

Size [DN]	32	40	50	65	80	100
MAWP [bar]	25.5	18.75	21	14.25	15.75	15

Materials:

Hose (EN 10028-7)	**Braid** (EN 10088-3)	**Coupling** (EN 10216-5 / EN 10222-5)
1.4404 (316L) X2CrNiMo17-12-2	1.4301 (304)	1.4301 (304)
1.4541 (321) X6CrNiTi18-10	1.4306 / 1.4307 (304L)	1.4306 / 1.4307 (304L)
1.4435 (316L HMO) X2CrNiMo18-14-3	1.4404 (316L)	1.4404 (316L)
1.4432 (316L) X2CrNiMo17-12-3	1.4541 (321)	1.4541 (321)
	1.4435 / 1.4432 (316L HMO)	1.4435 / 1.4432 (316L HMO)

Application/Limitation

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

Hose assemblies covered by this certificate may be installed in applications including gas and fluid transportation. The hose assemblies shall not be installed in seawater applications or applications where pressure pulsation may occur.

Flexible hoses are only to be used in short lengths where it is necessary due to vibrations or flexible mounting of the machinery. They shall not be used where fixed piping is possible/required.

The hose assemblies must only be fitted on places where they are always accessible for inspection and shall be mounted according to the manufacturer's instructions.

At elevated temperature, maximum working pressure is to be reduced according to factors below (Ref. ISO 10380 Table A.4):

Temperature (°C)		20	50	100	150	200	250	300	350	400	450	500	550
Materials	1.4404 (316L) X2CrNiMo17-12-2	1	0.88	0.74	0.67	0.62	0.58	0.54	0.52	0.50	0.48	0.47	0.47
	1.4541 (321) X6CrNiTi18-10	1	0.92	0.83	0.78	0.74	0.71	0.67	0.64	0.62	0.61	0.60	0.59
	1.4435 (316L) X2CrNiMo18-14-3	1	0.88	0.74	0.67	0.61	0.57	0.54	0.52	0.50	0.48	-	-
	1.4432 (316L) X2CrNiMo17-12-3	1	0.88	0.74	0.67	0.62	0.58	0.54	0.52	0.50	0.48	0.47	0.47

All hoses used in lubricating oil and compressed air systems must be possible to shut off from the system.

This approval does not cover use in LNG/LPG and ammonia applications.

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

Production testing

Each hose assembly shall be hydrostatically tested at a pressure of 1.5 times the maximum working pressure and be delivered with the pressure test report with reference to the type approval certificate.

Type Approval documentation

Tests carried out

Burst test, fatigue test and pliability (static bend) test.

Marking of product

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

- Hose manufacturer’s name or trade mark;
- Type designation.

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a 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.