

TYPE APPROVAL CERTIFICATE

This is to certify:**That the High Voltage Cable**

with type designation(s)

**RFOU P2/P9/P102 3,6/6 kV,
RFOU P3/P10/P103 6/10 kV,
RFOU P4/P11/P104 8,7/15 kV,
RFOU P19/P21/P112 12/20 kV,
RFOU P20/P22/P113 18/30 kV**

Issued to

**Draka Cable Wuppertal GmbH
Wuppertal, Nordrhein-Westfalen, Germany**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****General power.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**

Type	Rated voltage (kV)	Temp. class (°C)
RFOU P2/P9/P102 3,6/6 kV	3,6/6	90
RFOU P3/P10/P103 6/10 kV	6/10	90
RFOU P4/P11/P104 8,7/15 kV	8,7/15	90
RFOU P19/P21/P112 12/20 kV	12/20	90
RFOU P20/P22/P113 18/30 kV	18/30	90

Issued at **Høvik** on **2019-04-06**This Certificate is valid until **2023-12-31**.for **DNV GL**DNV GL local station: **Essen**Approval Engineer: **Ivar Bull**

**Trond Sjøvåg
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

Construction:

Conductors: Tinned, stranded copper
Core insulation: EPR
Screening: Tinned copper wire braid
Filler: Flame retardant halogen-free thermoset compound
Metal covering: Tinned copper wire braid
Outer sheath: SHF2 or SHF Mud

Single cores :

Voltage U0 / U [kV]				
P2/P9/P102	P3/P10/P103	P4/P11/P104	P19/P21/P112	P20/P22/P113
3,6/6	6/10	8,7/15	12/20	18/30
-	-	-	-	-
1 x 16	1 x 16	-	-	-
1 x 25	1 x 25	1 x 25	-	-
1 x 35	1 x 35	1 x 35	1 x 35	-
1 x 50	1 x 50	1 x 50	1 x 50	1 x 50
1 x 70	1 x 70	1 x 70	1 x 70	1 x 70
1 x 95	1 x 95	1 x 95	1 x 95	1 x 95
1 x 120	1 x 120	1 x 120	1 x 120	1 x 120
1 x 150	1 x 150	1 x 150	1 x 150	1 x 150
1 x 185	1 x 185	1 x 185	1 x 185	1 x 185
1 x 240	1 x 240	1 x 240	1 x 240	1 x 240
1 x 300	1 x 300	1 x 300	1 x 300	1 x 300
-	1 x 400	1 x 400	1 x 400	-
-	1 x 500	-	-	-
-	1 x 630	-	-	-

3 cores :

Voltage U0 / U [kV]				
P2/P9/P102	P3/P10/P103	P4/P11/P104	P19/P21/P112	P20/P22/P113
3,6/6	6/10	8,7/15	12/20	18/30
-	-	-	-	-
3 x 16	3 x 16	-	-	-
3 x 25	3 x 25	3 x 25	-	-
3 x 35	3 x 35	3 x 35	3 x 35	-
3 x 50	3 x 50	3 x 50	3 x 50	3 x 50
3 x 70	3 x 70	3 x 70	3 x 70	3 x 70
3 x 95	3 x 95	3 x 95	3 x 95	3 x 95
3 x 120	3 x 120	3 x 120	3 x 120	3 x 120
3 x 150	3 x 150	3 x 150	3 x 150	-
3 x 185	3 x 185	3 x 185	3 x 185	-
3 x 240	3 x 240	3 x 240	3 x 240	-
3 x 300	3 x 300	3 x 300	-	-

Job Id: **262.1-007974-5**
Certificate No: **TAE0000314**

Application/Limitation

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

Type Approval documentation

Tests carried out

Standard cable: IEC 60092-354, IEC 60332-3-22, IEC 60754-1/2, IEC 61034-1/2 and NEK 606(2016). On special request: Cold bend (-40 °C)/impact (-35 °C) test: CSA C 22.2 No 0.3-M1985.

Marking of product

DRAKA 04 - RFOU - size - P2/P9/P102 3,6/6 kV or P3/P10/P103 6/10 kV or P4/P11/P104 8,7/15 kV or P19/P20/P112 12/20 kV or P20/P22/P113 18/30 kV - IEC 60332-3-22 - Lot No.

Contact details

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Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests (RT) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

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