

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**That the High Voltage Cable**

with type designation(s)  
**RFOU P2/P9 3,6/6 kV, RFOU P3/P10 6/10 kV, RFOU P4/P11 8,7/15 kV, RFOU P19/P21 12/20 kV**

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

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**  
**IEC 60092-354 (2003-06)**  
**IEC 60332-3-22 (2009-02)**  
**IEC61034-1/2 (2005-04/2005-04)**  
**IEC 60754-1/2 (2011-11)**  
**NEK TS 606 (2009-05) (P-types only)**

**Application :**

**General power.**  
**Flame retardant in bunch Cat A. Halogen free. Low smoke.**  
**Mud resistant.**

Type	Voltage (kV)	Temp. class (°C)
RFOU P2/P9 3,6/6 kV	3,6/6	90
RFOU P3/P10 6/10 kV	6/10	90
RFOU P4/P11 8,7/15 kV	8,7/15	90
RFOU P19/P21 12/20 kV	12/20	90

This Certificate is valid until **2018-12-31**.

Issued at **Høvik** on **2014-11-14**

for **DNV GL**

DNV GL local station: **Essen**

Approval Engineer: **Ivar Bull**

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**Marit Laumann**  
**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 proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

Certificate No: **E-13672**  
 File No: **827.30**  
 Job Id: **262.1-007974-3**

## 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 U <sub>0</sub> / U [kV]			
P2/P9	P3/P10	P4/P11	P19/P21
3,6/6	6/10	8,7/15	12/20
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 70	1 x 70	1 x 70	1 x 70
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 150	1 x 150	1 x 150	1 x 150
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 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 U <sub>0</sub> / U [kV]			
P2/P9	P3/P10	P4/P11	P19/P21
3,6/6	6/10	8,7/15	12/20
3 x 16	3 x 16		3 x 16
3 x 25	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 70	3 x 70	3 x 70	3 x 70
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 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	

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### **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**

Data sheets  
Test reports

### **Tests carried out**

Standard cable: IEC 60092-354, IEC 60332-3-22, IEC 60754-1/2, IEC 61034-1/2 and NEK 606.  
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 3,6/6 kV or P3/P10 6/10 kV or P4/P11 8,7/15 kV or P19/P20 12/20 kV  
– IEC 60332-3-22 – Lot No.

### **Periodical assessment**

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

The main elements of the periodical assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and RT to 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.

Survey to be performed at least every second year.

### **Contact details**

Draka Industrial Cable GmbH  
Fax : +49 202 296-2000  
Web-site : <http://www.draka.com>  
E-mail : [Industrial-cable@draka.com](mailto:Industrial-cable@draka.com)

END OF CERTIFICATE