slingco®

TECHNICAL SPECIFICATION

ROBLON HIGH VOLTAGE PULLING ROPE (HVPR) – T2200

ROBLON HIGH VOLTAGE PULLING ROPE: TECHNICAL SPECIFICATION

TYPICAL APPLICATION

Roblon HVPR was initially designed for live-line stringing using the cradle-block method, but its excellent dielectric properties enable it to be used as helicopter longlines, guy lines for transmission towers and short-haul lines for work in energised electrical environments, and other applications.

1. TECHNICAL SPECIFICATION

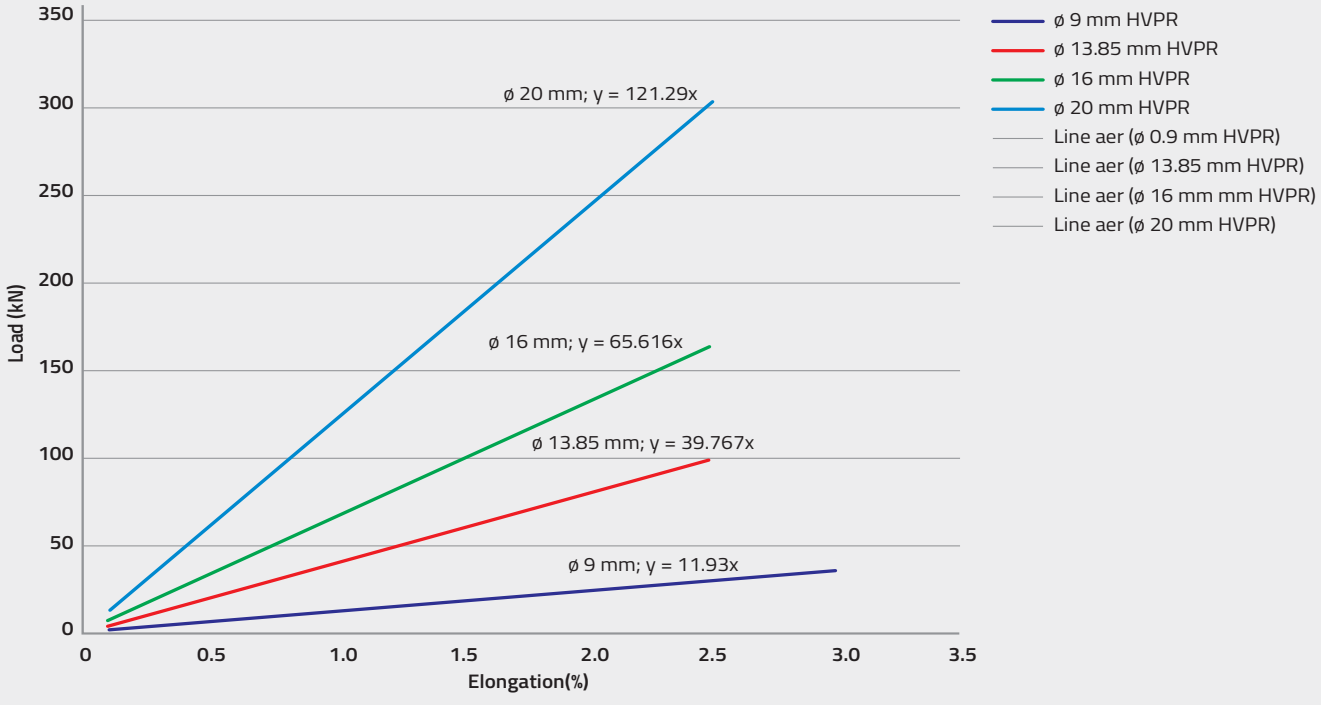
Roblon HVPR is a dielectric rope used for stringing and service operations, for installing OPGW, and similar operations. The rope is torque balanced and lightweight.

Roblon HVPR is manufactured from high performance aramid fibres with a thermoplastic polyurethane (TPU) coating. Roblon HVPR is available in four dimensions as standard (if other types are required, please contact us).

Diameter	9 mm (0.35 in)	13.85 mm (0.55 in)	16 mm (0.24 in)	20 mm (0.79 in)
Breaking strength (minimum)	>35 kN (7,868 lb)	>85 kN (19,108 lb)	>130 kN (29,225 lb)	>200 kN (44,961 lb)
Weight per metre (nom.)	68 g/m (2.4 oz)	162 g/m (5.7 oz)	230 g/m (8.1 oz)	343 g/m (12.1)
Elongation at break	3.6%			
Thermal expansion factor	-4.5×10^{-6}			
Cross section area (outer)	63.6 mm² (2.5 in²)	150.6 mm² (5.9 in²)	201.0 mm² (7.9 in²)	314.2 mm² (12.4 in²)
Cross section (fibre core)	43.0 mm² (1.7 in²)	117.9 mm² (4.6 in²)	133.0 mm² (5.2 in²)	265.9 mm² (10.5 in²)
Stiffness	1,200 kN (269,770 lb)	3,900 kN (876,755 lb)	6,500 kN (1,461,258 lb)	12,000 kN (2,697,708 lb)
Final modulus of elasticity	18.8 GPa	26.4 GPa	32.7 GPa	38.6 GPa

ELONGATION

THEORETICALLY GENERATED LE CURVES FOR ROBLON ROPES



Colour: Default colour is bright orange for maximum visibility.

Over time, the colour will change to yellow due to exposure to UV irradiation. The colour change is normal, and does not affect mechanical or electrical properties of the rope.

Minimum bending diameter	
Static load	10 x diameter
Dynamic load	23 x Diameter

2. APPROVALS / CERTIFICATION:

IEC 62192 APPROVED

Approvals / Certification	
Certification	Certified according to IEC 62192
Approval	All dimensions are approved for live-line work up to 800kV r.m.s.

3. WARRANTY AND PRODUCT LIABILITY

Slingco provides all products with a one-year warranty with regards to manufacturing defects, material quality, and workmanship. Slingco does not assume any liability for the use of the product or any losses resulting thereof, unless caused by product manufacturing defects or negligence of Slingco.

4. STORAGE & TRANSPORT

The rope must be stored in a dry and climate-controlled location, at 20-30˚C and max. 40% RH when not in use. These conditions may require sealing and/or dehumidification. Do not store in direct sunlight.

During transport and use, the rope should be kept in a sealed container with moisture absorbing crystals added, to the extent possible.

5. HANDLING

HVPR should be handled with care at all times in order to prevent damage to the thermoplastic coating. The rope must be kept clean and dry. Avoid laying the rope on the ground. If this cannot be avoided, the rope must be cleaned from mud and dirt as described in section 7. Avoid stepping on or placing heavy loads or sharp edges on the rope. Placing the rope over a sharp edge may damage the rope, and bending the rope more than the recommended minimum bend radius may affect strength and decrease the lifetime of the rope.

For use in rainy or moist conditions, careful consideration must be given to reduce any possible risk of current running through water film build-up on the rope. Mud and dirt will also increase risk.

The rope is approved for AC applications only and should not be used in a live-line DC environment. The rope may not be tied in a knot. Tying a knot will significantly reduce rope strength.

Small amounts of moisture may permeate the rope when used outside of climate-controlled areas for extended periods of time. After use, the rope should be returned to climate-controlled storage and remain there until next use. Electrical testing should be performed on return to storage. The test should be stopped immediately if leak current at any time exceeds acceptable levels.

Continued testing may damage the rope. In case electrical testing indicates moisture permeation, the rope should remain in specified climatic conditions, and electrical testing should be performed weekly until passed. A single failed test on a rope that has been outside of climate-controlled condition is not grounds for rope retirement. Renewed electrical testing should be performed immediately before next use.

6. INSPECTION

The rope should be inspected visually prior to and after each use. Inspection after use is easily done when winding the rope onto the drum. Any damage, especially if fibres are visible, must be repaired immediately as specified in section 9.

7. TEST

Electrical testing should be an integral part of handling procedures as specified in section 5, and should as a minimum be performed before leaving the warehouse, and on return.

Testing should be done according to the instructions provided in IEC 62192 clause 5.

8. PULLING METHODS

Local regulations, applicable protocols, and regulations imposed by the cable/wire manufacturer must be observed at all times. Consult the documentation for the cable/wire to be strung before planning stringing operations.

9. RECOMMENDED END FITTINGS

Method 1: Spliced eyes with thimble.
The eyes can be used to couple any hook, shackle, or similar to the rope. Splicing has the same, or higher, MBL as the rope itself, and does not impose any limitations on pulling force. The length of the splice is not part of the certification, and should be handled as if conductive.

Method 2: Cable pulling sock
The cable pulling sock should be a highly flexible, overhead type, suitable for the diameter of the rope. Observe the recommended pulling force for the sock.

Double bearing swivels should be installed at both ends of the rope to avoid rotation. Open rope ends should be capped.

9.1 Clamps

It is recommended to use clamps designed for insulated cables. Any clamps used on HVPR should have rubberised jaws. The clamped length along the rope depends on the projected pulling force. For pulling forces up to 1,000 kg (10kN), the clamped length should be at least 90 mm. Ensure that the pulling of the clamp does not create sharp bends, and that the clamp has no sharp edges that may damage the rope.

10. CLEANING

The rope surface must be kept clean. Any dirt on the surface, especially if combined with water, induces a risk of current running on the surface.

1. Clean the rope with water (use a brush if very dirty)
2. When the rope is fully dry, apply a coating of silicone or Teflon spray.

The spray treatment will make the rope run smoothly and will reduce the risk of water film building on the surface in wet conditions, inducing a risk of current running on the surface.

11. REPAIRS

Roblon has developed a proprietary method for repairing small cuts in the rope. Workers doing repairs or splices must have completed a training course overseen by Roblon, and hold a training certificate. In case of large and open cuts, or any damage affecting the fiber core, the damaged part of the rope must be cut away, and the rope reassembled by approved methods by a certificate-holding worker.

12. LIFETIME

Ropes wear out with use. The more severe the usage, the greater the wear. It is often not possible to detect wear on a rope by visible signs alone. Therefore it is recommended that the rope user keeps a usage log and determines a retirement criteria for ropes in their application, ensuring timely retirement according to local standards. The life expectancy/shelf life of the rope is expected to be 5-7 years depending upon storage conditions

13. DISPOSAL AND RECYCLING

The rope should be disposed of by incineration.

14. OPTIONAL

Ferrules can be moulded onto the rope as carrier. Dimensions and distance between the ferrules can be adjusted to meet any demand.

15. MARKING

For easy identification, all ropes are marked with a label including product code, description of material, manufacturer, production year and batch number. Apart from this, it is possible to add the customer's article no./order no., SWL from customer or other relevant information. All markings according to the requirements of IEC 62192.

16. TEST / CERTIFICATE OF CONFORMITY

All Roblon ropes are supplied with a standard Certificate of Conformity (CoC) indicating batch number, diameter and breaking strength.

An IEC 62192 test report for the electrical properties and a certificate of conformity for the specific batch can be supplied against additional costs. If required, please ask for a quotation for third party testing.

17. PACKING INFORMATION

Length of *plain* rope on standard reels:

Reel size	K8 m (ft)	K9 m (ft)	K10 m (ft)	K11 m (ft)	K12 m (ft)	K14 m (ft)	K16 m (ft)	K18 m (ft)	K20 m (ft)	K22 m (ft)	K24 m (ft)
Rope ø9 mm (ø0.35 in)	1,750 (5,741.47)	2,450 (8,038.06)	2,900 (9,514.44)	3,700 (12,139.11)	5,450 (17,880.58)	7,300 (23950.13)	9,200 (30,183.73)	NA	NA	NA	NA
Rope ø13.85 mm (ø0.55 in)	750 (2,460.63)	1,025 (3,362.86)	1,245 (4,084.64)	1,575 (5,167.32)	2,310 (7,578.74)	3,100 (10,170.60)	3,885 (12,746.06)	4,750 (15,583.99)	6,350 (20,833.33)	7,900 (25,918.64)	10,000 (32,808.40)
Rope ø16 mm (ø0.24 in)	500 (1,640.42)	740 (2,427.82)	1,000 (3,280.84)	1,200 (3,937.01)	1,800 (5,905.51)	2,450 (8,038.06)	3,000 (9,842.52)	3,600 (11,811.02)	NA	NA	NA
Rope ø20 mm (ø0.79 in)	350 (1,148.29)	500 (1,640.42)	600 (1968.50)	750 (2,460.63)	1,110 (3,641.73)	1,485 (4,872.05)	1,860 (6,102.36)	2,285 (7,496.72)	3,050 (10,006.56)	3,815 (12,516.40)	5,030 (16,502.62)

*The above lengths are for guidance only and may vary.

Reel sizes (all dimensions in mm):

Reel size	K8 mm (in)	K9 mm (in)	K10 mm (in)	K11 mm (in)	K12 mm (in)	K14 mm (in)	K16 mm (in)	K18 mm (in)	K20 mm (in)	K22 mm (in)	K24 mm (in)
D (outer)	800 (31.50)	900 (35.43)	1,000 (39.37)	1,100 (43.31)	1,200 (47.24)	1,400 (55.12)	1,600 (62.99)	1,800 (70.87)	2,000 (78.74)	2,200 (86.61)	2,400 (94.49)
d (inner)	375 (14.76)	425 (16.73)	500 (19.69)	575 (22.64)	675 (26.57)	800 (31.50)	950 (37.40)	1,100 (43.31)	1,300 (51.18)	1,400 (55.12)	1,400 (55.12)
w (inner)	500 (19.69)	550 (21.65)	600 (23.62)	650 (25.59)	850 (33.46)	850 (33.46)	850 (33.46)	850 (33.46)	1,000 (39.37)	1,000 (39.37)	1,000 (39.37)
W (outer)	580 (22.83)	630 (24.80)	712 (28.03)	762 (30.00)	982 (38.66)	982 (38.66)	1,075 (42.32)	1,075 (42.32)	1,188 (46.77)	1,188 (46.77)	1,200 (47.24)

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