



(N)TSCGEHXOEU

Medium Voltage Reeling Single Core Cable for Wind Turbine Applications

0.6/1 kV



Applicable Standards: VDE 0250 Part 813 | HD 620 S1 Part 9 | DIN VDE 0295 Class 5 | IEC 60228 | DIN EN 60332-2-1 | ISO 4982-2 Method A | DIN VDE 0282 Part 2 | HD 22.2 Test Type B

1. APPLICATION

Medium voltage power cable specifically designed for flexible, dynamic applications in wind turbine installations where cables are subjected to continuous torsional movement, mechanical stress, and extreme environmental conditions. Suitable for economical transmission of large energy rates from nacelle to tower base in wind energy systems.



Twistable
±100°/m



Free-Hanging
Installation



-40°C to +90°C
Operation



MV Power
Transmission

2. CONSTRUCTION DETAILS

1. Conductor	Electrolytic copper, tinned, finely stranded Class 5 (flexible) per DIN VDE 0295 / IEC 60228 Stranding design optimized for torsional stress
2. Conductor Screen	Extruded semiconductive compound (inner stress control) Halogen-free, thermosetting rubber material Smoothly extruded, non-strippable
3. Insulation	Ethylene Propylene Rubber (EPR) based compound Halogen-free, heat and cold resistant Color: Natural/red (core-dependent) Designed for medium voltage stress
4. Insulation Screen	Extruded semiconductive compound (outer stress control) Halogen-free, strippable design Ensures uniform electric field distribution
5. Core Identification	Natural base color with black semiconductive layer Permanent identification system
6. Outer Sheath	Special halogen-free rubber compound (HFFR) Resistant to: UV radiation, ozone, mineral oil, weathering High mechanical strength and flexibility Color: Black (RAL 9005) Enhanced abrasion resistance
7. Cable Marking	TRATOS WIND (N)TSCGEHXOEU [cores] × [mm ²] [voltage] + VDE Marking interval: ≤ 1000 mm White permanent print

3. ELECTRICAL CHARACTERISTICS

Rated Voltage U_0/U	0.6/1 kV AC
Test Voltage (AC, 5 min)	3.5 kV (conductor to screen)
Maximum Conductor Temperature	90°C (continuous operation) 130°C (emergency overload) 250°C (short circuit, max. 5 sec)
Minimum Ambient Temperature	-40°C (installation and operation) -15°C (flexible handling)
Frequency	50/60 Hz

3.1 Electrical Parameters (at 20°C)

Cross-Section	DC Resistance (Ω /km max)	AC Resistance (Ω /km @ 90°C)	Inductive Reactance (Ω /km @ 50Hz)	Capacitance (μ F/km)	Current Rating* (A)
240 mm ²	0.0754	≈0.098	≈0.10	≈0.35	415-520

***Note:** Current rating depends on installation method, ambient temperature, grouping factors, and cable routing. Values shown are indicative for single cable in air at 30°C ambient. Detailed ampacity calculations available upon request per IEC 60287.

4. MECHANICAL PROPERTIES

Conductor Class	Class 5 (flexible)	Bending Radius (Fixed)	12 × outer diameter
Tensile Strength	Up to 20 N/mm ² (copper cross-section)	Service Life (Dynamic)	> 25 years under spec. conditions
Torsion Capability	±100°/m (twisting cycles)	Crush Resistance	Per VDE 0250
Bending Radius (Install.)	15 × outer diameter	Impact Resistance	Enhanced (HFFR sheath)

5. ENVIRONMENTAL & CHEMICAL RESISTANCE

- UV Resistance:** Tested per ISO 4982-2 Method A - Suitable for outdoor installation without degradation
- Ozone Resistance:** Per DIN VDE 0282 Part 2, HD 22.2 Test Type B - No cracking or deterioration
- Mineral Oil Resistance:** Per DIN EN 60332-2-1 - Sheath resistant to mineral oil contact
- Weather Resistance:** Excellent resistance to rain, humidity, ice, and extreme weather conditions
- Moisture Resistance:** Water-resistant construction, suitable for damp locations
- Cold Flexibility:** Maintains flexibility down to -40°C operating temperature
- Thermal Cycling:** Designed for continuous thermal cycling in wind applications

6. DIMENSIONS AND WEIGHTS

Nominal Cross-Section	No. of Conductors	Conductor Diameter (mm)	Approx. Outer Diameter (mm)	Weight (kg/km)	
				Copper	Total Cable
240 mm ²	1 × 240	≈19.5	30.2 - 32.0	2,304	2,621

Note: Dimensions are nominal and subject to manufacturing tolerances per applicable standards. Other cross-sections (35 mm² to 630 mm²) available on request. Consult factory for detailed drawings and weight calculations.

7. FIRE PERFORMANCE

Flame Retardance	Single vertical cable test per IEC 60332-1-2
Halogen-Free	Zero halogen content (IEC 60754-1) Low smoke emission No corrosive gases
Smoke Density	Low smoke emission per IEC 61034
Fire Load	Reduced fire load due to HFFR materials

8. INSTALLATION GUIDELINES

- **Installation Methods:** Free-hanging (with cable support grips), free moveable in cable carrier systems, or fixed installation with appropriate supports
- **Cable Support:** Use appropriate cable suspension systems rated for cable weight and dynamic loads. Maximum suspension spacing per calculation
- **Bending:** Maintain minimum bending radius during installation (15D) and in service (12D for fixed, larger for dynamic)
- **Termination:** Use MV cable lugs and heat-shrink or cold-shrink termination kits suitable for EPR insulation and rated for medium voltage
- **Earthing:** Cable screens must be properly earthed at both ends or as per project earthing philosophy
- **Testing:** Perform insulation resistance and HV tests per VDE 0276-620 before commissioning
- **Torsion Installation:** For twistable applications, ensure cable is not pre-twisted and torsion occurs from neutral position

Safety Warning: Installation, testing, and maintenance must be performed by qualified personnel in accordance with local electrical safety regulations and VDE standards. De-energize and earth cables before maintenance. Observe all safety precautions for medium voltage equipment.

9. QUALITY ASSURANCE & TESTING

All cables are manufactured under ISO 9001 quality management system and tested per applicable standards:

- **Routine Tests:** Conductor resistance, voltage test, partial discharge test, insulation resistance
- **Type Tests:** Mechanical tests (tensile, bending, torsion), thermal cycling, environmental resistance, fire performance
- **Special Tests:** Long-term torsion testing, accelerated aging, dynamic bending fatigue (available on request)
- **Documentation:** Test certificates, material compliance declarations, and traceability records provided

10. PACKAGING & TRANSPORTATION

Delivery Type	Wooden or steel cable drums (reels)
Standard Lengths	500 m, 1000 m, or as specified (single length preferred)
Drum Labeling	Complete cable specification, length, weight, manufacturing date, serial number
Storage	Store drums on flat surface, protect from direct sunlight and moisture Storage temperature: -25°C to +55°C

11. ORDERING INFORMATION

Please specify when ordering: Cable type designation, number of cores, conductor cross-section, voltage rating, required length(s), special requirements, and any project-specific specifications.

Example Order Code: (N)TSCGEHXOEU 1×240 0.6/1kV - 1000m