



Definition of OPGW

OPGW (optical ground wire) is a type of conductor that is used in the construction of electric power transmission lines. Here the conductor combines both the functions of grounding and communications. OPGW contains a tubular structure with one or more optical fibers in it, surrounded by layers of galvanized steel and aluminium alloy wire. In the OPGW system, the conductor serves as a normal ground wire, protecting the phase conductors against the lightning strikes. The optical fibers are integrated in a stainless steel tube filled with a thixotropic jelly and hermetically sealed to provide best protection of enclosed fibers at any stage of the installation or operation.

Optical Fibers

The optical fiber of the OPGW is manufactured and designed to provide optimum transmission services. These fibers are used primarily in telecommunications networks characterised by long distance links and high capacity.

TECHNICAL SPECIFICATIONS

Aluminium Alloy Wire Diameter	mm	2.60 ± 0.03
Aluminium Clad Steel Wire Diameter	mm	2.60 ± 0.05
O/F Stainless Steel Tube Diameter	mm	2.60 ± 0.05
OPGW Conductor Diameter	mm	13.00 ± 0.5
Number of Aluminium Clad Steel Wire	center	1
Number of Aluminium Clad Steel Wire	1 st Layer	5
Number of Stainless Steel Tube	1 st Layer	1
Number of Aluminium Alloy (AAA) Wire	2 nd Layer	8
Number of Aluminium Clad Steel Wire	2 nd Layer	4
Lay Direction	1 st Layer	Left-Hand (S-twist)
Lay Direction	2 nd Layer	Right-Hand (Z-twist)
Total OPGW Cross-Section	mm ²	95.6
Aluminium Alloy Unit Weight	kg/km	115
Aluminium Clad Steel Wire Unit Weight	kg/km	350
O/F Tube and Jelly Unit Weight	kg/km	16
Total OPGW Unit Weight	kg/km	485
OPGW Rated Tensile Strength (RTS)	daN	8200
Final Modulus Elasticity of OPGW	daN/mm ²	11844
Thermal Expansion Coefficient of OPGW	10 ⁻⁶ /°C	15.1
Permissible Max. Working Stress	daN	3280
Medium High Tension	daN	1312 - 2050
Endurance Tensile Strength (ETS)	daN	5740
Short Time Overcurrent (0.5 second) (40-180°C)	A	14000
Temperature After Short Time Overcurrent	°C	180
Working Temperature (Max.)	°C	80
Resistance at 20 °C (Max.)	ohm/km	0.540
O/F Stainless Steel Tube Diameter (Inner/Outer)	mm	2.2/2.6
Fiber Count	-	12-24
Working Temperature	°C	-40 to 80