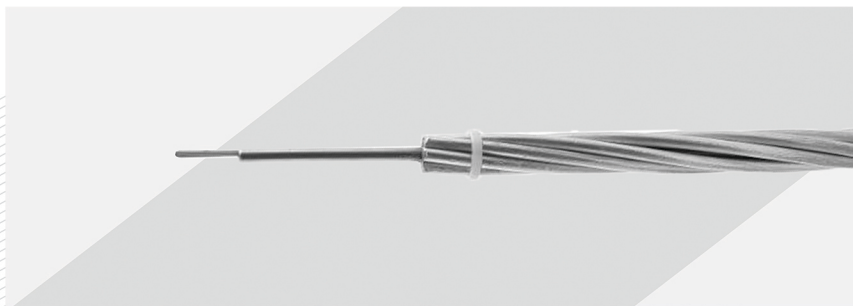


# OPGW 10.5




## PROPERTIES OF OPTICAL FIBER OPGW 10.5 MM

Description		Unit	Quaranteed data (10.5mm)	Note
1	Type of optical fiber	-	NZDSF	
2	applicable standard	No.	ITU-TG655	
3		Year	2003	
4	Mode field diameter	Version	A	
5		Class of optical fiber		
6		Range of nominal value at 1310 nm		NA
7		Range of nominal value at 1550 nm	μm	9.6
8	Cladding diameter	tolerance	±0.4	
9		nominal	125	
10		tolerance	±1	
11	Coating diameter	nominal	250	
12		tolerance	±5	
13	Core concentricity error Max	μm	0.6	
14	Cladding non-circularity Max	%	1.0	
15	Max Attenuation coefficient on the reel	At 1310 nm	NA	
16		At 1550 nm	0.22	
17	Attenuation discontinuities at 1310 nm and 1550 nm	dB	≤ 0.05	
18	Cut off wavelength for optical fiber Max	nm	1450	
19	Chromatic dispersion coefficient	At 1310 nm	NA	
20		At 1550 nm	2-6	
21		Sign	Positive or negative	Positive or negative
22		Wavelength range	nm	1530-1565
23	Zero dispersion wavelength	nm	1520	
24	Zero dispersion slope	Ps / ( nm <sup>2</sup> x km )	0.09	
25	PMD coefficient	Max	Ps / √km	0.2
26	Macrobend loss	radius	mm	30
27		Number of turns	-	100
28		Max loss	dB	0.1
29	Proof stress	Min	Gpa	0.69
30	Backscatter coefficient at 1550 nm	dB	-80 -82	

## PROPERTIES OF COMPLETE OPGW

Description		Unit	Quaranteed data (10.5mm)	Note	
32	Manufacturer/Country	-	Koohrang Zagros/Iran		
33	OPGW designation and unit type	-	OPGW10.5 CENTER TUBE		
34	Applicable standard	-	IEEE 1138		
35	Number of fibers	-	24		
36	Structure	Stainless steel loose tube	1/3.5		
37		Aluminum clad steel wire	6/3.5		
38		Aluminum alloy wire	NA		
39	Out stranding direction	direction	Left		
40	Ratio of length of lay of layer to nominal outside diameter of layer	times	10-16		
41					
42	Overall diameter	mm	10.5		
43	Cross section area	Stainless steel loose tube	2.07		
44		Aluminum clad steel wire	57.7		
45		Aluminum alloy wire	NA		
46		Total	59.8		
47	Weight (max)	ACS wire	388		
48		Alloy wire(if applicable)	NA		
49		Stainless steel loose tube	kg / km	15	
50		Grease	4		
51		Total	407		
52	Calculated breaking load (min)	Kgf	7100		
53	Module of elasticity	Initial	kgf / mm <sup>2</sup>	15500	
54		Final			15800
55	Coefficient of linear expansion	10 <sup>-6</sup> / C	13		
56	Maximum tensile stress	N / mm <sup>2</sup>	499		
57	Everday Stress	N / mm <sup>2</sup>	190.1		
58	Permanent tensile stress	N / mm <sup>2</sup>	855.4		
59	D.C resistance at 20 C° (max)	Ohm / km	1.499		
60	Rated short circuit current for 0.5s (temperature form 20°C to 180°C)	KA	6.5		
61					
62	Minimum allowable bending radius	mm	158		
63	Grease	Type of grease	-	ACC.To Standard	
64		Drop point	°C	>=90	
65		Flash temperature	°C	>=200	
66		Whether the grease is stable at 75c	Yes / No	yes	
67					
68		Weigth	kg / km	4	

Description		Unit	Quaranteed data (10.5mm)	Note
69	Material of	core	-	SIO2-GeO2
70		clad	-	SIO2
71	Tem. Dependence of Attenuation form -40 to +85 degree of cent.		db / km	<=0.05
72				
73	Max allowable temperature	Continuous	C	80
74		Instantaneous	C	200
75	Temperature Range Transport, Storage, Operation		C	-40 +80
76	Temperature Range installation		C	-10 +50
77	Minimum fiber excess length elongation		%	0.5
78	OPGW reel length		m	5000±3%
schematic cross section				

### PROPERTIES OF INDIVIDUAL WIRE BEFORE STRANDING

Description		Unit	Quaranteed data (10.5mm)	Note
79	applicable standard		ASTM B415	
80	Standard diameter	mm	3.5	
81	Tolerance of diameter	mm	± 1.5	
82	Minimum tensile strength	Mpa	1310	
83	Minimum elongation at fracture	%	1.5	
84	Minimum conductivity at 20 °C	IACS%	20	
85	Minimum number of twisting	No.	20	
86	Minimum thickness of aluminum	mm	0.175	

1- If final temperature after short circuit be increased, higher short circuit current shall be available as per IEC724.

opgw 12.0




## PROPERTIES OF OPTICAL FIBER OPGW 12.0MM

Description		Unit	Quaranteed data by manufacturer (12.0mm)	Note		
1	Type of optical fiber	-	NZDSF			
2	applicable standard	No.	ITU-TG655			
3		Version	2003			
4		Class of optical fiber	-	A		
5	Mode field diameter	Range of nominal value at 1310 nm	NA			
6		Range of nominal value at 1550 nm	μm	9.6		
7					tolerance	±0.4
8						
9	Cladding diameter	nominal	μm	125		
10		tolerance		±1		
11	Coating diameter	nominal	μm	250		
12		tolerance		±5		
13	Core concentricity error	μm	0.6			
14	Cladding non-circularity	%	1.0			
15	Max Attenuation coefficient on the reel	At 1310 nm	dB / km	NA		
16		At 1550 nm		0.22		
17	Attenuation discontinuities at 1310 nm and 1550 nm	dB	<= 0.05			
18	Cut off wavelength for optical fiber	Max	nm	1450		
19	Chromatic dispersion coefficient	At 1310 nm	Ps / ( nm x km )	A		
20		At 1550 nm		2-6		
21		Sign	Positive or negative	Positive or negative		
22		Wavelength range	nm	1530-1565		
23	zero dispersion slope	nm	1520			
24	Zero dispersion slope	Ps / ( nm <sup>2</sup> x km )	0.09			
25	PMD coefficient	Max	Ps / √km	0.2		
26	Macrobend loss	radius	mm	30		
27		Number of turns	-	100		
28		Max loss	dB	0.1		
29	Proof stress	Min	Gpa	0.69		
30	Backscatter coefficient at 1550 nm	dB	-80 -82			

## PROPERTIES OF COMPLETE OPGW

Description		Unit	Quaranteed data (10.5mm)	Note	
32	Manufacturer/Country	-	Koohrang Zagros/Iran		
33	OPGW designation and unit type	-	OPGW12.0 CENTER TUBE		
34	Applicable standard	-	IEEE 1138		
35	Number of fibers	-	24		
36	Structure	Stainless steel loose tube	1/4.00		
37		Aluminum clad steel wire	6/4.00		
38		Aluminum alloy wire	NA		
39	Out stranding direction	direction	Left		
40	Ratio of length of lay of layer to nominal outside diameter of layer	times	10-16		
41					
42	Overall diameter	mm	12		
43	Cross section area	Stainless steel loose tube	2.39		
44		Aluminum clad steel wire	75.4		
45		Aluminum alloy wire	NA		
46		Total	75.4		
47	Weight (max)	ACS wire	494		
48		Alloy wire(if applicable)	NA		
49		Stainless steel loose tube	kg / km	25	
50		Grease	6		
51		Total	530		
52	Calculated breaking load (min)	KN	82.1		
53	Module of elasticity	Initial	15500		
54		Final	15800		
55	Coefficient of linear expansion	$10^{-6} / C$	13		
56	Maximum tensile stress	N / mm <sup>2</sup>	490		
57	Everday Stress	N / mm <sup>2</sup>	190		
58	Permanent tensile stress	N / mm <sup>2</sup>	823		
59	D.C resistance at 20 C° (max)	Ohm / km	1.135		
60	Rated short circuit current for 0.5s (temperature form 20°C to 200°C) (1)	KA	7.5		
61					
62	Minimum allowable bending radius	mm	180		
63	Grease	Type of grease	-	ACC.To Standard	
64		Drop point	°C	>=90	
65		Flash temperature	°C	>=200	
66		Whether the grease is stable at 75c	Yes / No	yes	
67					
68		Weigth	kg / km	6	

Description		Unit	Quaranteed data (10.5mm)	Note
69	Material of	core	-	SiO <sub>2</sub> -GeO <sub>2</sub>
70		clad	-	SiO <sub>2</sub>
71	Tem. Dependence of Attenuation form -40 to +85 degree of cent.		db / km	<=0.05
72				
73	Max allowable temperature	Continuous	C	80
74		Instantaneous	C	200
75	Temperature Range Transport, Storage, Operation		C	-40 +80
76	Temperature Range installation		C	-10 +50
77	Minimum fiber excess length elongation		%	0.5
78	OPGW reel length		m	5000±3%
schematic cross section				

## PROPERTIES OF INDIVIDUAL WIRE BEFORE STRANDING

Description		Unit	Quaranteed data (10.5mm)	Note
79	applicable standard		ASTM B415	
80	Standard diameter	mm	4.0	
81	Tolerance of diameter	mm	± 1.5	
82	Minimum tensile strength	Mpa	1210	
83	Minimum elongation at fracture	%	1.5	
84	Minimum conductivity at 20 °C	IACS%	20	
85	Minimum number of twisting	No.	20	
86	Minimum thickness of aluminum	mm	0.200	