ALUMINIUM KOOHRANG ZAGROS CO.

Zagros
Koohrang
Aluminium

آلومینیوم کوهرنگ زاگرس

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ZAGROS CO.

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Aluminium Koohrang Zagros Co. is one of the leading manufacturers of pure aluminium and alloy rod by the continuous casting process and bare aluminium conductors for electrical applications, with the capacity of 20000 ton/year.

This company was incorporated in the year 2006, in Farrokhshahr industrial zone (Shahrekord,Chaharmahal & Bakhtiari Province, Iran) and started its operation in 2008.

Our company utilizes the advanced technology and controlling systems to minimize the human errors. All products including Pure Amuminium Alloy Rod(1000,3000,4000,5000,6000,8000-series) and Bare Aluminium Conductors are produced in accordance with international standards (ASTM, BS, DIN, IEC, NFC ...) .

Our quality control laboratory incorporates the latest generation of high technology equipments. Checks are made at each point in the alloying, casting and heat treatment processes. Chemical analysis of the aluminium product and physical testing are controlled in our laboratory. Conformance to customer and international standards is certified and documented with each shipment.

We endeavour to increase the capacity of production with highest quality standards and consistently achieve close following of our client›s requests. We have been successful to receive Certificate quality of goods from TAVANIR ORG and ISO 9001-2008 in Quality Management System.

Our aim is to be the domestic market leader, grow in a sustainable and profitable way and enter the international markets.

This catalogue covers all technical aspects of Aluminium Koohrang Zagros Overhead Lines, including design considerations such as conductor size, number of wires, wire diameter and parameters such as Conductor DC Resistance.

Aluminium Koohrang Zagros Co. manufactures following Aluminium products:

- Aluminium Alloy Rod (1000,3000,4000,5000,6000,8000 series)
- AAC (All Aluminium Conductors) used in short spans
- AAAC (All Aluminium Alloy Conductors)
- ACSR (Aluminium Conductors Steel Reinforced) used in large spans
- OPGW

آلومینیوم کوهرنگ زاگرس

شرکت تولیدی آلومینیوم کوهرنگ زاگرس در سال 1385 تاسیس و از سال 1388 به بهره برداری رسیده است. این شرکت در راستای تولید و توسعه محصولات مورد نیاز، در صنعت برق کشور و تامین مواد اولیه صنایع پایین دستی در زمینه های مختلف، به فعالیت خود ادامه می دهد.

شرکت تولیدی آلومینیوم کوهرنگ زاگرس با بهره مندی از ماشین آلات پیشرفته و تکنولوژی روز دنیا و به همت مدیران و کارشناسان مجرب خود، انواع محصولات با کیفیت و مطابق با استانداردهای جهانی را تولید و در بازارهای داخلی و خارجی عرضه می نماید.

فعالیت های اصلی شرکت شامل تولیدات زیر می شود:

1 – مفتول های آلومینیومی خالص و آلیاژی در گروههای 1000 ، 3000 ، 4000 ، 5000 ، 6000 و 8000

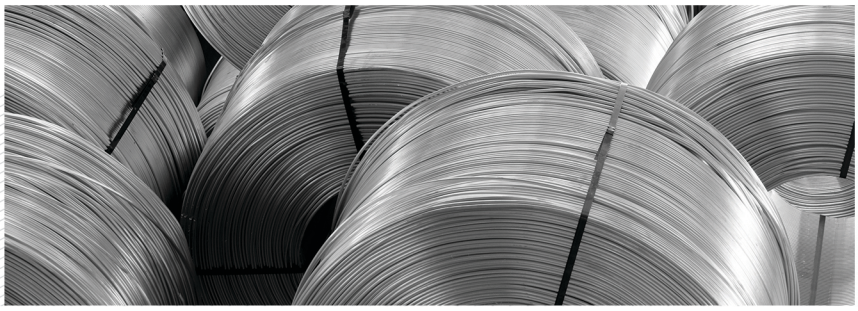
2 – انواع هادیهای هوایی برای شبکه های خطوط توزیع و انتقال برق Shield wire GA/AW –AAC–AAAC–ACSR/AW– ACSR/GA– OPGW

3 – سایزهای مختلف سیم های آلومینیوم آلیاژی برای جوشکاری MIG و TIG

4 – هادیهای آلیاژی کمپکت بکار رفته در کابلهای خودنگهدار و سیم های آلومینیوم آلیاژی مورد مصرف در صنایع مختلف نظیر سازندگان سیهای CCA , CCAM ، میخ پرچ ، حفاظ های توری و ...

آزمایشگاه شرکت تولیدی آلومینیوم کوهرنگ زاگرس با برخورداری از بهترین امکانات آزمایشگاهی و با استفاده از دستورالعمل ها و روش های استاندارد و همچنین تلاش بی وقفه کارشناسان خود، در اجرای نظام تضمین کیفیت و رسیدن به اهداف و تعالی سازمانی، قدم های موثری برداشته است و همگام با مدیریت آگاه و توانمند شرکت، طی مسیر می نماید.

Aluminium 1350 & aluminium Alloy rod



Standard : ASTM B233

CHEMICAL COMPOSITION OF ALUMINIUM ROD

Series	Grade	Cr (max)	Si (max)	Fe (max)	Cu (max)	Mn (max)	Zn (max)	B (max)	V+Ti (max)	Al
1000	1350	0.01	0.1	0.4	0.05	0.01	0.05	0.05	0.02	Rem

MECHANICAL AND ELECTRICAL PROPERTIES

Aluminium Rod	Temper	Tensile strength MPa	Yield strength MPa	Elongation % MPa	Electrical conductivity %IACS
1350	O	83	28	23	61.8
	H12	97	83	-	61.0
	H14	110	97	-	61
	H19	186	165	1.5	61

Standard : EN573-3

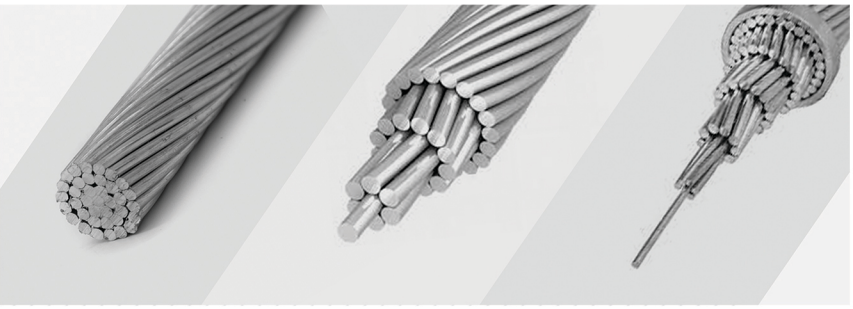
CHEMICAL COMPOSITION OF ALUMINIUM ROD

Series	Grade	Cr (max)	Si	Fe (max)	Cu (max)	Mn (max)	Mg	B (max)	Zn (max)	Al
6000	6101	0.03	0.30-0.70	0.5	0.1	0.03	0.35-0.80	0.06	0.1	rem
	6201	0.03	0.50-0.95	0.5	0.1	0.03	0.60-0.90	0.06	0.1	rem

MECHANICAL AND ELECTRICAL PROPERTIES

Series	Temper	Tensile strength MPa	Yield strength MPa	Elongation %	Electrical conductivity %IACS
6101	T6	221	193	15	53%
6201	T81	331	310	3	54%

All Aluminium Conductors (AAC)



For transmission and distribution in electrical networks with relatively short spans.

Standard : DIN 48201 / BS-EN 50182

Conductor : Hard drawn stranded aluminium wires

TECHNICAL INFORMATION A- ACCORDING TO DIN 48201 / BS-EN 50182

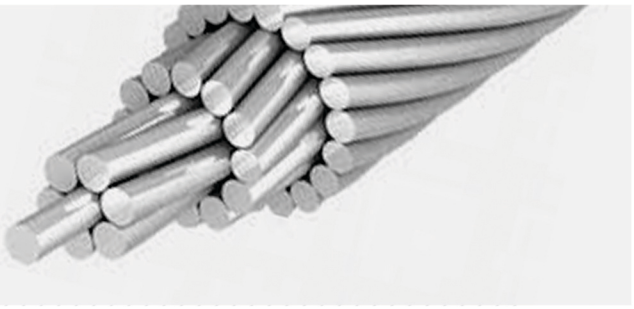
Nominal Cross Section mm^2	Number & nominal wire diameter NR x mm	Approx. Overal diameter mm	Approx. Conductor weight Kg/Km	Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
16	7x1.70	5.1	45	1.8017	2.8
25	7x2.10	6.3	65	1.1807	4.1
35	7x2.50	7.5	95	0.8331	5.7
50	7x3.00	9.0	135	0.5786	7.9
50	19x1.80	9.0	135	0.5949	8.4
70	19x2.10	10.5	180	0.4371	11.3
95	19x2.50	12.5	255	0.3084	15.6
120	19x2.80	14.0	320	0.2459	18.7
150	37x2.25	15.7	405	0.1960	25.3
185	37x2.50	17.5	500	0.1587	30.5
240	61x2.25	20.2	670	0.1191	39.5
300	61x2.50	22.5	825	0.0964	47.7
400	61x2.89	26.0	1105	0.0722	60.8
500	61x3.23	29.1	1380	0.0578	74.6
625	91x2.96	32.6	1726	0.0460	95
800	91x3.35	36.8	2228.3	0.0360	118.2
1000	91x3.74	41.1	2777.3	0.0290	145.5

TECHNICAL INFORMATION B-ACCORDING TO BS 215 / BS-EN 50182

Code Name	Number & nominal wire diameter NR x mm	Approx. Overal diameter mm	Approx. Conductor weight Kg/Km	Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
MIDGE	7x2.06	6.18	63.8	1.2270	3.9
GANT	7x2.2	6.6	73.00	1.0640	4.83
MOSQUITO	7x2.6	7.8	101	0.7740	6.27

Code Name	Number & nominal wire diameter NR x mm	Approx. Overal diameter mm	Approx. Conductor weight Kg/Km	Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
BLUEBOTTLE	7x3.7	11	201	0.3880	11.78
EARWIG	7x3.8	11.3	215	0.3630	12.57
GRASSHOPPER	7x3.9	11.7	230	0.3400	13.45
CLEGG	7x4.2	12.5	261	0.2980	15.3
WASP	7x4.39	13.17	289	0.2702	16
BEETLE	19x2.7	13.4	292	0.2700	18.08
BEE	7x4.9	14.7	361	0.2160	21.12
HORNET	19x3.25	16.25	433	0.1825	25.7
CATERPILLAR	19x3.5	17.7	511	0.1540	29.75
CHAFER	19x3.78	18.9	586	0.1349	23.4
SPIDER	19x4.0	20	653	0.1210	38.01
COCKROACH	19x4.22	21.1	730	0.1083	40
BUTTERFLY	19x4.65	23.3	887	0.0891	48.7
MOTH	19x5.0	25	1025	0.0770	59.69
DRONE	37x3.6	25.1	1027	0.0770	59.69
CETIPEDE	37x3.78	26.46	1145	0.0694	56.1
MAYBUG	37x4.1	28.6	1341	0.0590	77.78
SCORPION	37x4.3	29.9	1461	0.0540	84.77
CICADA	37x4.7	32.6	1733	0.0450	100.54

All Aluminium Alloy Conductors (AAAC)



For transmission and distribution in elctrical networks over long spans with high resistance to corrosion

Standard : BS 3242 / DIN 48201 / EN 50182 / ASTM B-232 / IEC 61089

Conductor : Hard drawn stranded aluminium alloy wires

TECHNICAL INFORMATION ACCORDING TO BS 3242 / EN50182

Code Name	Nominal Cross Section mm^2	Number & nominal wire diameter NR x mm	Approx. Overal diameter mm	Approx. Conductor weight Kg/km	Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
BOX	19	7*1.85	5.55	51	1.7658	5.28
ACACIA	24	7*2.08	6.24	65	1.3969	6.68
ALMOND	30	7*2.34	7.02	82	1.1037	8.44
CEDAR	36	7*2.54	7.62	97	0.9367	9.94
DEODAR	42	7*2.77	8.31	115	0.7876	11.82
FIR	48	7*2.95	8.85	131	0.6944	13.41
HAZEL	60	7*3.30	9.9	164	0.5549	16.78
PINE	72	7*3.61	10.83	196	0.4637	20.08
HOLLY	84	7*3.91	11.73	230	0.3953	23.56
WILLOW	90	7*4.04	12.12	245	0.3702	25.15
OAK	119	7*4.65	13.95	325	0.2795	33.32
MULBERRY	151	19*3.18	15.90	415	0.2212	42.30
ASH	181	19*3.48	17.4	497	0.1847	50.65
ELM	211	19*3.76	18.80	580	0.1582	59.13
POPLAR	239	37*2.87	20.09	659	0.1397	67.10
SYCAMORE	303	37*3.23	22.61	835	0.1103	84.98
UPAS	362	37*3.53	24.71	997	0.0923	101.50
YEW	479	37*4.06	28.42	1319	0.0698	134.26
TOTARA	489	37x4.14	29	1372	0.0660	146.93
RUBUS	587	61x3.50	31.50	1622	0.0567	173.13
SORBUS	659	61x3.71	33.4	1822	0.0505	194.53
ARAUCARIA	821	61x4.14	37.30	2269	0.0406	242.24
REDWOOD	996	61x4.56	41	2753	0.0334	293.88

Code Name	Nominal Cross Section mm²	Number & nominal wire diameter NR x mm	Approx. Overal diameter mm	Approx. Conductor weight Kg/km	Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
ALTON	24.7	7x2.12	6.4	68	1.3576	7.84
AMES	39.3	7x2.67	8.00	108	0.8533	12.40
AZUSA	62.5	7x3.37	10.1	172	0.5364	19.00
ANAHEIM	78.7	7x3.78	11.4	217	0.4255	24.00
AMHERST	99.2	7x4.25	12.8	273	0.3379	30.20
ALLIANCE	125.1	7x4.77	14.3	345	0.2658	38.10
BUTTE	158.5	19x3.26	16.3	437	0.2114	46.70
CANTON	199.9	19x3.66	18.3	551	0.1675	59.00
CAIRO	235.8	19x3.98	19.9	650	0.1421	69.60
DARIEN	283.5	19x4.36	21.8	781	0.1181	83.60
ELGIN	330.6	19x4.71	23.5	911	0.1013	97.50
FLINT	375.4	37x3.59	25.2	1035	0.0892	108.00
GREELEY	469.8	37x4.02	28.1	1295	0.0712	136.00

TECHNICAL INFORMATION ACCORDING TO ASTM B-232 / IEC 61089

Code Name Al / Equiv	Alloy Cross Section mm²	Number & nominal wire diameter NR x mm	Approx. Overal diameter mm	Approx. Conductor weight Kg/km	Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
16	18.4	7x1.83	5.5	50	1.7896	5.43
25	28.8	7x2.29	6.90	79	1.1453	8.49
40	46	7x2.89	8.7	126	0.7158	13.58
63	72.5	7x3.63	10.90	198	0.4545	21.39
100	115	19x2.78	13.9	316	0.2877	33.95
125	144	19x3.10	15.50	395	0.2302	42.44
160	184	19x3.51	17.6	506	0.1798	54.32
200	230	19x3.93	19.60	633	0.1439	67.91
250	288	19x4.39	22	791	0.1151	84.88
315	363	37x3.53	24.70	999	0.0916	106.95
400	460	37x3.98	27.9	1268	0.0721	135.81
450	518	37x4.22	29.60	1427	0.0641	152.79
500	575	37x4.45	31.2	1586	0.0577	169.76
560	645	61x3.67	33.00	1778	0.0516	190.14
630	725	61x3.89	35	2001	0.0485	213.90
710	817	61x4.13	37.20	2255	0.0407	241.07
800	921	61x4.38	39.5	2541	0.0361	271.62
900	1036	91x3.81	41.80	2861	0.0321	305.58

Code Name Al Equiv	Alloy Cross Section mm²	Number & nominal wire diameter NR x mm	Approx. Overal diameter mm	Approx. Conductor weight Kg/km	Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
1000	1151	91x4.01	44.1	3179	0.0289	339.53
1120	1289	91x4.25	46.70	3561	0.0258	280.27
1250	1439	91x4.49	49.4	3974	0.0231	424.41

Aluminium Alloy Messenger Conductor

Takes all mechanical stress in self-supporting cable and serves as earth-cum-neutral conductor.

Conductor : Hard drawn stranded aluminium alloy wires

TECHNICAL INFORMATION

Nominal Cross Section mm²	Number & nominal wire diameter NR x mm	Approx. Overal diameter mm	Approx. Conductor weight Kg/km	Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
35	7*2.54	7.6	97	0.9500	9.94
50	7*3.15	9.5	149	0.6300	15.3
70	7*3.61	10.8	196	0.5000	20.0

Aluminium Conductors Steel Reinforced (ACSR)

For transmission and distribution in electrical networks over long spans

Standard : DIN 48204 / ASTM B232 / BS 215 / EN50182

Conductor : A center galvanized steel wire(s) and Hard drawn stranded aluminium wires

TECHNICAL INFORMATION A -ACCORDING TO ASTM - B232

Code Name	Nominal Cross mm²	Number & nominal wire diameter NR X mm		Approx. Overal mm	Approx.Conductor weight kg/km		Max DC Resistance ohm/km	Calculated Breaking KN
		Al	Steel		Al	Steel		
TURKEY	15.52	6*1.68	1*1.68	5.04	37	17	2.1045	5.28
THRUSH	19.64	6*1.89	1*1.89	5.67	46	22	1.6628	6.68
SWAN	24.71	6*2.12	1*2.12	6.36	58	27	1.3216	8.31
SWALLOW	31.14	6*2.38	1*2.38	7.14	73	35	1.0486	10.21
SPARROW	39.19	6*2.67	1*2.67	8.01	92	44	0.8332	12.69
ROBIN	49.48	6*3.00	1*3.00	9.00	116	55	0.6599	15.82
RAVEN	62.44	6*3.37	1*3.37	10.11	147	69	0.5230	19.36
QUAIL	78.55	6*3.78	1*3.78	11.34	185	185	0.4157	23.27
PIGEON	99.3	6*4.25	1*4.25	12.75	234	234	0.3288	29.42
PENGUIN	125.09	6*4.77	1*4.77	14.31	294	294	0.2610	37.06
WAXWING	142.48	18*3.09	1*3.09	15.45	372	372	0.2118	30.27
OWL	153	6*5.36	1*1.79	16.09	372	372	0.2078	42.95
PARTRIDGE	156.86	26*2.57	7*2.00	16.28	374	374	0.2096	50.24
OSTRICH	176.89	26*2.73	7*2.12	17.28	422	422	0.1858	56.56
MERLIN	179.68	18*3.47	1*3.47	17.35	470	74	0.1679	38.18
LINNET	198.38	26*2.89	7*2.25	18.31	473	217	0.1658	62.77
ORIOLE	210.27	30*2.69	7*2.69	18.83	474	311	0.1645	77.44
CHICKADEE	212.09	18*3.77	1*-3.77	18.85	554	87	0.1423	43.37
BRANT	227.68	24*3.27	7*2.18	19.61	559	204	0.1409	64.73
IBIS	234.06	26*3.14	7*2.44	19.88	558	256	0.1404	72.07
LARK	247.77	30*2.92	7*2.92	20.44	557	366	0.1393	90.31
PELICAN	255.76	18*4.14	1*4.14	20.70	669	105	0.1180	52.31
FLICKER	272.98	24*3.58	7*2.39	21.49	670	245	0.1176	75.68
HAWK	281.12	26*3.44	7*2.68	21.80	670	308	0.1170	86.74
HEN	297.56	30*3.20	7*3.20	22.40	671	440	0.1162	105.18
OSPREY	298.16	18*4.47	1*4.47	22.35	779	122	0.1012	60.98

Code Name	Nominal Cross mm²	Number & nominal wire diameter		Approx. Overal mm	Approx.Conductor weight kg/km		Max DC Resistance ohm/km	Calculated Breaking KN
		Al	Steel		Al	Steel		
PARAKEET	318.89	24*3.87	7*2.58	23.22	783	286	0.1006	88.30
DOVE	328.49	26*3.72	7*2.89	23.55	783	359	0.1000	101.12
EAGLE	347.88	30*3.46	7*3.46	24.21	784	514	0.0994	122.97
PEACOCK	345.91	24*4.03	7*2.69	24.20	849	311	0.0928	95.88
SQUAB	355.62	26*3.87	7*3.01	24.51	848	389	0.9024	108.16
WOOD DUCK	378.7	30*3.61	7*3.61	25.25	853	560	0.0913	129.05
WOOD DUCK	378.7	30*3.61	7*3.61	25.25	853	560	0.0913	129.05
TEAL	376.67	30*3.61	19*2.16	25.24	853	545	0.0914	133.39
KINGBIRD	340.95	18*4.78	1*4.78	23.88	891	140	0.0885	69.74
ROOK	364.94	24*4.14	7*2.76	24.84	896	327	0.0879	101.06
GROSBEAK	374.33	26*3.97	7*3.09	25.15	892	410	0.0878	111.89
SCOTER	397.82	30*3.70	7*3.09	25.88	897	588	0.0869	135.56
EGRET	396.1	30*3.70	19*2.22	25.90	897	576	0.0870	140.62
FLAMINGO	380.98	24*4.23	7*2.82	25.40	935	341	0.0842	105.50
GANNET	393.15	26*4.07	7*3.16	28.30	938	429	0.0836	117.28
CROW	408.48	54*2.92	7*2.92	26.28	1003	366	0.0785	115.21
STILT	410.12	24*4.39	7*2.92	26.31	1007	366	0.0782	113.36
STARLING	421.07	26*4.21	7*3.28	26.68	1003	462	0.0781	125.97

TECHNICAL INFORMATION B-ACCORDING TO DIN 48204 / EN50182

Nominal Cross Section mm²		Number & nominal wire diameter		Approx. Overal mm	Approx.Conductor weight kg/km		Max DC Resistance ohm/km	Calculated Breaking KN
Al	Steel	Al	Steel		Al	Steel		
16	2.5	6*1.80	1*1.80	5.40	42	20	1.8332	5.58
25	4	6*2.25	1*2.25	6.80	65	31	1.1732	8.56
35	6	6*2.70	1*2.70	8.10	94	45	0.8147	12.06
44	32	14*2.00	7*2.40	11.20	121	248	0.5932	43.20
50	8	6*3.20	1*3.20	9.60	132	63	0.5800	16.32
50	30	12*2.33	7*2.33	11.70	141	234	0.5189	42.27
70	12	26*2.85	7*1.44	11.70	193	89	0.4032	25.26
95	15	26*2.15	7*1.67	13.60	260	120	0.2986	33.42
95	55	12*3.20	7*3.20	16.00	266	441	0.2751	76.21
105	75	14*3.10	19*2.25	17.50	292	594	0.2471	101.67
120	20	26*2.44	7*1.90	15.50	335	156	0.2318	42.70
120	70	12*3.60	7*3.60	18.00	337	558	0.2174	93.51
125	30	30*2.33	7*2.33	16.10	353	234	0.2182	55.47
150	25	26*2.70	7*2.10	17.10	411	190	0.1893	51.65
170	40	30*2.70	7*2.70	18.90	474	314	0.1625	73.17

Code Name	Nominal Cross Section mm²	Number & nominal wire diameter N*d(mm)		Approx. Overal diameter mm	Approx.Conductor weight Kg/km		Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
		Al	Steel		Al	Steel		
FINCH	637.58	54*3.65	19*2.19	32.85	1574	560	0.0505	174.64
BUNTING	647.62	45*4.14	7*2.76	33.12	1680	327	0.0473	142.44
GRACKLE	679.66	54*3.77	19*2.27	33.97	1679	602	0.0473	184.22
BITTERN	689.04	45*4.27	7*2.85	34.17	1787	349	0.0445	151.66
PHEASANT	726.77	54*3.90	19*2.34	35.10	1797	639	0.0442	194.16
DIPPER	731.09	45*4.40	7*2.92	35.16	1897	366	0.0419	160.37
MARTIN	772.04	54*4.02	19*2.41	36.17	1910	678	0.0416	206.12
BOBOLINK	775.39	45*4.53	7*3.02	36.24	2011	392	0.0395	170.55
PLOVER	818.67	54*4.14	19*2.48	37.24	2025	718	0.0393	218.44
NUTHATCH	817.01	45*4.65	7*3.10	37.20	2119	413	0.0375	177.67
PARROT	863.07	54*4.25	19*2.55	38.25	2134	759	0.0372	230.57
LEPWING	859.72	45*4.77	7*3.18	38.16	2230	434	0.0356	186.95
FALCON	908.63	54*4.36	19*2.62	39.26	2246	802	0.0354	243.04
CKUKAR	976.69	84*3.70	19*2.22	40.70	2516	576	0.0318	227.83

TECHNICAL INFORMATION D-ACCORDING TO ASTM B232

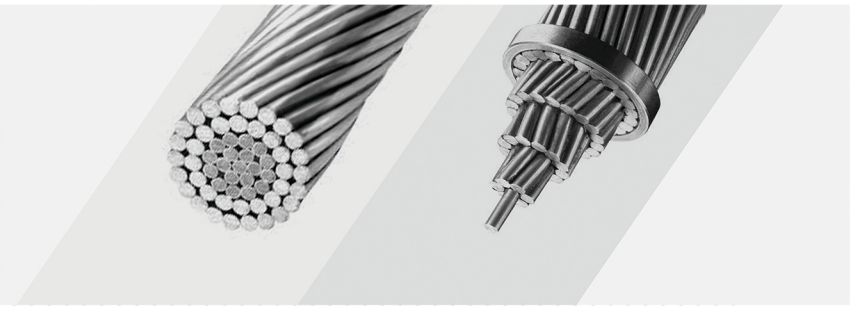
Code Name	Nominal Cross Section mm²	Number & nominal wire diameter N*d(mm)		Approx. Overal diameter mm	Approx.Conductor weight Kg/km		Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
		Al	Steel		Al	Steel		
GROUSE	54.65	8*2.54	1*4.24	9.32	112	110	0.6758	22.87
PETREL	81.71	12*2.34	7*2.34	11.71	143	236	0.5544	46.16
MINORCA	88.84	12*2.44	7*2.44	12.22	156	256	0.5099	50.19
LEGHORN	107.98	12*2.69	7*2.69	13.46	189	312	0.4195	60.68
GUINEA	127.23	12*2.92	7*2.92	14.63	223	367	0.3560	71.12
DOTTEREL	141.56	12*3.08	7*3.08	15.42	248	408	0.3200	76.69
DORKING	152.8	12*3.20	7*3.20	16.03	268	441	0.2964	82.78
COCHIN	169.47	12*3.37	7*3.37	16.84	297	489	0.2673	91.81
BRAHMA	194.56	16*2.86	19*2.48	18.14	285	720	0.2798	126.55

TECHNICAL INFORMATION D-ACCORDING TO BS 215 / EN 50182

Code Name	Nominal Cross Section mm²	Number & nominal wire diameter N*d(mm)		Approx. Overal diameter mm	Approx.Conductor weight Kg/km		Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
		Al	Steel		Al	Steel		
MOLE	12.37	6*1.50	1*1.50	4.50	29	14	2.6398	4.13
AQUIRREL	24.48	6*2.11	1*2.11	6.33	58	27	1.3341	7.90
GOHPER	30.62	6*2.36	1*2.36	7.08	72	34	1.0664	9.61

Code Name	Nominal Cross Section mm²	Number & nominal wire diameter N*d(mm)		Approx. Overal diameter mm	Approx.Conductor weight Kg/km		Max DC Resistance at 20°C ohm/km	Calculated Breaking Load KN
		Al	Steel		Al	Steel		
WEASEL	36.88	6*2.59	1*2.59	7.77	87	41	0.8854	11.35
FOX	42.79	6*2.79	1*2.79	8.37	101	48	0.7630	13.17
FERRET	49.48	6*3.00	1*3.00	9.00	116	55	0.6599	15.23
RABBIT	61.7	6*3.35	1*3.35	10.05	145	69	0.5292	18.37
MINK	73.64	6*3.66	1*3.66	10.98	173	82	0.4434	21.80
SHUNK	100.1	12*2.59	7*2.59	12.95	175	288	0.4200	52.74
BEAVER	87.52	6*3.99	1*3.99	11.97	206	97	0.3730	25.76
HORSE	116.16	12*2.79	7*2.79	13.95	203	334	0.3619	61.19
RACOON	92.42	6*4.10	1*4.10	12.30	217	103	0.3533	27.20
OTTER	97.9	6*4.22	1*4.22	12.66	230	109	0.3335	28.82
CAT	111.33	6*4.50	1*4.50	13.50	262	124	0.2933	32.76
HARE	122.48	6*4.72	1*4.72	14.16	288	136	0.2666	35.94
DOG	118.53	6*4.72	7*1.57	14.15	288	106	0.2681	32.69
HYENA	126.43	7*4.39	7*1.93	14.57	291	160	0.2631	41.13
LEOPARD	148.21	6*5.28	7*1.75	15.81	360	132	0.2143	40.77
COYOTE	151.8	26*2.54	7*1.91	15.89	364		0.2144	45.93
COUGAR	138.81	18*3.05	1*3.05	15.25	362		0.2171	30.56
TIGER	161.85	30*2.36	7*2.36	16.52	363	239	0.2127	58.02
WOLF	194.93	30*2.59	7*2.59	18.13	437	288	0.1766	69.24
	167.46	18*3.35	1*3.35	16.75	437	69	0.1800	33.93
LYNX	226.2	30*2.79	7*2.79	19.53	507	334	0.1522	79.80
	194.47	18*3.61	1*3.61	18.05	508	80	0.1550	39.06
PANTHER	261.53	30*2.00	7*3.00	21.00	586	387	0.1316	92.26
LION	293.85	30*3.18	7*3.18	22.26	658	435	0.1171	100.49
BEAR	326.11	30*3.35	7*3.35	23.45	731	482	0.1055	111.26
GOAT	399.97	30*3.71	7*3.71	25.97	896	591	0.0861	135.80
SHEEP	462.62	30*3.99	7*3.99	27.93	1036	684	0.0744	156.32
ANTELOPE	422.59	54*2.97	7*2.97	26.73	1015	379	0.0744	118.53
BISON	431.17	54*3.00	7*3.00	27.00	1036	387	0.0729	118.95
	222.33	18*3.86	1*3.86	19.30	580	91	0.1355	44.26
DEER	529.83	30*4.27	7*4.27	29.89	1187	783	0.0649	178.60
ZEBRA	484.46	54*3.18	7*3.18	28.62	1164	435	0.0649	131.94
ELK	588.44	30*4.50	7*4.50	31.50	1318	870	0.0585	198.36
CAMEL	537.65	54*3.35	7*3.35	30.15	1292	482	0.0585	145.95
MOOSE	596.98	54*3.53	7*3.53	31.77	1434	535	0.0527	161.00

Aluminium Conductors Aluminium Clad Steel Reinforced (ACSR-AW)



For transmission and distribution in electrical networks over long spans

Standard : EN 50182 / IEC 61089 / ASTM B-549

TECHNICAL INFORMATION A-ACCORDING TO EN 50182

Code Number	Cross Section mm²	Stranding & Wire Diam No x mm Al	Steel	Overal Diameter mm	Unit Weight Kg/Km Al	AW	Rated Strength KN	Electrical Resistance at 20°C ohm/km
LARL-30	31.1	6x2.38	1x2.38	7.14	73	29	10.2	1.018
LARL-56	54.6	6x3.15	1x3.15	9.45	128	51	7.2	0.581
LARL-78	78.6	6x3.78	1x3.78	11.34	185	74	23.0	0.403
LARL-145	147.1	30x2.25	7x2.25	15.75	330	184	55.1	0.224
LARL-180	181.6	20x2.50	7x2.50	17.5	407	227	66.3	0.182
LARL-280	281.1	26x3.44	7x2.68	21.80	667	262	87.6	0.113
LARL-380	381	54x2.82	7x2.82	25.38	932	290	109.6	0.082
LARL-455	454.4	54x3.08	7x3.08	27.72	1112	345	129.4	0.069
LARL-516	516.8	45x3.70	7x2.47	29.61	1339	221	117.4	0.059
LARL-545	547.3	54x3.38	7x3.38	30.42	1339	416	153.2	0.057
LARL-635	636.6	54x3.65	19x2.19	32.85	1562	475	177.5	0.490

TECHNICAL INFORMATION B-ACCORDING TO IEC 61089

Code Number	Cross Section mm²	Stranding & Wire Diam No x mm Al	Steel	Overal Diameter mm	Unit Weight Kg/Km	Rated Strength KN	Electrical Resistance at 20°C ohm/km
16	17.6	6x1.81	1x1.81	5.43	59.0	5.91	1.792
25	28	6x2.26	1x2.26	6.78	92.1	9.00	1.147
40	44.4	6x2.85	1x2.85	8.55	147.4	14.21	0.717
63	70.1	6x3.58	1x3.58	10.70	232.2	21.17	0.455
100	112	6x4.51	1x4.51	13.50	368.6	31.84	0.287
125	130	18x2.95	1x2.95	14.80	384.3	29.18	0.230
125	140	26x2.43	7x1.89	15.40	460.8	44.49	0.231
160	167	18x3.34	1x3.34	16.70	491.9	36.38	0.180
160	179	26x2.74	7x2.13	17.40	589.8	56.18	0.180
200	208	18x3.74	1x3.74	18.70	614.9	43.62	0.144
200	223	26x3.07	7x2.39	19.40	737.2	69.27	0.144
250	268	32x3.76	7x2.09	21.30	830.9	67.80	0.115

Code Number	Cross Section mm²	Stranding & Wire Diam No x mm Al	Steel	Overal Diameter mm	Unit Weight Kg/Km	Rated Strength KN	Electrical Resistance at 20°C ohm/km
250	279	26x3.43	7x2.67	21.70	921.5	86.58	0.115
315	331	45x2.96	7x1.97	23.70	996.4	78.33	0.092
315	352	26x3.75	7x2.99	24.40	1161.1	107.58	0.092
400	420	45x3.34	7x2.22	26.70	1265.3	97.50	0.072
400	437	54x3.02	7x3.02	27.20	1402.9	124.20	0.072
450	483	45x3.54	7x2.36	28.30	1423.4	107.48	0.064
450	493	54x3.21	7x3.21	28.90	1578.2	139.72	0.064
500	526	45x3.73	7x2.49	29.80	1581.6	119.42	0.058
500	547	54x3.78	7x3.38	30.40	1753.6	153.99	0.058
560	588	45x3.95	7x2.63	31.60	1771.4	133.75	0.052
560	612	54x3.58	19x2.15	32.20	1956.3	169.36	0.052
630	662	45x4.19	7x2.79	33.50	1992.8	150.47	0.046
630	688	54x3.79	19x2.28	34.20	2200.9	190.52	0.046
710	476	45x4.44	7x2.96	35.60	2245.8	169.57	0.041
710	775	54x4.03	19x2.42	36.30	2480.3	214.72	0.041
800	825	72x3.74	7x2.49	37.40	2412.8	167.67	0.036
800	849	84x3.45	7x3.45	37.90	2598.9	206.37	0.036
800	873	54x4.28	19x2.57	38.50	2794.7	241.94	0.036
900	929	72x3.97	7x2.65	39.70	2714.4	188.63	0.032
900	956	84x3.66	7x3.66	40.20	2923.8	224.82	0.032
1000	1032	72x4.18	7x2.79	41.80	3016.0	209.59	0.029
1120	1187	84x4.08	19x2.45	44.90	3628.4	282.88	0.026
1250	1325	84x4.31	19x2.59	47.40	4049.5	315.72	0.023

TECHNICAL INFORMATION C- ACCORDING TO STANDARD ASTM B549

Code Word	Cross Section mm²	Stranding & Wire Diam No x mm Al	AW	Overal Diameter mm	Unit Weight Kg/Km Total	Rated Strength KN	Electrical Resistance at 20°C ohm/km
SWAN	24.7	6x2.12	1x2.12	6.36	81	7.9	1.282
SWANATE	26.5	7x1.96	1x2.61	6.53	93	10.1	1.251
SPARROW	39.2	6x2.67	1x2.67	8.01	129	12.3	0.808
SPARATE	42.1	7x2.47	1x3.30	8.24	149	15.6	0.787
ROBIN	49.5	6x3.00	1x3.00	9.00	163	15.3	0.640
RAVEN	62.4	6x3.37	1x3.37	10.11	205	18.9	0.507
QUAIL	78.6	6x3.78	1x3.78	11.34	259	22.8	0.403
PIGEON	99.3	6x4.25	1x4.25	12.75	326	28.0	0.319
PENGUIN	125.1	6x4.77	1x4.77	14.31	411	34.2	0.253
WAXWING	142.5	18x3.09	1x3.09	15.45	421	30.3	0.210
PARTRIDGE	156.9	26x2.57	7x2.00	16.28	520	48.0	0.204

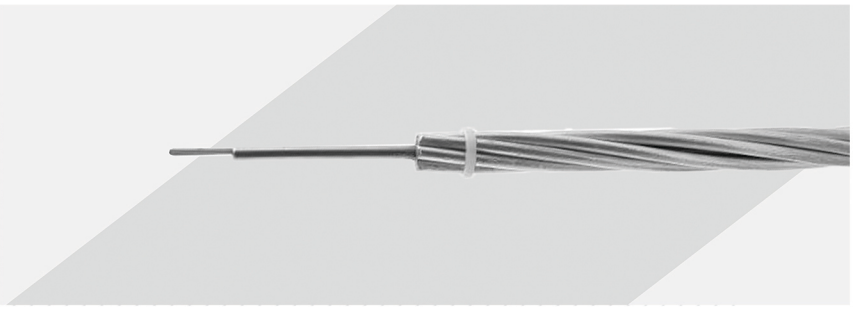
Code Word	Cross Section mm²	Stranding & Wire Diam No x mm Al	AW	Overal Diameter mm	Unit Weight Kg/Km Total	Rated Strength KN	Electrical Resistance at 20°C ohm/km
OSTRICH	176.9	26x2.73	7x2.12	17.28	584	54.0	0.180
MERLIN	179.7	18x3.47	1x3.47	17.35	532	38.0	0.166
LINNET	198.4	26x2.89	7x2.25	18.31	654	60.0	0.161
ORIOLE	210.3	30x2.69	7x2.69	18.83	736	74.5	0.158
CHICKADEE	212.1	18x3.77	1x3.77	18.85	628	43.5	0.141
BRANT	227.7	24x3.27	7x2.18	19.62	730	62.5	0.138
IBIS	234.1	26x3.14	7x2.44	19.88	773	70.2	0.136
LARK	247.8	30x2.92	7x2.92	20.44	869	87.3	0.134
PELICAN	255.8	18x4.14	1x4.14	20.70	754	51.0	0.117
FLICKER	273.0	24x3.58	7x2.39	21.49	876	74.3	0.115
HAWK	280.8	26x3.44	7x2.67	21.77	928	84.3	0.114
HEN	297.6	30x3.20	7x3.20	22.40	1043	104.0	0.112
OSPREY	298.2	18x4.47	1x4.47	22.35	879	58.9	0.100
PARAKEET	318.9	24x3.87	7x2.58	23.22	1022	85.7	0.098
DOVE	328.5	26x3.72	7x2.89	23.55	1084	97.5	0.097
EAGLE	347.9	30x3.46	7x3.46	24.22	1217	119.0	0.095
PEACOCK	345.9	24x4.03	7x2.69	24.19	1111	93.3	0.091
SQUAB	355.6	26x3.87	7x3.01	24.51	1178	105.0	0.090
WOOD DUCK	378.7	30x3.61	7x3.61	25.27	1323	126.0	0.088
TEAL	376.7	30x3.61	19x2.16	25.24	1313	126.6	0.088
KINGBIRD	341.0	18x4.78	1x4.78	23.90	1005	66.8	0.088
ROOK	365	24x4.14	7x2.76	24.84	1168	98.0	0.086
GROSBEAK	374.3	26x3.97	7x3.09	25.15	1238	110.0	0.085
SCOTER	397.8	30x3.70	7x3.70	25.90	1391	130.0	0.083
EGRET	396.1	30x3.70	19x2.22	25.90	1381	133.0	0.084
SWIFT	332.0	36x3.38	1x3.38	23.66	946	60.6	0.088
FLAMINGO	381.0	24x4.23	7x2.82	25.38	1224	103.0	0.082
GANNET	393.2	26x4.07	7x3.16	25.76	1298	116.0	0.081
STILT	410.1	24x4.39	7x2.92	26.32	1314	110.0	0.076
STARLING	421.1	26x4.21	7x3.28	26.68	1393	122.0	0.076
REDWING	444.5	30x3.92	19x2.35	27.43	1552	148.0	0.074
TERN	431.6	45x3.38	7x2.25	27.03	1298	95.4	0.070
CONDOR	454.5	54x3.08	7x3.08	27.72	1459	124.0	0.069
CUCKCOO	454.5	24x4.62	7x3.08	27.74	1459	122.0	0.069
DRAKE	468	26x4.44	7x3.45	28.11	1549	136.0	0.068
COOT	413	36x3.77	1x3.77	26.41	1182	73.8	0.071
MALLARD	495.6	30x4.14	19x2.48	28.96	1726	165.0	0.067
RUDDY	487.2	45x3.59	7x2.40	28.73	1470	107.0	0.062
CANARY	515.4	54x3.28	7x3.28	29.52	1653	138.0	0.061

Code Word	Cross Section mm²	Stranding & Wire Diam No x mm Al	AW	Overal Diameter mm	Unit Weight Kg/Km Total	Rated Strength KN	Electrical Resistance at 20°C ohm/km
RAIL	517.4	45x3.70	7x2.47	29.61	1558	113.0	0.059
CATBIRD	498.1	36x4.14	1x4.14	28.95	1419	86.6	0.059
CARDINAL	547.3	54x3.38	7x3.38	30.42	1751	146.0	0.057
ORTLAN	560.2	45x3.85	7x2.57	30.81	1687	121.0	0.054
TANAGER	537.3	36x4.30	1x4.30	30.12	1537	93.7	0.055
CURLEW	593.6	54x3.52	7x3.52	31.68	1896	158.0	0.053
BLUEJAY	604.4	45x400	7x2.66	31.98	1819	121.0	0.050
FINCH	636.6	54x3.65	19x2.19	32.85	2043	167.0	0.049

TECHNICAL INFORMATION D- ACCORDING TO STANDARD ASTM B-549 / EN 50182

Code Word	Cross Section mm²	Stranding & Wire Diam No x mm Al	AW	Overal Diameter mm	Unit Weight Kg/Km Total	Rated Strength KN	Electrical Resistance at 20°C ohm/km
BUNTING	647.6	45x4.14	7x2.76	33.12	1948	139.0	0.047
CRACKLE	679.7	54x3.77	19x2.27	33.97	2187	179.0	0.046
BITTERN	689.1	45x4.27	7x2.85	34.17	2077	149.0	0.044
PHEASANT	726.8	54x3.90	19x2.34	35.10	2333	189.0	0.043
SKYLARK	664.0	36x4.78	1x4.78	33.42	1893	114.0	0.044
DIPPER	731.1	45x4.40	7x2.92	35.16	2207	158.0	0.041
MARTIN	772.1	54x4.02	19x2.41	36.17	2478	200.0	0.041
BOBOLINK	775.4	45x4.53	7x3.02	36.24	2337	167.0	0.039
PLOVER	818.7	54x4.14	19x2.48	37.24	2625	212.0	0.038
NUTHACH	817.0	45x4.65	7x3.10	37.2	2467	176.0	0.037
PARROT	863.1	54x4.25	19x2.55	38.25	2788	224.0	0.036
LAPWING	859.7	45x4.77	7x3.18	38.16	2598	186.0	0.035
FALCON	908.7	54x4.36	19x2.62	39.26	2917	236.0	0.035
CHUKAR	976.7	84x3.70	19x2.22	42.70	2995	220.0	0.031
BLUEBIRD	1181.6	84x4.07	19x2.44	44.76	3626	262.0	0.026
KIWI	1147.3	72x4.41	7x2.94	44.10	3367	219.0	0.026
THRASHER	1235.3	76x4.43	19x2.07	45.79	3678	246.0	0.024
GROUSE	54.8	8x2.54	1x4.24	9.32	205	21.7	0.635
PETREL	81.7	12x2.34	7x2.24	11.71	342	44.1	0.469
MINORCA	88.9	12x2.44	7x2.44	12.22	372	48.0	0.431
LEGHORN	108.0	12x2.69	7x2.69	13.46	452	57.8	0.354
GUINEA	127.6	12x2.92	7x2.92	14.63	534	68.0	0.300
DOTTEREL	141.7	12x3.08	7x3.08	15.42	594	75.4	0.270
DORKING	153.1	12x3.20	7x3.20	16.03	641	81.3	0.250
BRAHMA	194.8	16x2.86	19x2.48	18.14	894	120.0	0.216
COCHIN	169.6	12x3.37	7x3.37	16.84	709	88.0	0.226

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		Version	Year	2003	
4		Class of optical fiber	-	A	
5	Mode field diameter	Range of nominal value at 1310 nm	µm	NA	
6					
7		Range of nominal value at 1550 nm		9.6	
8					
9		tolerance		±0.4	
10	Cladding diameter	nominal	µm	125	
11		tolerance		±1	
12	Coating diameter	nominal	µm	250	
13		tolerance		±5	
14	Core concentricity error Max		µm	0.6	
15	Cladding non-circularity Max		%	1.0	
16	Max Attenuation coefficient on the reel	At 1310 nm	dB / km	NA	
17		At 1550 nm		0.22	
18	Attenuation discontinuities at 1310 nm and 1550 nm		dB	<= 0.05	
19	Cut off wavelength for optical fiber Max		nm	1450	
20	Chromatic dispersion coefficient	At 1310 nm	Ps / (nm x km)	NA	
21		At 1550 nm		2-6	
22		Sign	Positive or negative	Positive or negative	
23		Wavelength range	nm	1530-1565	
24	Zero dispersion wavelength		nm	1520	
25	Zero dispersion slope		Ps / (nm^2 x km)	0.09	
26	PMD coefficient	Max	Ps / √km	0.2	
27	Macrobend loss	radius	mm	30	
28		Number of turns	-	100	
29		Max loss	dB	0.1	
30	Proof stress	Min	Gpa	0.69	
31	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	No. / diameter	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	mm^2	2.07	
44		Aluminum clad steel wire		57.7	
45		Aluminum alloy wire		NA	
46		Total		59.8	
47	Weight (max)	ACS wire	kg / km	388	
48		Alloy wire(if applicable)		NA	
49		Stainless steel loose tube		15	
50		Grease		4	
51		Total		407	
52	Calculated breaking load (min)		Kgf	7100	
53	Module of elasticity	Initial	kgf / mm^2	15500	
54		Final		15800	
55	Coefficient of linear expansion		$10^{-6} / C$	13	
56	Maximum tensile stress		N / mm^2	499	
57	Everday Stress		N / mm^2	190.1	
58	Permanent tensile stress		N / mm^2	855.4	
59	D.C resistance at 20 C^o (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	

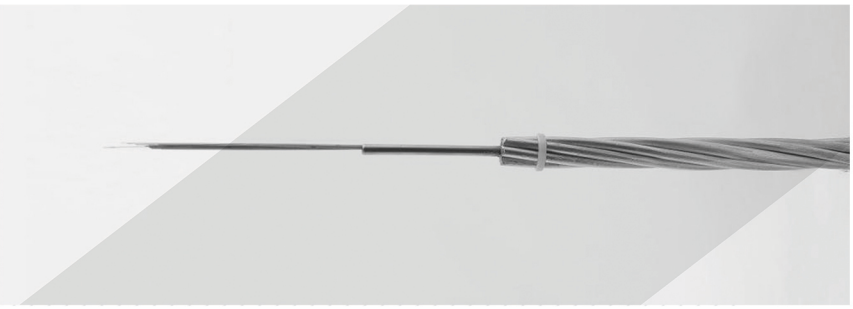
	Description		Unit	Quaranteed data (10.5mm)	Note
69	Material of	core	-	SIO2-GeO2	
70		clad	-	SIO2	
71	Tem. Dependence of Attenuation form -40 to +85 degree of cent.		db / km	<=0.05	
72					
73	Max allowable temperature	Continuous	C	80	
74		Instantaneous	C	200	
75	Temperature Range Transport, Storage, 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 ℃	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	Year	2003	
4		Class of optical fiber	-	A	
5	Mode field diameter	Range of nominal value at 1310 nm	µm	NA	
6					
7		Range of nominal value at 1550 nm		9.6	
8					
9		tolerance		±0.4	
10	Cladding diameter	nominal	µm	125	
11		tolerance		±1	
12	Coating diameter	nominal	µm	250	
13		tolerance		±5	
14	Core concentricity error		µm	0.6	
15	Cladding non-circularity		%	1.0	
16	Max Attenuation coefficient on the reel	At 1310 nm	dB / km	NA	
17		At 1550 nm		0.22	
18	Attenuation discontinuities at 1310 nm and 1550 nm		dB	<= 0.05	
19	Cut off wavelength for optical fiber Max		nm	1450	
20	Chromatic dispersion coefficient	At 1310 nm	Ps / (nm x km)	A	
21		At 1550 nm		2-6	
22		Sign	Positive or negative	Positive or negative	
23		Wavelength range	nm	1530-1565	
24	zero dispersion slope		nm	1520	
25	Zero dispersion slope		Ps / (nm^2 x km)	0.09	
26	PMD coefficient	Max	Ps / √km	0.2	
27	Macrobend loss	radius	mm	30	
28		Number of turns	-	100	
29		Max loss	dB	0.1	
30	Proof stress	Min	Gpa	0.69	
31	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	No. / diameter	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	mm^2	2.39	
44		Aluminum clad steel wire		75.4	
45		Aluminum alloy wire		NA	
46		Total		75.4	
47	Weight (max)	ACS wire	kg / km	494	
48		Alloy wire(if applicable)		NA	
49		Stainless steel loose tube		25	
50		Grease		6	
51		Total		530	
52	Calculated breaking load (min)		KN	82.1	
53	Module of elasticity	Initial	kgf / mm^2	15500	
54		Final		15800	
55	Coefficient of linear expansion		$10^{-6} / C$	13	
56	Maximum tensile stress		N / mm^2	490	
57	Everday Stress		N / mm^2	190	
58	Permanent tensile stress		N / mm^2	823	
59	D.C resistance at 20 C^o (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	-	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	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	

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