Alumoweld® Overhead Ground Wire

Alumoweld wire and strand are used by power utilities, as well as formed wire and optical ground wire manufacturers. Alumoweld is suitable in corrosive environments, lowering maintenance and replacement costs.

Applications

- Overhead ground wire
- Shield wire protecting transmission lines against lightning damage

Features

Corrosion Resistance

Alumoweld overhead ground wire has excellent corrosion resistance. Its strength and conductivity remain unchanged in any atmosphere where aluminum is satisfactory, especially those known to be corrosive from industrial or atmospheric conditions.

This assurance against corrosion is obtained through the application of a thick covering of pure aluminum, which provides a substantial barrier of protective metal. The minimum cladding thickness of Alumoweld is 10% of the radius of the wire. The cladding has a continuous, strong metallic bond to the steel core that will not crack or flake.

Strength Comparable to Steel

Alumoweld also provides strength greater than or comparable to other overhead ground wires. For commonly used wire sizes, the tensile strength of the individual wire can approach 200,000 pounds per square inch. When used in a strand for overhead ground wire, this high strength permits greater span lengths, less sag, and heavier loads under storm loading conditions.

Lightweight

Directly related to strength and sag performance is the lighter weight of Alumoweld. This lighter weight, combined with high strength, permits Alumoweld to be installed to the same sags as steel with correspondingly lower tensions and lower stresses on the towers or supporting structures.

Alumoweld Strand ASTM B-416

NUMBER & SIZE OF WIRES	NOMINAL WIRE DIAMETER		NOMINAL STRAND DIAMETER		BREAKING LOAD		WEIGHT		RESISTANCE		CROSS SECTION	
AWG	IN	MM	IN	MM	LB	KG	LB/1000 FT	KG/KM	OHMS/1000 FT@68°F	OHMS/ KM@20°C	SQ IN	MM^2
37 No. 6	0.1620	4.115	1.130	28.70	120,200	54,500	2222.00	3307.0	0.05356	0.1757	0.7629	492.20
37 No. 7	0.1443	3.665	1.010	25.70	100,700	45,690	1762.00	2623.0	0.06754	0.2216	0.6050	390.30
37 No. 8	0.1285	3.264	0.899	22.80	84,200	38,190	1398.00	2080.0	0.08516	0.2794	0.4798	309.50
37 No. 9	0.1144	2.906	0.801	20.30	66,770	30,290	1108.00	1649.0	0.10740	0.3523	0.3805	245.50
37 No.10	0.1019	2.588	0.713	18.10	52,950	24,020	879.00	1308.0	0.13540	0.4443	0.3017	194.70
19 No. 5	0.1819	4.620	0.910	23.10	73,350	33,270	1430.00	2129.0	0.08224	0.2698	0.4940	318.70
19 No. 6	0.1620	4.115	0.810	20.60	61,700	27,990	1134.00	1688.0	0.10370	0.3402	0.3917	252.70
19 No. 7	0.1443	3.665	0.721	18.30	51,730	23,460	899.50	1339.0	0.13080	0.4290	0.3107	200.40

continued

Alumoweld® Overhead Ground Wire

Alumoweld Strand ASTM B-416 (cont.)

NUMBER & SIZE OF WIRES	NOMINAL WIRE DIAMETER		NOMINAL STRAND DIAMETER		BREAKING LOAD		WEIGHT		RESISTANCE		CROSS SECTION	
AWG	IN	MM	IN	MM	LB	KG	LB/1000 FT	KG/KM	OHMS/1000 FT@68°F	OHMS/ KM@20°C	SQ IN	MM²
19 No. 8	0.1285	3.264	0.642	16.30	43,240	19,610	713.50	1062.0	0.16490	0.5409	0.2464	158.90
19 No. 9	0.1144	2.906	0.572	14.50	34,290	15,550	565.80	842.0	0.20790	0.6821	0.1954	126.10
19 No.10	0.1019	2.588	0.509	12.90	27,190	12,330	448.70	667.7	0.26220	0.8601	0.1594	99.96
7 No. 5	0.1819	4.620	0.546	13.90	27,030	12,260	524.90	781.1	0.22640	0.7426	0.1820	117.40
7 No. 6	0.1620	4.115	0.486	12.30	22,730	10,310	416.30	619.5	0.28030	0.9198	0.1443	93.10
7 No. 7	0.1443	3.665	0.433	11.00	19,060	8,645	330.00	491.1	0.35350	1.1600	0.1145	73.87
7 No. 8	0.1285	3.264	0.385	9.78	15,930	7,226	261.80	389.6	0.44580	1.4630	0.09077	58.56
7 No. 9	0.1144	2.906	0.343	8.71	12,630	5,729	207.60	308.9	0.56210	1.8440	0.07198	46.44
7 No.10	0.1019	2.588	0.306	7.77	10,020	4,545	164.70	245.1	0.70880	2.3250	0.05708	36.83
7 No.11	0.0907	2.304	0.272	6.91	7,945	3,604	130.60	194.4	0.89380	2.9320	0.04523	29.21
7 No.12	0.0808	2.052	0.242	6.15	6,301	2,858	103.60	154.2	1.12700	3.6970	0.03590	23.16
3 No. 5	0.1819	4.620	0.392	9.96	12,230	5,547	224.50	334.1	0.51770	1.6990	0.07800	50.32
3 No. 6	0.1620	4.115	0.349	8.86	10,280	4,663	178.10	265.0	0.65280	2.1420	0.06185	39.90
3 No. 7	0.1443	3.665	0.311	7.90	8,621	3,910	141.20	210.1	0.82320	2.7010	0.04905	31.65
3 No. 8	0.1285	3.264	0.277	7.04	7,206	3,269	112.00	166.7	1.03800	3.4060	0.03890	25.10
3 No. 9	0.1144	2.906	0.247	6.27	5,715	2,592	88.81	132.2	1.30900	4.2940	0.03085	19.90
3 No.10	0.1019	2.588	0.220	5.59	4,532	2,056	70.43	104.8	1.65100	5.4150	0.02446	15.78

Alumoweld Wire ASTM B-415

NUMBER & SIZE OF WIRES	NOMINAL WIRE DIAMETER		BREAKING STRENGTH PER AREA		BREAKING LOAD		WEIGHT		RESISTANCE		CROSS SECTION	
AWG	IN	MM	KPSI	MPa	LB	KG	LB/1000 FT	KG/KM	OHMS/1000 FT@68°F	OHMS/ KM@20°C	SQ IN	MM²
No. 4	0.2043	5.189	155	1070	5,081	2,305	93.63	139.3	1.222	4.009	0.03278	21.15
No. 5	0.1819	4.620	165	1140	4,290	1,946	74.25	110.5	1.541	5.056	0.02599	16.77
No. 6	0.1620	4.115	175	1210	3,608	1,637	58.88	87.6	1.943	6.375	0.0261	13.30
No. 7	0.1443	3.665	185	1280	3,025	1,372	46.69	69.5	2.450	8.038	0.01635	10.55
No. 8	0.1285	3.264	195	1340	2,529	1,147	37.03	55.1	3.089	10.130	0.01297	8.37
No. 9	0.1144	2.906	195	1340	2,005	909	29.37	43.7	3.896	12.780	0.01028	6.63
No.10	0.1019	2.588	195	1340	1,590	721	23.29	34.7	4.912	16.120	0.00816	5.26
No.11	0.0907	2.304	195	1340	1,261	572	18.47	27.5	6.194	20.320	0.00647	4.17
No.12	0.0808	2.052	195	1340	1,000	454	14.65	21.8	7.811	25.630	0.00513	3.31

Modulus of Elasticity: Strand 23,000,000; Solid Wire 23,500,000. Coefficient of Linear Expansion: 0.000,007,2 per degree F.
Modulus of Elasticity: Strand 16,200 kg/mm2; Solid Wire 16,500 kg/mm2. Coefficient of Linear Expansion: 0.000,013 per degree C.

Qualifications

GOVERNING BODY	STANDARD CODE	COMPONENT
ASTM	B416	Alumium Clad Steel Wire (ACS wire)

Contact AFL for your Alumoweld solution.