



ESP CABLE

Cable EPDM Lead Flat



OVERVIEW

OLEUM designs and manufactures a complete line of electrical submersible pumping (ESP) system cables specifically for the oil and gas industry. The Superior Performance series cables are designed to help operators maximize production in a wide range of challenging downhole conditions. OLEUM power cable designs have become the industry standard for reliability and durability.

OLEUM ESP (Cable EPDM Lead Flat) cable is applicable in a wide range of temperatures from -40°F (-40°C) to 450°F (232°C). Main design: Copper conductors, double layer insulation – EPDM + fluoropolymer film, lead sheath, thermo-mechanical braid, galvanized steel interlocking armor, for highly corrosive wells – H₂S > 3% Stainless steel or Monel armor are available.

FEATURES AND BENEFITS

- Lead covering – Reliable operations in severe levels of H₂ S greater than 3% and severe levels of CO₂ greater than 90%
- CEL: High temperature cable – Reliable operations in hot wells
- Solid copper conductors – Prevents gas migration in the cable and increases clearance in the well
- Armored capillary line cable – Allows for pressure measurement, chemical insertion, and diluent insertion
- Armored steel galvanized, stainless steel or Monel alloy
- CES-507 STANDARD SPECIFICATION FOR CEL TYPE CABLE
- 100% SURFACES of the cables are controlling by AI QUALITY INSPECTION Machines

Well parameters	Conventional design	Anti corrosion design
pH		5 - 8,5
Maximum concentration of solids, % / ppm		0,1 / 1
Maximum microhardness of particles, Mohs		7
Maximum water cut %		No limits - 100%
Maximum GOR %		No limits
Maximum hidrostatic pressure, PSI		5800 PSI
Maximum concentration of H ₂ S %/ppm	0,001 / 0,01	0,125 / 1,25
Maximum concentration of CO ₂ %/ppm	-	0,115 / 1,15
Maximum concentration of Cl ⁻ %/ppm	-	7,5 / 75
Maximum concentration of HCO ₃ ⁻ %/ppm	-	0,1 / 1
Maximum concentration of Ca ⁺² %/ppm	-	0,9 / 9
Maximum concentration of (Na ⁺ +K ⁺) %/ppm	-	4,0 / 40

Technical characteristics (nominal voltage 4 kV)

Dimensions as per IEEE 1017/18/19 standards but can be designed to customer specifications

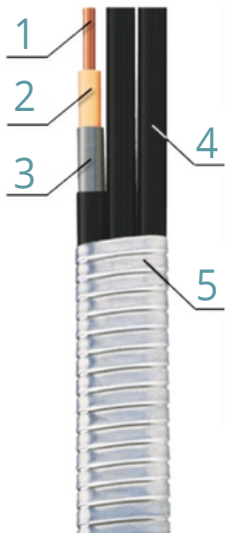
Technical characteristics	10 mm	6 AWG	16 mm	4 AWG	25 mm	2 AWG	1 AWG
Conductor diameter: Nominal	10	13,3	16	21,15	25	33,6	42,4
Nominal ConductorSection, mm	3,56	4,12	4,52	5,19	5,64	6,54	7,35
Qty and Conductor diameter, mm2	3x10	3x13,3	3x16	3x21,15	3x25	3x33,6	3x42,4
Nominal voltage	4 kV	4 kV	4 kV	4 kV	4 kV	4 kV	4 kV
Thickness of insulation, nominal, mm	1,676	1,676	1,676	1,676	1,676	1,676	1,676
Insulation diameter, nominal (OD), mm	6,91	7,47	7,87	8,54	8,99	9,90	10,70
Thickness of jacket, nominal, mm	0,813	0,813	0,813	0,813	0,813	0,813	0,813
Jacket diameter nominal (OD), mm	8,53	9,09	9,50	10,17	10,62	11,52	12,33
Outer armor dimension, mm	11.34 x 28.48	11.90 x 30.16	12.31 x 31.37	12.98 x 33.38	13.43 x 34.73	14.33 x 37.44	15.14 x 39.86
Nominal weight of 1000 m, kg	1448	1622	1757	1993	2162	2532	2886
Current leakage: Hipot to 35 KV DC Max.	0,618	0,690	0,743	0,829	0,886	1,002	1,104
Insulation resistance (15,6 C) Min.	1618	1449	1346	1207	1129	998	906
Conductor D.C. Resistance at 20 C Max.	1,736	1,296	1,074	0,815	0,690	0,513	0,407
Adhesion	No limits	No limits	No limits	No limits	No limits	No limits	No limits
GOR	No limits	No limits	No limits	No limits	No limits	No limits	No limits



Technical characteristics (nominal voltage 5 kV)

Dimensions as per IEEE 1017/18/19 standards but can be designed to customer specifications

Technical characteristics	10 mm	6 AWG	16 mm	4 AWG	25 mm	2 AWG	1 AWG
Conductor diameter: Nominal	10	13,3	16	21,15	25	33,6	42,4
Nominal ConductorSection, mm	3,56	4,12	4,52	5,19	5,64	6,54	7,35
Qty and Conductor diameter, mm2	3x10	3x13,3	3x16	3x21,15	3x25	3x33,6	3x42,4
Nominal voltage	5 kV	5 kV	5 kV	5 kV	5 kV	5 kV	5 kV
Thickness of insulation, nominal, mm	1,981	1,981	1,981	1,981	1,981	1,981	1,981
Insulation diameter, nominal (OD), mm	7,52	8,08	8,48	9,15	9,60	10,51	11,31
Thickness of jacket, nominal, mm	1,067	1,067	1,067	1,067	1,067	1,067	1,067
Jacket diameter nominal (OD), mm	9,65	10,21	10,62	11,29	11,73	12,64	13,44
Outer armor dimension, mm	12.46 x 31.83	13.02 x 33.51	13.43 x 34.73	14.10 x 36.73	14.55 x 38.08	15.45 x 40.79	16.26 x 43.21
Nominal weight of 1000 m, kg	1833	2023	2169	2428	2611	3006	3388
Current leakage: Hipot to 35 KV DC Max.	0,556	0,620	0,665	0,740	0,790	0,891	0,980
Insulation resistance (15,6 C) Min.	1797	1614	1503	1351	1265	1122	1020
Conductor D.C. Resistance at 20 C Max.	1,736	1,296	1,074	0,815	0,690	0,513	0,407
Adhesion	No limits	No limits	No limits	No limits	No limits	No limits	No limits
GOR	No limits	No limits	No limits	No limits	No limits	No limits	No limits



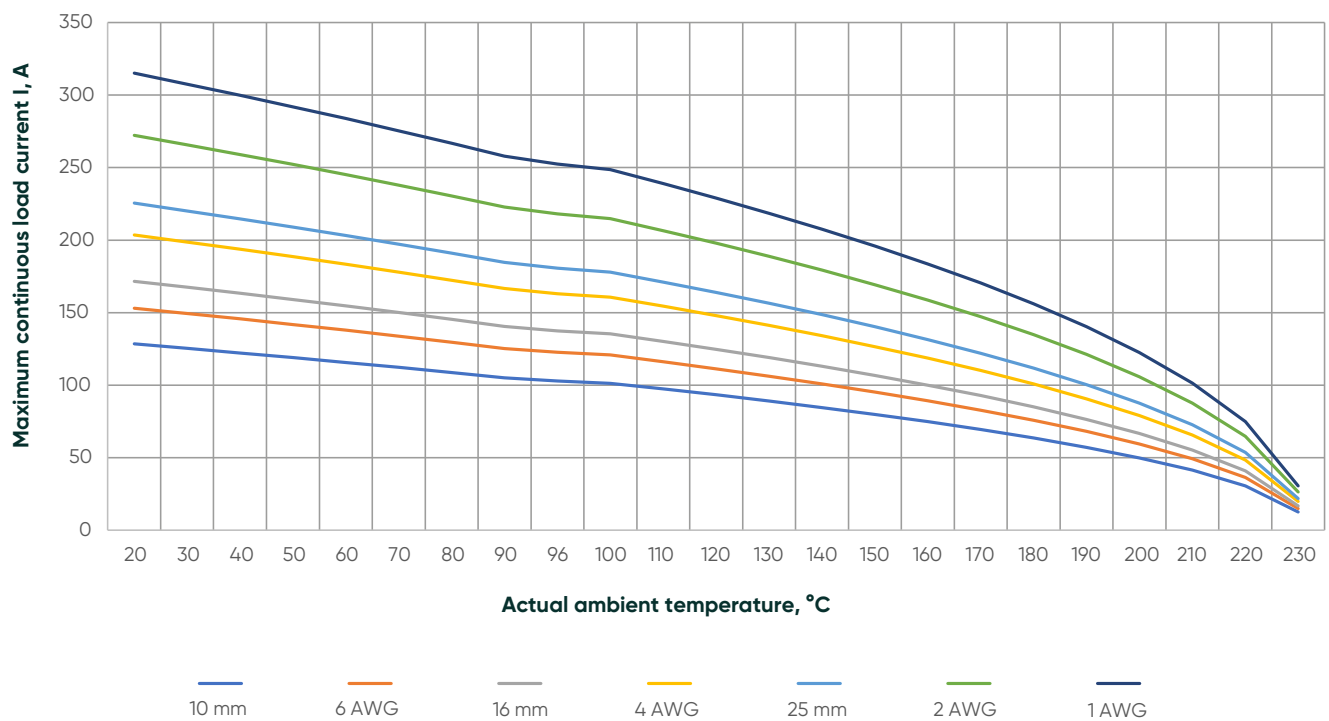
- 1 **Copper conductor – solid**
- 2 **One layer insulation – EPDM or Double layer insulation – EPDM + one layer fluoropolymer film**
- 3 **Lead sheath**
- 4 **Fabric tape/braid coated on one side with a polymer base styrene butadiene rubber on each conductor**
- 5 **Interlocking amor (Galvanized steel as per ASTM A459, Stainless steel as per ASTM A480, ASTM A240 or Monel Alloy)**



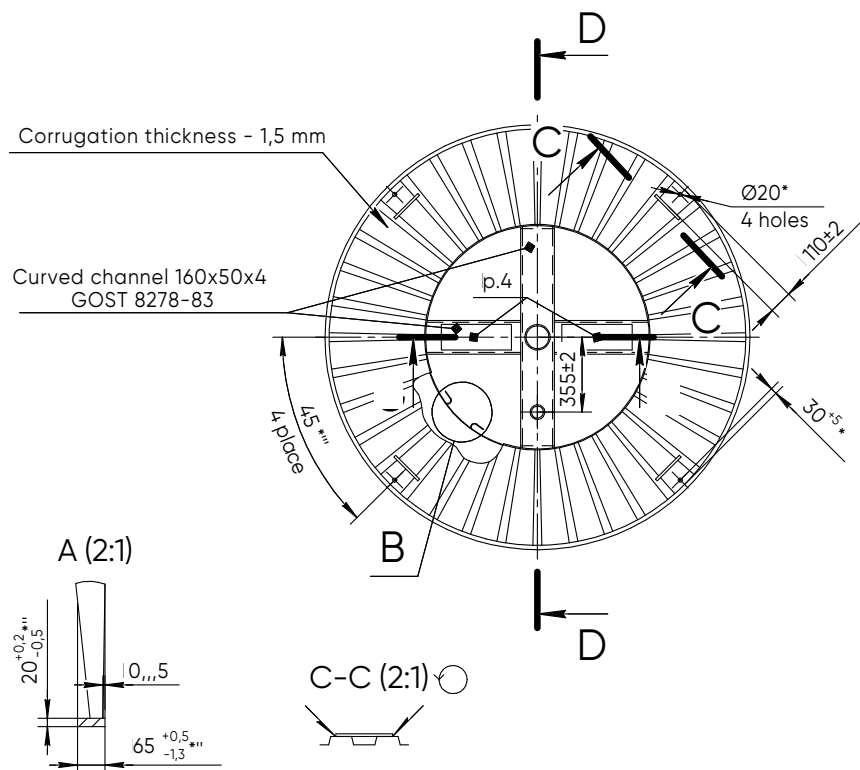
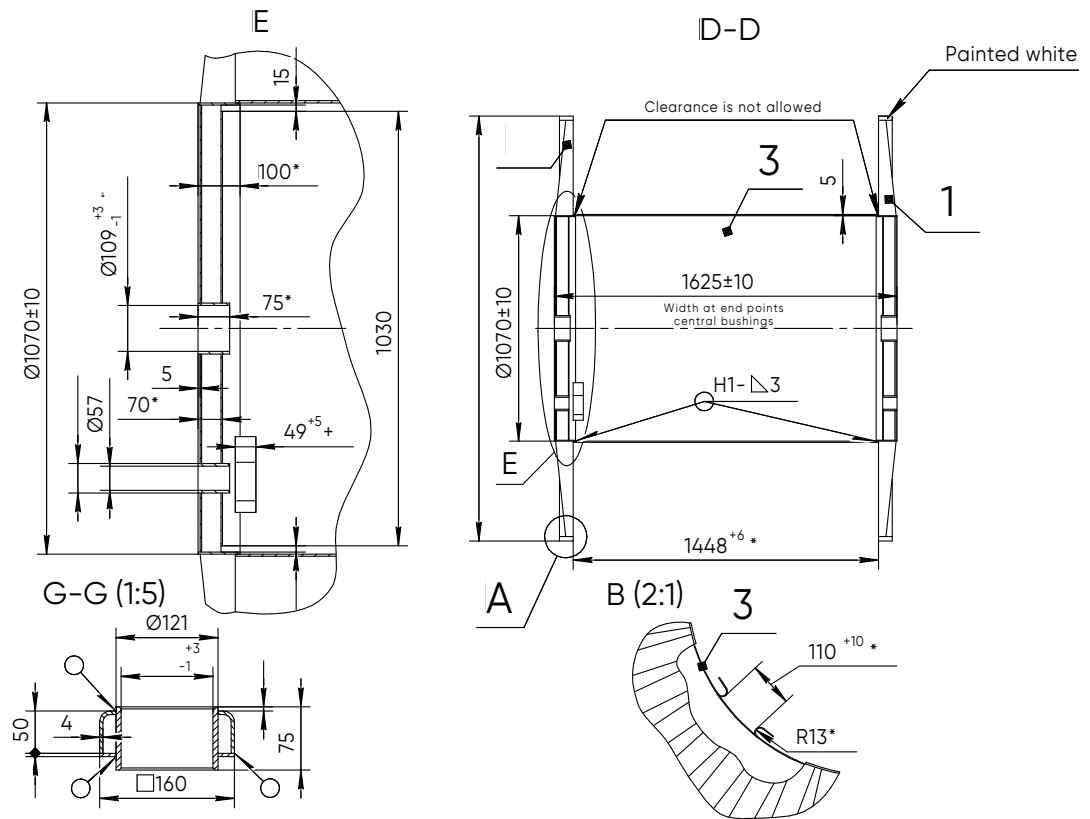
MAX CURRENT VS TEMPERATURE

AWG #	Maximum continuous load current I, A, at actual ambient temperature, °C																									
	20	30	40	50	60	70	80	90	96	100	110	120	130	140	150	160	170	180	190	200	210	220	230	232		
10 mm	128	125	122	119	116	112	109	105	103	101	97	93	89	85	80	75	69	64	57	50	41	31	12	0		
6 AWG	153	149	146	142	138	134	130	125	123	121	116	111	106	101	95	89	83	76	68	59	49	36	15	0		
16 mm	172	168	163	159	155	150	145	140	137	135	130	125	119	113	107	100	93	85	76	67	55	41	17	0		
4 AWG	204	199	194	189	183	178	172	167	163	161	154	148	141	134	127	119	110	101	91	79	66	48	20	0		
25 mm	226	220	215	209	203	197	191	185	181	178	171	164	156	149	140	131	122	112	100	88	73	54	22	0		
2 AWG	272	266	259	252	245	238	230	223	218	215	206	198	189	179	169	159	147	135	121	106	88	65	26	0		
1 AWG	315	308	300	292	284	275	267	258	252	249	239	229	219	208	196	184	170	156	140	122	101	75	31	0		

Rated Voltage – 5KV



REEL METAL FOR CABLE 78HD



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