



CABLE HALAR/HMWPE



REVISION 1

APPLICATION

HALAR/HMWPE cable is designed for anode lead wires in a wide range of environments. Due to its dual insulation construction, it can be installed directly in native soils or submerged in fresh, brackish, or salt waters. The cable is ideal for deep anode bed installations where chlorine and hydrogen gases are generated. The HALAR insulation will not embrittle at temperatures down to (-80F) and will maintain dimensional stability and dielectric strength at temperatures up to 250F. It is highly resistant to notch propagation.

HALAR/HMWPE CABLE DATA



One of the major causes of deep anode failures is the failure of cable insulation. This is especially evident in areas where brackish water is present in the ground. In this environment, anodes generate reactive gases such as chlorine and nascent oxygen. These gases cause rapid deterioration of conventional HMWPE insulation.

Cathodic protection cable insulated with HALAR fluoropolymer, is especially suited for deep anode lead wires. HALAR fluoropolymer is inert to reactive compounds and has an outstanding ability to prevent the passage of gases. Laboratory and field evaluations indicate that HALAR fluoropolymer insulated lead wire can extend the life of deep anode installations. The cable is composed of stranded copper wire covered by two layers of insulation. The outer insulation layer is made from high molecular weight polyethylene (HMWPE). It exhibits superior dielectric and tensile strength, and provides mechanical protection to the cable.

The material is also resistant to water intrusion and is not affected by most organic or inorganic substances. The inner or primary insulation is composed of HALAR, a fluoropolymer. This insulating material demonstrates exceptional chemical resistance. In the presence of chlorine, hydrochloric acid, sulfuric acid, or other strong oxidizing agents the material remains stable. Further, it will not deteriorate when exposed to petroleum hydrocarbons which are encountered in numerous cathodic protection applications.

The dual extrusion HALAR cable is made specifically for cathodic protection applications. It can withstand considerable abuse during installation.

STANDARDS

Conductor : Stranded bare copper conductor conforms to ASTM Specification B-3 and B-8.

Insulation : A homogeneous wall of natural ECTFE fluoropolymer (HALAR) shall be extruded over the conductor.

Jacket : Insulation is high molecular weight polyethylene conforming to ASTM-D-1248, Type 1, Class C, Category 5, Grades E5 & J1. Tensile Strengths J1, J3.

Available with high density polyethylene (Types II, III, IV) Class B and C (all colors). Surface printed. Custom printing available.



CABLE HALAR/HMWPE


REVISION 1

CABLE DATA

Size	No. of Strands	Circular Mils	AWG Diameter Inches	HALAR Thickness Inches	HMWPE Thickness Inches	Nominal Diameter Inches	Weight Lbs per 1000 ft	DC Ohms per Mft at 20 C
#8	7	16,510	.142	.020	.065	.32	81	.652
#6	7	26,240	.179	.020	.065	.36	116	.411
#4	7	41,740	.225	.020	.065	.41	170	.258
#2	7	66,360	.283	.020	.065	.46	254	.162

Specifications for HALAR/HMWPE Cathodic Protection Cable

This specification describes a special single conductor size 8 AWG-2 AWG, HALAR insulated, High Molecular Weight Polyethylene jacketed cable designed for use as a direct burial feeder in deep anode ground-bed cathodic protection systems. The cable is ideally suited for use in harsh chemical environments involving brackish water, sour gas, chlorine, acids, alkalis, and petroleum based solvents. The cable is suitable for use at voltages up to 600 volts ac or dc.

Applicable Standards (The following standards form a part of this specification to the extent specified herein:)

ASTM Specification B 3, latest edition, for Soft or Annealed Copper Wire

ASTM Specification B 8, latest edition, for Concentric-Lay Stranded Copper Conductors

ASTM Specification D 1248, latest edition, for Polyethylene Plastics Molding and Extrusion Materials.

ICEA Standard S-61-402/NEMA Standard WC5 for Thermoplastics Insulated Wire and Cable Conductor

The copper conductor shall be Class B stranded, compressed, annealed, uncoated copper in accordance with ASTM B 3 and B 8

Insulation : The conductor shall be insulated with an extruded layer of natural HALAR ECTFE fluoropolymer as a primary insulation. The average thickness shall be 20 mils. The minimum thickness at any point shall be not less than 90% of the specified average thickness. The insulation shall be applied tightly to the conductor and shall be free-stripping.

Jacket : A black High Molecular Weight Polyethylene jacket having both insulating and jacketing properties shall be extruded over the primary insulation. The jacket, before extrusion, shall comply with the physical and electrical requirements of ASTM Specification D 1248 for Type1, Class C, Category 5, Grade E-5 and J-1 material.

The average jacket thickness shall be 65 mils. The minimum thickness shall be not less than 80% of the specified average thickness.

Identification : The cable shall be surface ink printed with: "Conductor Size AWG, CU, Manufacturer, HALAR/HMWPE CATHODIC PROTECTION CABLE".

Tests : The completed cable shall be tested in accordance with the requirements of ICEA S-61-402, Part 6.