

High-Performance Cables

A COMPLETE LINE OF TECHNICALLY ADVANCED CABLES

OVERVIEW

Summit ESP® – A Halliburton Service provides a complete line of high-performance cables designed to the exact standards required for electric submersible pump (ESP) systems. To maximize operational longevity, all Summit ESP cables are tested to the latest API and IEEE recommended practices, as well as to the stringent Summit ESP specifications for each specific line.

The Summit ESP EPDM (ethylene propylene diene monomer) cable uses an insulation compound specially formulated to be oil-resistant while maintaining excellent electrical properties. For additional protection, a lead jacket or an additional EPDM jacket is applied over the insulation to add strength and provide an added shield to the insulation.

SELF cable: The workhorse of the Summit ESP cable product line is the SELF (Summit EPDM Lead Flat) cable. SELF cable is designed to operate over a wide temperature range from -40°F (-40°C) to 450°F (232°C). A corrosive-resistant lead sheath is extruded over the insulation, making the cable impervious to gas or chemical penetration. This lead jacket barrier protects the insulation in wells that have hot and gassy conditions, and is the only true protection against gas decompression, which commonly occurs within the cable when gas is present.

All of the three-conductor Summit ESP® EPDM cables can be customized for specific well conditions requiring different armor materials.

The cable is designed for environments where H_2S is greater than 3 percent or where CO_2 content is high.

SELR cable: The Summit ESP SELR (Summit EPDM Lead Round) cable uses an EPDM insulation and lead jacket over each phase. The phase wires are then twisted together, and an EPDM jacket is extruded over all three phases in a round configuration. This cable is designed to operate in a range from -40°F (-40°C) to 450°F (232°C) in environments where H_2S is greater than 3 percent or where CO_2 content is high.

SEER cable: The Summit ESP SEER (Summit EPDM EPDM Round) cable uses an EPDM insulation and EPDM jacket in a round configuration. The three-conductor cables are designed to operate in a range from -60°F (-51°C) to 400°F (204°C). SEER cable is the right selection for hot wells that do not have issues with sour gas or gas decompression, which commonly occurs within the cable when gas is present.

SENF and SENR cables: The Summit ESP SENF (Summit EPDM Nitrile Flat) cable and SENR (Summit EPDM Nitrile Round) cable utilize a specially formulated low-swell nitrile jacket to protect the EPDM insulation from downhole environments. SENF and SENR cables are designed to operate from -30°F (-34°C) to 280°F (137°C) in operations with less than 10 percent CO_2 and H_2S concentrations below 2.5 percent.



FEATURES

- » Industry-standard, solid-copper conductor
- » Superior insulation compounds for all cables
- » Robust lead sheath for extreme well conditions
- » Armor offered in galvanized steel, 316L stainless steel, and MONEL® nickel-copper alloy
- » Optional capillary tubes for chemical treatment
- » All standard cables are 5-KV rated

BENEFITS

- » More decompression resistant
- » Insulation and jackets compounded for longer life
- » Lead sheath impervious to fluid and gas intrusion
- » Armor profiled for maximum protection
- » Round cables are phase identified for easy installation
- » Extended operational life

Summit ESP also offers polypropylene-insulated cables with options of both lead and nitrile jackets. The Summit ESP polypropylene-insulated cable product line uses a thermoplastic compound that delivers excellent electrical properties and operates best in wells with cooler downhole temperatures.

SPLF cable: The Summit ESP SPLF (Summit Polypropylene Lead Flat) cable utilizes a corrosive-resistant lead sheath extruded over the polypropylene insulation, making the cable impervious to gas or chemical penetration. This lead jacket barrier protects the insulation in wells that have gassy conditions, and is the only true protection against gas decompression within the cable. SPLF

cables are designed to operate in a temperature range from -40°F (-40°C) to 250°F (121°C) and in environments where H_2S is greater than 3 percent or where CO_2 content is high.

SPNF and SPNR cables: The Summit ESP SPNF (Summit Polypropylene Nitrile Flat) cable and SPNR (Summit Polypropylene Nitrile Round) cable utilize a specially formulated low-swell nitrile jacket to protect the polypropylene insulation from downhole environments. SPNF and SPNR cables are designed to operate in a temperature range from -30°F (-34°C) to 205°F (96°C) and for operations with less than 10 percent CO_2 and H_2S concentrations below 2.5 percent.

Cable Engineering Information

Family	Conductor	Insulation	Covering	Jacket	Covering	Configuration	Armor	Min. Temp	Max. Temp	Gas Apps
SPNF	Copper	PP	—	Nitrile	Tape and Braid	Flat		-30°F (-34°C)	205°F (96°C)	Low
SPNR	Copper	PP	—	Nitrile	Tape and Braid	Round		-30°F (-34°C)	205°F (96°C)	Low
SPLF	Copper	PP	—	Lead	Tape and Braid	Flat		-40°F (-40°C)	250°F (121°C)	High H_2S and CO_2
SENF	Copper	EPDM	—	Nitrile	Tape and Braid	Flat	Galvanized Steel	-30°F (-34°C)	280°F (137°C)	Moderate
SENR	Copper	EPDM	DBL-T	Nitrile	Tape and Braid	Round	Stainless Steel	-30°F (-34°C)	285°F (140°C)	Moderate
SEER	Copper	EPDM	DBL-T	EPDM	Tape and Braid	Round	MONEL®	-60°F (-51°C)	400°F (204°C)	Moderate
SELF	Copper	EPDM	—	Lead	Tape and Braid	Flat		-40°F (-40°C)	450°F (232°C)	High H_2S and CO_2
SELR	Copper	EPDM	—	Lead	Tape and Braid	Round		-40°F (-40°C)	450°F (232°C)	High H_2S and CO_2
CAP	Copper				Tape and Braid	Flat or Round		Specific to Cable Family		
MLE	Copper	KK-EPDM	—	Lead	Tape and Braid	Flat	MONEL®	-60°F (-51°C)	450°F (232°C)	High H_2S and CO_2

MONEL® is a trademark of the Special Metals Corporation group of companies.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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