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Direct Burial/Outdoor Rated Basic Cable Types

Today we will be talking about different types of outdoor cabling. In this article we will be discussing both outdoor-rated and direct burial cables, what kind of installations they are used for and how they are different. We will also be going over how different outdoor cables are constructed.

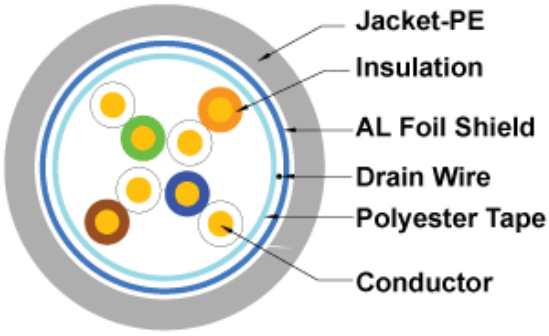
What is an outdoor-rated cable? This type of cable can be used when an installation requires that a cable be run outside, as normal cables are not designed to withstand nature's elements. Indoor cables are usually constructed with regular PVC (Polyvinyl chloride) jackets that offer no UV (ultraviolet) protection, and their brittle jackets can easily crack in direct sunlight and degrade over time. Direct burial cables differ from outdoor-rated cables in the way that they are designed to be buried under dirt, without the use of conduit. What is conduit? This is plastic or metal tubing that will protect a cable from the elements.

Temperatures

Although all cables have a temperature rating, this is especially important when it comes to outdoor-rated and direct burial cable. Because these types of cables are designed to withstand heat and cold, they require more rigorous protection than normal cables. For cables that are going to be installed in colder climates, a cable with an outdoor-rated PE (Polyethylene) jacket is suggested. PE jackets are made from a semi-crystalline thermoplastic material which makes them perfect for withstanding lower temperatures. A regular PVC jacket can only support temperatures down to -20°C, where a Polyethylene jacket can support temperatures down to -40°C.

Outdoor-rated Cable

Outdoor-rated cables are differentiated by their UV-resistant jackets. These types of cables are designed to be used outside, but not buried. Outdoor-rated cables are made to withstand heat and UV rays, and their UV-resistant jackets are either made out of PE or a UV-resistant PVC material. Technically outdoor-rated cables can be buried, as long as conduit is used. Keep in mind however that direct burial cables are designed specifically for this purpose.

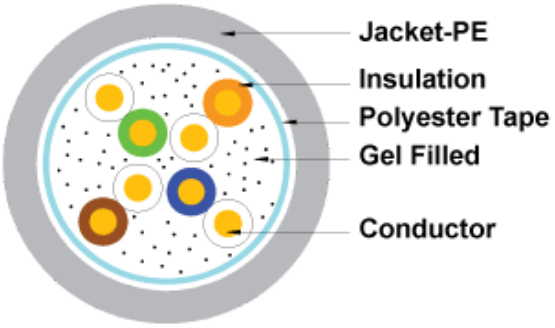


Direct Burial Cable

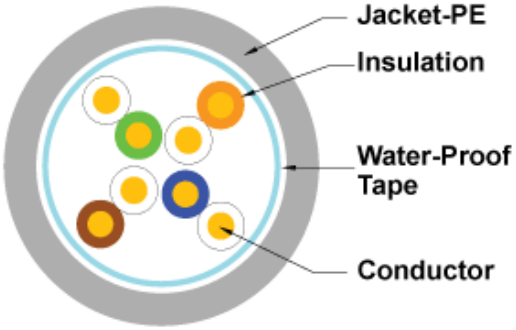
Direct burial cables can also have an outdoor-rated PVC jacket covering their internal wiring, but internally they are constructed much differently than an outdoor-rated cable. Direct burial cables are designed to be buried, just like their name suggests. Moisture is always a threat when cables are exposed to the elements. Waterproofing the cables helps prevent moisture damage.

Water-Proof Tape
Shielded Ethernet

There are a few different styles of direct burial-type cable to choose from, and they are differentiated by the internal materials used to construct them. The first type has a waterproof gel inside that oozes into cracks and crevices which keep the internal wires coated, which prevents water getting through to them and causing damage. The second type has a waterproof tape that covers the internal wiring, which protects the cable from water and moisture. The third type is usually found on shielded cable, and has the internal wires wrapped with a PET tape, which uses a material that is similar to polyester. Mylar tape is then applied around the PET tape to add shielding to the cables. The tape versions of direct burial cable tend to be less of a mess to work with, as there is no gel oozing out of the cable ends. Some direct burial cables also feature a special built-in armor for rodent protection, so that rodents are not able to chew through the cables once they are buried in the ground. Direct burial cables are much stiffer than indoor cables, as they are usually built with splines inside to reinforce their center so that they are not easily crushed.



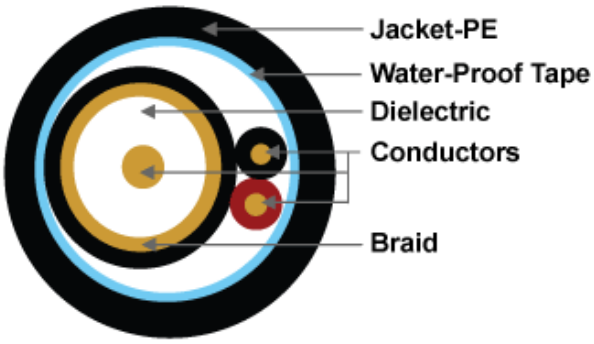
Gel Filled
Unshielded Ethernet



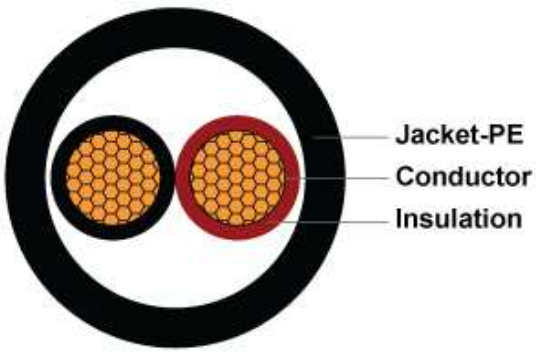
Water-Proof Tape
Unshielded Ethernet

How are they used?

Some of the different types of cables that are available in direct burial or outdoor-rated form are Ethernet, coaxial, and speaker wire. These types of cable will work for a variety of different installations. Ethernet can be run from a main house to a back house or shed, wherever an internet connection is desired. Speaker wire can be used to hook-up speakers in a backyard or gazebo. Running cables underground will give the backyard a clean look, and cuts down on the risk of anyone accidentally tripping over the cabling. Coax cable can be used for running cable television to a back house or garage. A special type of coax contains both power and audio video that can be used for closed-circuit TV and can also be used to run power to video surveillance, or used for operating devices like a DVR on a closed-circuit television. Siamese just refers to two individual jacketed wires fused together.



Water-Proof Tape
Coax w/ Power



Speaker
Wire

Installation

Placement of direct burial cable needs to be considered before installation begins. Future landscaping projects should be contemplated before deciding the placement of the cable, as it should be placed in an area where it will not likely be dug up in the future. A long cable life is ensured if there is no threat of possible cable severing during landscaping or gardening activities. When burying a cable underground a depth of about two feet is recommended. If the cable is not buried deep enough it may surface over time, which runs the risk of the cable being severed. Once you have your layout planned, a portable trenching machine can be used to make digging in the dirt an easier task, and can help gauge how far down your cable will be buried.

One of the most frequently asked questions regarding direct burial cable is how to go about terminating them. Terminating these types of cables can be tricky. Use extra caution when terminating gel-type direct burial cables; the gel can be irritating if it comes into contact with your skin. Keep in mind that these types of cables are typically larger than normal cables and may require more pressure when terminating. Weatherproof compression connectors are recommended when building your own direct burial coax cable. These will maintain the cable's weatherproofing and will help keep the insides of the direct burial cable dry. If you terminate the ends in a protected area (like inside the garage, etc.) you don't need waterproof connectors. Direct burial Ethernet cables should be terminated to a punch down jack, and then you can use a short patch cable from the jack at each end, to each computer, router/switch or junction box. If you think that you may want to someday upgrade your cables, you may want to consider using outdoor-rated cabling plus conduit. This way you can swap out cables with ease just by pulling another cable through the conduit, and it offers that much more protection for your cables.

Hopefully this will help you make an informed decision on whether to go with direct burial or outdoor-rated cables in your next installation.

Sincerely yours,

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