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WATER-PROOF COAXIAL CABLE WITH READILY SEPARABLE LAYER

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The present invention relates to electrical cable and more particularly to an improved coaxial cable.

It is desirable that coaxial cable laid under water or under wet ground resist longitudinal movement of water through the cable. It is also desirable that layers of a coaxial cable be readily separable to connect their conductors to other cables, to junction boxes, or for testing of the cable. At the present time coaxial cables are not particularly well adapted to withstand longitudinal water pressure, nor are they particularly well adapted to have their layers readily separable for splicing.

It is an objective of the present invention to provide a coaxial cable in which the insulation around the outer conductor is easily extrudable and, after extrusion, readily separable from the remainder of the cable. It is a further objective that the insulation adjacent the outer conductor provide protection against longitudinal passage of fluids.

In accordance with the present invention, a coaxial cable is provided in which a filled compound of a mixture of polyethylene, polyisobutylene and a mineral filler, preferably powdered acid magnesium metasilicate, is extruded over or under or within the spaces of the braided outer conductor of the coaxial cable. The filler renders the dielectrical material about the braid less cohesive and enables the outer conductor to be readily separated from the other portions of the cable. The filler selected for this purpose should be non-hygroscopic and unsusceptible to fungus and should not increase the electrical attenuation or otherwise alter the electrical characteristics of the cable.

Other features of the present invention will be apparent from the below detailed description of a preferred embodiment, taken in conjunction with the accompanying drawing in which the single figure is a side elevational view showing a coaxial cable embodying the present invention.

In the drawing, the coaxial cable comprises an inner electrical conductor 1, generally of copper wire. The inner conductor 1 is surrounded by a layer 2 of electrically insulative material, preferably polyethylene which is extruded over conductor 1. An outer conductor 3, preferably of braided copper wire, surrounds the insulative layer 2. A covering layer 4 of a mixture of mineral filler, polyisobutylene and polyethylene surrounds the outer

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conductor 3 and is preferably extruded onto conductor 3. Talc (powdered acid magnesium metasilicate) is the preferred mineral filler although diatomaceous earth, whiting (calcium carbonate), silica (silica dioxide), or hard or soft clays (mixtures containing hydrous aluminous minerals) may be used. A preferred mixture for layer 4 is polyethylene, polyisobutylene and talc, in equal proportions by weight.

A weather protective layer 5, preferably of extruded polyethylene containing carbon black and an antioxidant, covers layer 4.

Although the above description and the drawing relate to the use of the filled polyethylene-polyisobutylene material on the outside of the outer conductor, it is often desirable that the filled polyethylene-polyisobutylene material be applied underneath, over, and within the interstices of the braided outer conductor 3.

Modifications may be made in the present invention within the scope of the subjoined claims.

I claim:

1. In a coaxial cable, the combination of an inner conductor, an insulative layer around the inner conductor, an outer conductor of braided wire around the insulative layer, and about the outer conductor, an extruded layer consisting essentially of a mixture of polyethylene, polyisobutylene and sufficient mineral filler to render the extruded layer relatively non-cohesive with the outer conductor so that the outer conductor and the extruded layer are readily separable.

2. The combination defined in claim 1, in which the mixture is composed of substantially equal proportions by volume of polyethylene, polyisobutylene and the mineral filler.

3. The combination defined in claim 1, in which said extruded layer substantially fills the interstices of the braid.

4. The combination defined in claim 1, in which the mineral filler is powdered acid magnesium metasilicate.

5. The combination defined in claim 1, in which the mineral filler is whiting.

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