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ELECTRIC CABLE WITH CORROSION-INHIBITING SHEATH

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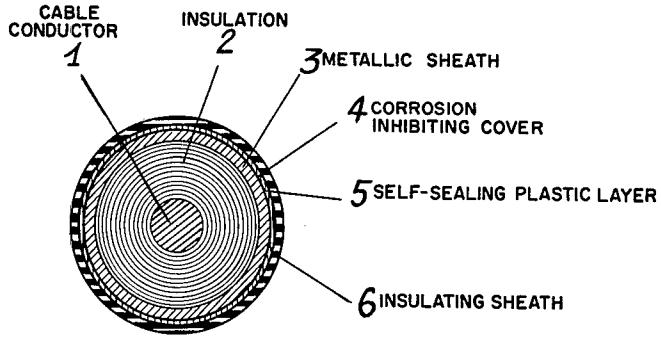

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ELECTRIC CABLE WITH CORROSION-INHIBITING SHEATH

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It is well known, in order to protect metal-sheathed electric cables from corrosion, to cover said sheaths either with paper, rubber or plastic tapes, moistened with bitumen, or with a continuous sheath of thermo-plastic resin such as polyvinyl chloride or polythene.

However, the materials used in this way to obtain such a protective sheath are all more or less permeable, and in particular allow water-vapour to pass. Moreover, their insulation resistance is not infinite, so that even a very weak current may pass between the metal sheath and ground, through the protective sheath. Finally, there is always a fine layer of more or less humid air, between the metallic sheath and the protective sheath.

These various factors may lead to corrosion of the metallic sheath, which may be produced a fortiori if the protective sheath is penetrated.

In order to overcome these drawbacks, it has been suggested to arrange a corrosion-inhibiting covering around said sheath, and an external envelope to protect said covering.

The cable according to the invention is characterised in this, that it comprises a layer of adhesive, self-sealing, highly resistant, plastic material between the inhibiting covering and the external protective envelope.

This intermediate plastic layer has the effect of increasing the insulation resistance of the cable forming a tight mass which eliminates the layer of air between the metallic sheath of the cable and the external protective sheath, and of producing self-sealing in the event of accidental puncture of said outer sheath.

By way of example, when the metal sheath of the cable consists of lead, the inhibiting covering may be a layer of tar containing traces of phenol. In the event that the sheath is of aluminium, this sheath may be covered as soon as it leaves the press, with a priming of formal resin or polyvinyl acetal, of zinc chromate and phosphoric acid. In this way, the inhibiting cover will be more than just a corrosion-protective barrier which prevents passage of moisture to the metal sheath. If the proper materials are used, such as those suggested, the inhibiting covering due to its chemical effect will oppose the action of corrosion.

According to the present invention, it is also possible to apply over the above priming a paint containing metallic zinc powder, in order to improve the inhibiting action.

The self-sealing layer of plastic consistency is composed, advantageously, of a mixture of polyisobutylene of a molecular weight in the vicinity of 100,000, of polyethylene, a small proportion of polybutene and a charge such as kaolin.

The following, for example is a suitable formula:

Polyisobutylene of molecular weight PM 100,000	75
Polyethylene of grade 7	25
Polybutene	5
Kaolin	60

An external sheath is applied over the whole cable made in this way, in order to protect it from chemical agents and from mechanical accidents. This external sheath may be either of polythene of high density and high molecular weight, or of polyvinyl chloride especially hard and resistant to abrasion.

Finally, it is an advantage, in order to obtain a close union of the self-sealing layer and the external sheath and to avoid the occlusion of air between them to extrude them in a single operation by means of an extrusion press with double body and a single head.

The attached drawing represents by way of example, a cross-section of a cable according to the invention. **1** is the cable conductor, **2** its insulation, **3** its metallic sheath, **4** the corrosion inhibiting covering, **5** the layer of self-sealing plastic material and **6** the external protective envelope.

What is claimed is:

1. In an electric cable having an outer metal sheath, the improvement comprising corrosion-inhibiting means arranged around said sheath for opposing the chemical reaction which results in corrosion in said sheath, and an insulating cover surrounding said corrosion inhibiting means for protecting said cable from damaging external forces, said metal sheath consisting of lead and said corrosion inhibiting means consisting of a layer of tar containing traces of phenol.

2. In an electric cable having an outer metal sheath, the improvement comprising corrosion-inhibiting means arranged around said sheath for opposing the chemical reaction which results in corrosion in said sheath, and an insulating cover surrounding said corrosion inhibiting means for protecting said cable from damaging external forces, said metal sheath consisting of aluminum and said corrosion inhibiting means consisting of a layer of polyvinyl acetal of zinc chromate.

3. An electric cable comprising a central conductor, an insulating body surrounding said central conductor, a metallic sheath surrounding said insulating body, corrosion-inhibiting means arranged contiguous to the entire outer surface of said sheath for opposing the chemical reaction which results in corrosion in said sheath, a self-sealing layer of plastic consistency provided entirely around said corrosion-inhibiting means, and an insulating cover surrounding said self-sealing layer in air-tight relationship.

4. An electric cable as defined in claim **3**, wherein said metal sheath consists of lead and said corrosion-inhibiting means consists of a layer of tar containing traces of phenol.

5. An electric cable as defined in claim **3**, wherein said metal sheath consists of aluminum and said corrosion-inhibiting means consists of a layer of polyvinyl acetal of zinc chromate.

6. An electric cable as defined in claim **3**, wherein said self-sealing layer consists essentially of a composition containing the following parts by weight:

Polyisobutylene	75
Polyethylene of grade 7	25
Polybutene	5
Kaolin	60

wherein the polyisobutylene has a molecular weight of approximately 100,000.

7. The method of producing corrosion-resistant cables having a central conductor, insulation, and an outer metallic sheath comprising the steps of covering said metallic sheath with a layer of corrosion-inhibiting material, extruding a self-sealing layer containing polyisobutylene and a layer of polyvinyl chloride simultaneously so as to produce a unitary covering, and securing said unitary covering to said layer of corrosion-inhibiting material.

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