

Electric Cable

The invention relates to an electric cable comprising a conductor, having at least one insulating layer surrounding said conductor and having an outer sheath.

Electric cables, in particular medium voltage cables with a higher voltage range, which can be 1000 V, must continue to function over a defined period of time, even in the event of fire, without the voltage failing or the flow of current being interrupted. Such cables are sometimes used where safeguarding of the voltage supply for the safety of people or the availability of necessary installations must be guaranteed, even in the event of fire. This can be in high-rise buildings, hospitals, metro stations, underground rail supplies, tunnel power supplies, airports etc., i.e. infrastructures which have a high density of people or large and expensive equipment and/or require a high level of availability.

Known energy cables generally have a number of layers of banding on the conductor which in the event of fire guarantee that insulation will be maintained even after the insulating material has burnt away. High voltage cables with banding on the copper conductor have ageing characteristics different from a normal medium voltage cable, and all known versions are very complex to produce.

The object underlying the present invention is to provide an electric cable which guarantees proper functioning for longer than with known

cables in the event of fire and can nevertheless be produced with a compact structure and inexpensively.

According to the invention the object is achieved in that at least one intumescent layer surrounding the conductor over the entire length of the cable is provided which is integrated into the cable such that it can foam up if the electric cable is heated and provide heat protection for the latter.

Further preferred configurations of the single conductor cable according to the invention form the subject matter of the dependent claims.

Exemplary embodiments and further advantages of the invention are described in more detail below using the drawing. This shows as follows:

Fig. 1 an exemplary embodiment of a single-conductor cable according to the invention in cross-section.

According to Fig. 1 an electric cable 10 designed for single-phase operation is shown which is sometimes also suitable for medium voltage and high voltage cables which are used for operating voltages in particular of 1000 V or more.

The electric cable 10 comprises a conductor 12 which in this case is formed by a cord consisting of a number of wires 12'. In addition, an insulating layer 13 surrounding this conductor and an outer sheath 16 are provided.

According to the invention there is provided between the insulating layer 13 and the outer sheath 16 an intumescent layer 15 extending over the entire length of the cable and which foams up when the electric cable is heated and thus provides protection against heat over an increased period of time.

This intumescent layer 15 is substantially composed of a polymer carrier and distending graphite. It can be applied to a ribbon-like layer 14 surrounding the insulating layer 13 and to an inner sheath 14' by bandaging or extruding. This ribbon-like layer 14 on its part is for example in the form of a metal screen, and has an electrical protective function which serves as a diffusion barrier against the penetration of molecular water and as heat dissipation, and this extends the life span of the cable.

The outer sheath 16, which provides mechanical protection for the cable 10, is produced from a material and with a thickness such that the latter ruptures and/or melts for example in the event of fire or when heated correspondingly so that this intumescent layer can foam up by a multiple of the outside diameter of the cable. The outer sheath 16 is also applied by the extruding process or by bandaging, and it is made substantially, for example, of a polyolefin copolymer.

The invention is sufficiently described by the exemplary embodiment given above. It could be configured differently, however. Thus, for example, the conductor 12 could be surrounded by one or more semiconductor layers, by at least one dielectric insulating layer lying between the latter and/or by further layers.

For three-phase operation with rotary current a cable can be used that comprises three single-conductor cables according to the invention,

preferably formed as shown in Fig. 1. This cable can be equipped with an additional sheath, armouring etc..

CLAIMS

1. An electric cable comprising a conductor, having at least one insulating layer (13) surrounding said conductor and having an outer sheath (16), characterised in that at least one intumescent layer (15) surrounding the conductor (12) over the entire length of the cable is provided which is integrated into the cable (10) such that it foams up if heated and provides heat protection for this cable.
2. The electric cable according to Claim 1, characterised in that the intumescent layer (15) is substantially composed of a polymer carrier and distending graphite.
3. The electric cable according to Claim 1 or 2, characterised in that the intumescent layer (15) is provided between the insulating layer (13) and the outer sheath (16).
4. The electric cable according to Claim 3, characterised in that the outer sheath (16) providing mechanical protection for the cable (10) is produced from a material and with a thickness such that the latter ruptures and/or melts for example in the event of fire and when heated correspondingly so that this intumescent layer (15) can foam up by a multiple of the outside diameter of the cable.
5. The electric cable according to any of the preceding Claims 1 to 4, characterised in that there is provided between the insulating layer (13) and the layer provided as a strip or the extruded intumescent layer (15) a ribbon-like layer (14) and an inner sheath (14').

6. The electric cable according to any of the preceding Claims 1 to 5, characterised in that the outer sheath (16) is applied by the extruding process or by bandaging.

7. The electric cable according to any of the preceding Claims 1 to 6, characterised in that the outer sheath (16) is composed substantially of a polyolefin copolymer in two layers.