

Insulation material having paint and a material
additive, and insulating tape

Description

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The invention relates to an insulation material with lacquer and added material and to an insulative belt with a layer of insulation material of the invention on at least one of the two sides.

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It is well known that high-frequency welding processes are used in the production of plastic bags, in particular in medical technology. In these processes, a plurality of foil sections mutually superposed are bonded to give a bag by means of a weld that runs at least to some extent around the exterior boundary of the foil sections. In the normal method, the foils to be bonded are supplied on rolls and are in the form of mutually superposed continuous strips of material on a conveyor belt when they are introduced into a high-frequency-welding apparatus. In a production step downstream of the welding procedure, the welded strips of foil sections are separated in accordance with the geometric dimensions of the welds that surround the bags.

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The basis of the high-frequency-welding process is that electrical energy is introduced in the form of a radio-frequency field into areas that require bonding. This causes motion of the molecules within the material. The resultant friction between the molecules generates the heat required for melting of the material. The weld produced by this process has the same strength as the surrounding material.

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The functional principle of the high-frequency-welding process increases the level of the requirements placed

upon the conveyor belt, which also serves as substrate for the high-frequency-welding procedure.

5 Firstly, the surface of the conveyor belt must have a particular surface roughness, in order to accept the melt produced during the welding of the foils located on the conveyor belt. Examples of suitable roughness values are from roughness index Rz 2.5 to Rz 10. This is a requirement for achieving high weld quality. There
10 are also requirements placed upon the electrical insulation capability of the conveyor belt.

The conveyor belt used in the prior art for purposes of this type is an insulative belt which comprises a
15 polyester foil coated on both side by a pressed woodchip product or by any other suitable cellulosic pulp. The external sides of each of the two layers of pressed woodchip material moreover have a fixing layer of gloss lacquer, in particular 2-component gloss
20 lacquer, and when this layer is dried it does not initially have the surface roughness required.

In order to achieve the surface roughness required for the layer of gloss lacquer on a conveyor belt, the
25 layer is abraded manually before the belt is first used for production purposes.

A disadvantage of said procedure is the time required for the grinding process, and also that this type of
30 manual process gives rise to high tolerances in respect of the surface of the abraded conveyor belt.

Starting from this prior art, it is an object of the invention to provide a method which avoids any abrasion
35 procedure but improves the surface roughness of an insulative belt. Another object of the invention is to provide a corresponding insulative belt which can be used as conveyor belt.

The invention achieves the object via an insulation material with lacquer and added material with the features of claim 1.

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Accordingly, the added material mentioned in the introduction is characterized in that it comprises silica and polyethylene wax, hereinafter termed PE wax.

10 The silica particularly advantageously increases the microroughness of the surface of the lacquer, and the PE wax reduces adhesion, in particular of the welds, to the surface of the lacquer.

15 In one preferred embodiment of the invention, the lacquer used comprises 2-component gloss lacquer, where the proportion by weight of silica is from 9% to 14%, and the proportion by weight of PE wax is from 0.5% to 4%, of the insulation material in the wet state. The
20 respective proportions change correspondingly in the hardened state, i.e. after escape of the volatile constituents of the insulation material.

It has been found that this compositional ratio
25 exhibits particularly advantageous properties for the layer of lacquer, in relation to the use as substrate for the high-frequency welding of foils.

The object is also achieved via an insulative belt with
30 insulative core and with a layer of insulation material on at least one of the two sides, with the features of claim 3 or 4.

Accordingly, the insulation material used comprises an
35 insulation material with 2-component gloss lacquer and with the added materials silica and PE wax.

Even without any abrasion procedure, this is a particularly advantageous method of achieving a defined surface roughness of the insulative belt which can be used as conveyor belt. Liquefied plastics material which by way of example is produced during a procedure of welding of a plurality of plastics foils located on the insulation material can thus penetrate into recesses or cavities resulting from surface roughness on the surface of the conveyor belt. When the respective plastics bag is separated from the conveyor belt, the dried melt material remains in the form of a roughened surface on the bag weld, and the recesses or cavities resulting from the surface roughness of the conveyor belt are therefore again available. If the insulative belt has been coated with insulation material only on one side, care has to be taken that when the belt is used as conveyor belt it is the side that has been coated with insulation material that serves as substrate for the high-frequency-welding process. Preferred embodiment is coating of the insulative belt with insulation material on both sides.

In another embodiment of the invention, the insulative core comprises a polyester foil surrounded on both sides by a layer of cellulosic pulp.

This method achieves not only high mechanical strength but also high electrical insulation capability.

The inventive examples depicted in the drawings will be used for a more detailed description of the invention, of further embodiments and of further advantages.

The single figure shows:

an example of a multilayer structure of an insulative belt

The single figure shows an example of a multilayer structure of an insulative belt which is suitable for use as conveyor belt. A layer of pressed woodchip material has been applied on each of two sides around an inner layer of polyester foil. Again, a cellulosic pulp with comparable properties can be used. As a function of the requirements placed upon mechanical strength and electrical insulative stability, the thickness of the polyester foil is from about 23 μm to 100 μm . The thickness of the pressed woodchip material varies accordingly as a function of requirements from about 100 μm to 300 μm . The thickness of the layer of gloss lacquer applied externally on both sides is from about 8 μm to 20 μm , in the dried state. Use of an insulation material with gloss lacquer and with added materials firstly comprising a proportion by weight of about 11.6% of silica achieves defined surface roughness of the layer of insulation material without any requirement to abrade said layer after drying. An additional proportion by weight of 1.4% of PE wax inhibits adhesion of other materials to the surface of the layer of insulation material. This in particular also applies to any adhesion of welds to the surface of the insulative belt.

Another advantage is that the surface of the insulative belt of the invention has a matt appearance. The proportion of the energy introduced into the welding process that is reflected by a glossy surface is markedly reduced, and the welding process becomes still more effective. By way of example, the use of gloss lacquer without added material produces this type of disadvantageously glossy surface.

An example of a suitable two-component gloss lacquer is the polyurethane-based product GL 3335/hardener GU106 from DuPont, which comprises solvent. An example of a suitable material for the added silica material is

"Sylsia 350" or else "Syloid 244". An example of a suitable PE wax is "DM" micronized PE wax or else "Luwax AF 30".

Key

- 10 Insulative belt
- 11 Polyester foil
- 5 12 Layer of pressed woodchip material
- 13 Layer of insulation material

What is claimed is

1. An insulative belt comprising:

an insulative core comprising a polyester foil surrounded on opposite sides by

5 a layer of cellulosic pulp; and

a layer of insulation material on opposite sides of the insulative core,

comprising lacquer, silica and polyethylene (PE) wax.

2. The insulative belt of claim 1, wherein

10 the lacquer is a 2-component gloss lacquer; and/or

the silica is 9% to 14% by weight of the insulation material, and the PE wax is
0.5% to 4% by weight of the insulation material.