DESCRIPTION

The invention relates to a process for applying electrical conductors to an insulating material support.

The support can be in the form of a flat plate or a body with planes at different levels or with planes at angles to one another.

Such supports are used with printed conductors for electric current, particularly in small electrical and electronic equipment.

DE-AS 10 98 560 already discloses a process for applying electric printed conductors to an insulating material support, in which the support is provided with channels in the pattern of the conductors, said channels being filled with an electrically conductive material, which is galvanically strengthened. The provision of the support with channels with the pattern of the printed conductors is difficult and time-consuming.

From DE-OS 23 36 917 it is known to produce insulating material supports in an injection moulding process and metallize the complete support; but patterned printed conductors are not formed.

German utility model 19 66 250 discloses an arrangement in the nature of an electric circuit board, in which metal coatings are applied as current paths to an insulating material support. The latter is a three-dimensional body made from a per se known plastics material of the ABS polymer type and in particular an

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ABS graft polymer, to which the current paths are galvanically applied.

For the production of printed circuits, the Expert knows (Rempel, reprint "new observations in the chemogalvanic metallization of moulded articles of ABS polymer" from "Fachberichte für Oberflächentechnik", 1970) to attack the butadiene part by etching, particularly using chromosulphuric acid, covering same with a lacquer having the desired pattern, autocatalytically depositing a very thin metal film and then galvanically applying thereto the metal coating forming the current path.

As can be gathered from Rempel, loc. cit., this process suffers from a number of difficulties and the use of chromosulphuric acid during etching is prejudicial to the environment. Despite high production costs, it was not possible to reproducibly manufacture in large numbers physically constructed boards with printed conductors for electric current.

The problem of the present invention is to provide a process for the application of electric conductors to an insulating material support enabling the application of the printed conductors in the in each case desired pattern in a large scale, economic and reproducible manner.

The invention solves this problem by a process for applying electrical conductors to an insulating material support, in which the support is provided by injection moulding with printed

conductors patterned by ducts, said ducts being filled with an electrically conductive plastic and said material is then galvanically strengthened, characterized in that the ducts are filled with the electrically conductive plastic in such a way that between the sides of the electrically conductive plastic and the walls of the ducts grooves are formed.

This leads to an insulating material support with electric conductors in the in each case desired form in an economic, large-scale reproducible manner.

Commercially available, electrically non-conducting plastics shapeable by injection moulding are used for the insulating material support. The electrically conductive plastic is constituted by commercially available electrically conductive plastics which are shapeable by injection. Injection moulding and injection are performed in per se known manner on known machines and equipment. Galvanic strengthening takes place in per se known manner.

The ducts act as a guide for the mould for the injection moulding of the electrically conductive plastic. The mould walls prevent a complete filling of the ducts and consequently the insulating material support is separated from the electrically conductive plastic on the side walls thereof by grooves. During galvanic strengthening, the electrically conductive metal is also deposited in the grooves, which leads to a better anchoring of the galvanic reinforcement.

An advantage of the process according to the invention is that an assembly can be fitted prior to galvanic strengthening and the assembly is so firmly joined by said strengthening that there is no need for initial soldering.

Another advantage of the inventive process is that printed conductors for electric current can be applied to the interior of hollow bodies, e.g. casings.