**Method for Coating Metal Surfaces of Substrates and Objects Coated According to Said Method**

The invention relates to a method for coating surfaces, a corresponding coating and the use of the objects coated according to this method. There are numerous methods for producing homogeneous coatings on metallic surfaces in particular by means of immersion methods. In doing so, the following techniques are preferably used for creating anticorrosion coatings consisting primarily of an organic matrix and/or organic and/or inorganic additive components.

In one aspect, there is provided a method for coating metallic surfaces of substrates, comprising or consisting of the steps: I. supplying a substrate having a cleaned metallic surface; II. contacting and coating metallic surfaces with an aqueous composition in the form of a dispersion and/or suspension; VI. optionally rinsing the organic coating and VII. drying and/or baking the organic coating or VIII. optionally drying the organic coating and coating with a similar or additional coating composition before drying and/or baking, characterized in that in step II the coating is applied with an aqueous composition in the form of a dispersion and/or suspension containing 2.5 to 45 wt% of at least one nonionically stabilized binder and 0.1 to 2.0 wt% of a gelling agent, wherein the aqueous composition has a pH in the range of 0.5 to 7 and forms coating based on an ionogenic gel with the cations dissolved out of the metallic surface in the pretreatment stage and/or during the contacting in step II.

In another aspect, there is provided an aqueous composition containing 2.5 to 45 wt% of at least one nonionically stabilized binder and 0.1 to 2.0 wt% of a gelling agent, wherein the aqueous composition has a pH in the range of 0.5 to 7.

The traditional methods are based on use of the rheological properties of the formulations that are used in order to achieve a complete coating of a joined workpiece. Although an accumulation of coating material in critical locations can be reduced by continuous rotation of the respective workpiece after the immersion process, it is

impossible with this method to achieve a completely homogeneous coating. In addition, defects such as bubbles and pits that have a negative effect on the quality of the coating as a whole may occur in locations with larger amounts of coating during the drying and/or crosslinking process.

Electrophoretic methods avoid these problems by using an electric current to deposit a uniform coating in immersion. With this method it is possible to homogeneous coatings on metallic workpieces. The coatings that are deposited exhibit extremely good adhesion in the wet state to the metallic substrate, which allows treatment of the workpiece in a subsequent rinsing step without separation of the coating. As a result, the aforementioned locations on the workpiece which are difficult to access can be freed of excess coating solution and therefore no defects can be formed during the drying process. This technique has the disadvantage that, in addition to the amount of electricity required and, in addition to suitable immersion basins, which result in increased costs and also so-called edge alignment, occur because electric fields are built up non-homogeneously on macroscopic edges, and the edges are coated uniformly and possibly even incompletely. In the design of the workpieces, it is also