

ABSTRACT OF THE DISCLOSURE**Electrically Conductive Layer Material**

5 The object of the invention is to present a highly flexible electrically
conductive layer material containing non-metallic powder, especially carbon,
as conductive component, and to present a method for the production
thereof. Low electrical resistivities and high mechanical tenacity and
flexibility can be simultaneously obtained though using cost-effective
materials and a simple production method.

10 The layer material of the invention is characterized in that the contact
points between the conductive non-metallic particles are well defined and
in that all-round coatings of binding polymers are avoided. This is achieved
by forming the contact points by pressing or rolling before adding the
essential binder. The binder is added subsequently in the form of a liquid,
15 curable plastic material that fills completely or partially the pores of the
layer material. In order to improve mechanical properties, the layer material
may contain fibers, e.g. carbon fibers.

20 The layer material can be used for shielding against electromagnetic
interferences, as mechanical reinforcement for gas diffusing electrodes or
as a bipolar plate separating reactants in stacks of electrochemical cells,
especially of PEM fuel cells.