

KatTex

Catalytic doped fabric for industrial filtering applications

Invention

Industrial filter bags with catalytic properties are state of the art. They consist of a multi-layer fabric, containing catalytic particle in the intermediate space. Due to this construction, there is a huge pressure lost and cost for an additional fabric layer.



Fig. 1: Filterhose

Scientists at the Hochschule Niederrhein invented a new method to solve this problem. The present invention relates to a process for surface-catalytic finishing of polymer fibers and/or fabrics. An aqueous particle dispersion of a catalyst support is used to impregnate a polymeric fabric with a catalytically active metal or metal oxide.

The particles are bonded on the fiber surface of the fabric without any binding additives. There is no activity lost compared to the free particles observed. The particles remain on the surface under rough conditions, e.g. cleaning process, pulsed backwash etc.. No leaching is observed.

Commercial Opportunities

Heterogeneous catalysis is a reaction of gaseous or liquid substances on the Surface of a solid partner, the catalyst. Due to the presence of a catalyst the reaction rate is increased or the activation energy is reduced. The catalysts used in, for example, gas purification processes are usually metals or metal compounds, and their oxides.

These metals are applied to an inactive carrier material with a large outer and inner surface. A requirement is high stability, durability against mechanical influences, such as abrasion and bleeding, and chemical resistance.

A practical application of such heterogeneous gas catalysis is the pneumatic conveying of organic dust for product separation. Fine dust filter such as bag filters can be used. However, as a side effect of these processes the formation of fire pockets occurs. In cleaning process at elevated temperatures harmful gases such as carbon monoxide are formed. The resulting carbon monoxide must be oxidized before it is allowed to escape into the exhaust air. Catalytic

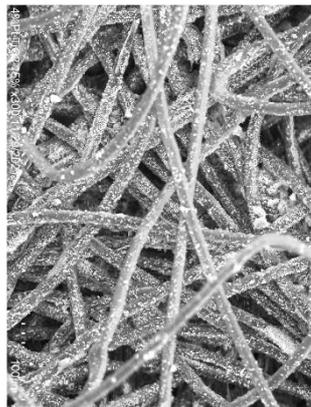


Fig. 2: Doped fabric

filter bags are recommended, who neutralize the gas to harmless Carbondioxide at relatively low temperatures.

Carbon monoxide limits will be a problem for the industrial application in the future. So there is a need for catalytic exhaust air purification and simple production of such items. Katex is a low-cost procedure to finish common polymer fabrics with catalytic particles, e.g. filter bags.

Current Status

A patent application has been filed at the German Patent and Trademark Office. Further international applications are still possible.

The invention could prove its feasibility in numerous experiments. PROvendis offers licenses for interested enterprises on behalf of the Hochschule Niederrhein.

An invention of Hochschule Niederrhein.

Competitive Advantages

- Simple method, just a washing step
- No organic solvents and mild temperatures
- High catalytic activity
- No Leaching
- No pressure lost
- No double layered fabric
- Binder-free immobilization of catalytic particles

Technology Readiness Level

1 2 3 4 5 6 7 8 9

Experimental proof of concept

Industries

- Chemical Industry
- Materials
- Coatings

Ref. No.

6375

Contact

Dr. Thorsten Schaefer
E-Mail: ts@provendis.info
Phone: +49(0)208-94105-27

