

The present invention is a polyurethane foam comprising in their structure silver, gold or copper nanoparticles. Polyurethane foams are polyurethane materials reputed to have most versatile properties, so they can be used in various branches of science and industry. They are applied in clothing, upholstery, automotive, and aerospace industries. Commonly they are used as seals, packaging and in the production of toys. Furthermore, due to their unique mechanical properties, polyurethane foams have a great importance in the construction industry, as for the manufacture of walls and isolation and to strengthen the structure. Properties of foams can be enriched by the addition of a biocide. Silver, gold or copper present in the form of nanometric scale are known for their biocidal properties against bacteria, viruses and fungi. Nanometals additive for polyurethane foams affects the inhibition of growth of bacteria, fungi and viruses, especially when the foam are used in the environment favouring their development.

A method for preparing a polyurethane material was developed. The process consisted of mixing at room temperature the water nanosilver, nanogold or nanocopper suspension with polyol premix which is a mixture of two polyols, catalyst and surfactant. Suspension of silver, gold or copper, which is obtained based on water works as a foaming agent. Then, methylenediphenyl-4,4'-diisocyanate is added to that mixture. Water which serves as a dispersant of metal nanoparticles, reacts with isocyanate leading to the formation of foam by generating carbon dioxide.

Thus, the process condition allows to deposit the nanoparticles on the surface of the foam, rather than in its volume, which creates better possibilities for the use of their biocidal properties.

[M2k Tekno](#)

Polyurethane foam containing metal nanoparticles

[Etap zaawansowania prac:](#)

Prace rozwojowe

[Ochrona prawna:](#)

NIE

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