



## Spray-on liquid glass is about to revolutionize almost everything

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The fissure was induced in order present an image which shows the characteristics of the coating. The image shows the SiO<sub>2</sub> coating on a filament of a microfibre.

**(PhysOrg.com) -- Spray-on liquid glass is transparent, non-toxic, and can protect virtually any surface against almost any damage from hazards such as water, UV radiation, dirt, heat, and bacterial infections. The coating is also flexible and breathable, which makes it suitable for use on an enormous array of products.**

The liquid glass spray (technically termed “SiO<sub>2</sub> ultra-thin layering”) consists of almost pure [silicon dioxide](#) ([silica](#), the normal compound in glass) extracted from quartz sand. Water or ethanol is added, depending on the type of surface to be coated. There are no additives, and the nano-scale glass coating bonds to the surface because of the quantum forces involved. According to the manufacturers, liquid glass has a long-lasting antibacterial effect because microbes landing on the surface cannot divide or replicate easily.

Liquid glass was invented in Turkey and the patent is held by Nanopool, a family-owned German company. Research on the product was carried out at the Saarbrücken Institute for New Materials. Nanopool is already in negotiations in the UK with a number of companies and with the National Health Service, with a view to its widespread adoption.

The liquid glass spray produces a water-resistant coating only around 100 nanometers (15-30 molecules) thick. On this [nanoscale](#) the glass is highly flexible and breathable. The coating is environmentally harmless and non-toxic, and easy to clean using only water or a simple wipe with a damp cloth. It repels bacteria, water and dirt, and resists heat, [UV light](#) and even acids. UK project manager with Nanopool, Neil McClelland, said soon almost every product you purchase will be coated with liquid glass.

Food processing companies in Germany have already carried out trials of the spray, and found sterile surfaces that usually needed to be cleaned with strong bleach to keep them sterile needed only a hot water rinse if they were coated with liquid glass. The levels of [sterility](#) were higher for the glass-coated surfaces, and the surfaces remained sterile for months.

Other organizations, such as a train company and a hotel chain in the UK, and a hamburger chain in Germany, are also testing liquid glass for a wide range of uses. A year-long trial of the spray in a Lancashire hospital also produced “very promising” results for a range of applications including coatings for equipment, medical implants,

catheters, sutures and bandages. The war graves association in the UK is investigating using the spray to treat stone monuments and grave stones, since trials have shown the coating protects against weathering and graffiti. Trials in Turkey are testing the product on monuments such as the Ataturk Mausoleum in Ankara.

The liquid glass coating is breathable, which means it can be used on plants and seeds. Trials in vineyards have found spraying vines increases their resistance to fungal diseases, while other tests have shown sprayed seeds germinate and grow faster than untreated seeds, and coated wood is not attacked by termites. Other vineyard applications include coating corks with liquid glass to prevent “corking” and contamination of wine. The spray cannot be seen by the naked eye, which means it could also be used to treat clothing and other materials to make them stain-resistant. McClelland said you can “pour a bottle of wine over an expensive silk shirt and it will come right off”.

In the home, spray-on glass would eliminate the need for scrubbing and make most cleaning products obsolete. Since it is available in both water-based and alcohol-based solutions, it can be used in the oven, in bathrooms, tiles, sinks, and almost every other surface in the home, and one spray is said to last a year.

Liquid glass spray is perhaps the most important nanotechnology product to emerge to date. It will be available in DIY stores in Britain soon, with prices starting at around £5 (\$8 US). Other outlets, such as many supermarkets, may be unwilling to stock the products because they make enormous profits from cleaning products that need to be replaced regularly, and liquid glass would make virtually all of them obsolete.

**More information:** Nanopool: <http://www.nanopool.eu/couk/index.htm>