



## Pureti Makes Surfaces Self-Cleaning

**Pureti's technology keeps buildings and materials clean without having to lift a finger.**

By Jeremy Quittner | Oct 31, 2012

Imagine cleaning an entire building, inside and out, without lifting a finger.

Pureti says it can do just that by coating surfaces with a liquid form of titanium dioxide--the same stuff that colors some sun blocks, toothpastes, and makeups. Pureti has figured out a way to use the chemical compound, and its natural reaction to ultraviolet light, to remove free radicals and other pollutants from surfaces, the air, and water.

In practical terms, companies could use the product to save millions of dollars each year by cutting down on the need for energy, staff, and products to clean building exteriors and interiors.

"Molecules and chemicals bumping against the Pureti-treated surface are initially broken up until nothing is left but CO<sub>2</sub> and H<sub>2</sub>O," says Glenn Finkel, president and co-founder of Pureti.

Pureti was founded in 2004 by Finkel and John Andrews, currently the company's senior scientist. Finkel had been a clinical psychologist and Andrews had worked as an organic chemist developing uses of polyurethane textile coatings for airplane exit chutes, life vests and parachutes for NASA. Pureti currently has six employees and is on track to break even in about a year, Finkel says. The company is in the process of closing a deal with a private equity fund by the end of 2012, though Finkel would not divulge the amount of funding. Pureti has about 100 customers.

The patented process at work, which involves nano-particles of titanium dioxide, is based on photo-catalysis, the opposite of photosynthesis, and it can clear noxious pollutants such as nitrogen and sulfur oxides (NOX and SOX) from the air by robbing them of their oxygen compounds.

The technology was pioneered in Asia about 30 years ago, where the walls of some big city subway stations are coated with it. The process has more recently found a foothold in Western Europe, and is only now being introduced to the U.S.

Its competitors, including Alcoa, Italcemente, among others, primarily mix titanium dioxide in powder form with cement, for example, to keep highways clean, or in materials like aluminum siding, to keep houses looking shiny and new, experts say. The problem is that there's no way to apply it once the building or highway is constructed without it. (Glass-makers Pilkington and St.-Gobain also offer self-cleaning windows, but their products are limited to glass.)

Because Pureti is liquid, and sprayed on in a micro-thin coat, it can be applied to almost any surface after the fact.

"[Pureti] has a very inexpensive way of applying the coating, and ingredients are relatively inexpensive, so prices will be fairly reasonable," says Alexander Orlov, assistant professor in the material science and engineering department for SUNY Stonybrook, who has examined and consulted on the product.

Los Angeles Community College District recently used Pureti's product to coat a 60,000 square foot childhood development center in its South L.A. campus. The process took about four days to complete, at a cost of about 60 cents a square foot.

And the college had a built in control: a replica of the development center building next door, used for classes, which it did not treat.

"When we would come back and look periodically and we'd see result within six months the classroom building was showing classic signs of dirt accumulation and drain streaking on the building and window streaking," says Larry Eisenberg, Former executive director of facilities planning and development at LACD. The building that was treated showed none of that, Eisenberg says, even a year later.

LACD was so happy with the results, it began treating some other buildings in its nine college campus, including the solar panels in a parking lot in its West LA campus, which are now transmitting about 17% more energy after spraying, Eisenberg says.

NASA and the Department of Homeland Security are also looking into ways to use Pureti's product, or technology like it, to protect city infrastructure in the event of a dirty-bomb attack. Theoretically, it could be used to keep surfaces clean that otherwise might take 10 to 15 years to be rid of a poisonous half-life.

"That could debilitate the functions of the city," says Lauren Underwood, a scientist leader at Computer Sciences Corp. and a support contractor for NASA who has examined Pureti's product.

But Pureti is counting on more friendly uses, too.

"Our leg up is our versatility and our greater photo-catalytic efficacy and greater cost-effectiveness," says Finkel.

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