

Spray-on protective coating wins 'R&D 100' Award

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R&D Magazine honored Office of Naval Research scientist Dr. Roshdy George S. Barsoum with a 2011 "R&D 100" award on Oct. 13 for the development of a revolutionary coating material that is blast-and fire-resistant.

The special high-tech surface technology, HybridSil Fire/Blast, acts like a force field that surrounds and protects any type of surface, making it blast-, ballistic- and fire-resistant.

"You can take an existing material and change it completely to make it more useful for the warfighter," said Barsoum, ONR's manager, Explosion-Resistant Coating, Ships and Engineering Systems Division. "Receiving this award is recognition that we are developing something that the warfighter can really use and exploit."

The coating is sprayed onto surfaces just like paint, with minimal surface preparation. It is applied in variable thicknesses—less for fireproofing and more for blast-resistance. But the tricky part is that the law of diminishing returns is at work: at some point, the more you apply, the less effective it becomes. Determining the appropriate amount for each surface and user need is complex, Barsoum said.

The Navy is particularly interested in the material's fire-resistant properties, since fires, along with floods, present the greatest threats on a ship or submarine. The Army and Air Force have also been investigating its use to protect buildings against vehicle-borne explosive devices.

The coating was developed with industry partner NanoSonic Inc, and the cost per gallon is equivalent to premium house paint. It can be used on new and old materials alike, making it easy to apply to existing ships or vehicles.

The research into this coating began after the bombing of USS Cole (DDG 67) on Oct. 12, 2000. The Navy wanted to find new ways of protecting ships, including coatings and polymers that could shield against explosions and fire. The research took off after 9/11, and the new defensive [coating](#) was applied to the rebuilt sections of the Pentagon.

According to R&D Magazine's website, the R&D 100 awards identify and celebrate the top high-technology products of the year, spanning industry, academia and government-sponsored research. Winning products include sophisticated testing equipment, innovative new materials, chemistry breakthroughs, biomedical products, consumer items and high-energy physics.

Provided by Office of Naval Research

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