

Sandia's low-density, environmentally friendly foam might save surfboard industry from a total wipeout

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Researchers at Sandia National Laboratories in Livermore, Calif., have developed a low-density, energy-absorbing foam that, among other potential applications, could help avoid a complete wipeout for the nation's \$200 million surfboard manufacturing market. Sandia is a National Nuclear Security Administration (NNSA) laboratory.

TuffFoam was originally conceived by Sandia materials scientists for NNSA as an encapsulant material to protect sensitive electronic and mechanical structures from harsh weapons environments. It is a water-blown, closed-cell, rigid polyurethane foam that features formulations as

low as 2 lbs.-per-cubic foot density. But beyond its use as a structural material, the foam likely has other applications.

"It can be used for thermal and electrical insulation, and as a core material for the automobile and aerospace industries," said Scott Vaupen, a business associate at Sandia, which is actively pursuing licensing and commercialization partners. "TufFoam might not only be ideal for surfboards, but also for car bumpers and airplane wings. The potential market could be staggering."

Clark Foam, the leading manufacturer of foam for surfboard construction, unexpectedly closed its doors late last year because of the impact of ever-tightening environmental regulations on the manufacturing of their polyurethane surfboard blanks. The move has led to near-panic, particularly in California, by manufacturers and sellers of surfboards who fear they will not be able to find the high strength-to-weight ratio surfboard blanks necessary to make the boards. Surf historian Matt Warshaw, in an article in the Santa Barbara NewsPress, said "it's the equivalent of removing lumber from the housing industry."

Largely due to its low (2 pcf) density, Sandia's TufFoam might very well fit the bill as a drop-in replacement material. A key feature of TufFoam is that it does not contain toluene diisocyanate (TDI), the chemical used in the production of the polyurethane foam surfboard blanks that is most problematic with respect to environment regulations. Another attractive feature of the Sandia product is that all of the chemicals used to make TufFoam are commercially available in commodity quantities. The material is currently formulated to be processed in a batch mode, but the processing schedule can be modified for machine mixing or injection molding.

Source: Sandia National Laboratories

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