

# Revolutionary material dramatically increases explosive force of weapons

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A revolutionary material that will replace steel in warhead casings will bring added lethality and increase the likelihood of a hit on an enemy target, the Office of Naval Research (ONR) announced August 10.

By combining several metals with standard manufacturing techniques, High-Density Reactive Material (HDRM) has the potential to dramatically increase the explosive impact of most weapons with little or no compromise in strength or design.

Unlike conventional munitions, the innovative materials approach integrates the casing with approved warhead explosives for increased lethality. In addition, the unique design for fragmenting warheads allows release of [chemical energy](#) after impact, increasing the probability of a catastrophic kill.

"Recent testing and demonstrations have consistently shown that the new casings can be integrated into naval missiles and are durable enough to withstand both high acceleration of missile launch and the forces exposed to during the detonation event," said Dr. Clifford Bedford, ONR's [energy conversion](#) program officer. The HDRM fragments can penetrate a target's skin, followed by a rapid and sustained combustion/explosion."

The last test shots were fired at the Army's Blossom Point Field Test Facility in Maryland at the end of June.

HDRM has the strength of common aluminum alloys yet the density of mild steel, making it an ideal replacement for steel components. This is important because, in order for existing weapon systems to maintain probability of a hit, they must have a density similar to that of steel.

ONR is planning additional test shots in mid-August at Blossom Point. A large-scale demonstration against multiple stationary targets is tentatively planned for September.

Provided by Office of Naval Research

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