

**Abstract ID:** 13616

**Title:** (Closed if available; open if closed is not available) Insensitive Munitions Fuze Solution

**Abstract Text:** A paper was presented at the 53rd Fuze Conference in 2008, discussing means to improve the IM sensitivity of the M213 Fuze being used with the Special Forces Anti-Structure Munitions (ASM) and the Army M67 Hand Grenade. The M67 Hand Grenade, though an Army Grenade is used by all Services while the ASM is unique to US Special Operation Forces. The M67 Grenade contains approximately .35 lbs of Comp B, a primary explosive while the ASM contains 0.9lbs of PBXN-109, an explosive with IM Insensitive qualities. The M213 fuze contains in-line primary explosives making both Grenades susceptible to all IM stimuli. The M213 fuze does not by itself ignite the PBXN-109; an additional booster (PBXW-128) is placed around the fuze to amplify its output. Note that with no fuze, the ASM Grenade passes most IM tests, while the M67 fails them all. By replacing the Grenade collar (through which the fuze screws into the Grenade) with a collar of eutectic material and filling both Grenades with PBXN-109, the Grenades will pass Fast and Slow Cook-Off. the eutectic collar melts at a temperature of 240°F and the risen pressure during deflagration ejects the fuze from the Grenade. To pass all other IM threats, the explosive in the fuze firing columns must be replaced by secondary explosives.

The object of this report is to describe the tests that have been conducted to replace lead azide, lead styphanate and RDX in the fuze firing column with secondary explosives. Due to the insensitivity of the secondary explosives such as BPXN-5 and PBXN-9407, it was impossible to obtain a high order detonation. Success was obtained when the secondary explosives were used to accelerate a small flying plate to impact the fuze booster; this provided the ignition energy needed to detonate the ASM Grenade. By using secondary explosives, it will be possible to pass other IM tests, i.e., Bullet Impact, Fragment Impact and Sympathetic Detonation. These changes, however, do not Make the M213 fuze meet the MIL-STD 1911 for hand emplacement munitions. An approach will be discussed to separate the upper column of the fuze containing a primary explosive from the explosive column containing secondary explosives.