

RESPONSE OF ICB BLAST PANELS TO LOCALIZED BLAST AND FRAGMENT THREATS: OVERVIEW OF 2009 TESTS

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Protection of U.S. soldiers from blast, fragmentation and ballistic attack in forward expeditionary locations remains a critical need of the U.S. Armed services. Structures using traditional materials such as reinforced concrete require considerable equipment and labor for erection, can take up to a month to attain full protection strength, and can generate a considerable amount of hazardous fragmentation debris as a result of attack. PPG Industries (PPG) has developed unique, energy absorbing, fire and corrosion resistant construction panels for both new and retrofit Anti-Terrorism Force Protection (ATFP) applications. These panels, Mil-Tough™ ICB blast and ballistic panels, are a combination of chemically bonded phosphate ceramic and fiberglass, and offer substantial areal density savings over traditional materials when evaluated against blast, ballistic, and fragmentation threats. This presentation first provides a summary of the panel technology, its construction, and results of recent full-scale testing. The testing was used to confirm a flexural response resistance function previously developed for this material based on laboratory and shock tube testing. Test results showed a very significant capability of the man-portable sections to resist realistic PBIED and VBIED threats. Full-scale December 2009 test results will be presented, in which a space gap design utilizing this technology defeated PBIED (stand off at one meter) and VBIED (standoff at 5 meters) threats.