



Report
3M: Anchored Safety Film Blast Tests

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Executive Summary

Blast testing of anchored film glazing systems, under supervision of TPS, was undertaken at the Spadeadam Test Facility, MoD R5, Spadeadam, Gilsand, Cumbria CA36 7AT, England by Avantica Technologies Limited from the 13th to the 20th September 2007.

Glazing systems tested consisted of combinations of glazing, film type and anchoring mechanisms.

The object of the tests was to assess and compare the bomb blast resistance of a selection of systems to the International Organisation for Standards (ISO) and US General Services Administration (GSA) glazing. In particular, the hazard ratings and confidence levels for the ISO EXV 25, ISO EXV 33, ISO EXV 45 and GSA C standards. Each sample was tested using a single bomb blast. Note: to achieve full compliance with GSA, each sample would need to be tested 3 times.

The glazing systems were mounted three in each test structure, with two test structures per test. 6 tests were undertaken with 33 window systems tested in total. Each test structure contained an internal pressure transducer and, for the majority of the tests, a high speed video camera.

3 pressure transducers were mounted on an external gauge block to measure the reflected pressure from the blast and calculate the blast loads on the test samples. 3 Free field transducers were mounted in aerodynamic casings and used to measure the free field pressure used to assess the explosive strength of the blast.

The table on the following page summarises the windows tested and the results of the tests.

The systems tested provide a good sample for comparing different anchoring methods and film types and assessing the bomb blast protection capabilities. This information could be used to decide on which systems would undergo further tests to provide consistency in the results and confidence in the protection afforded by the anchored safety film.

All tests were conducted on samples with four side attachment unless otherwise stated