

# **DESTRUCTIBLE BLAST INHIBITING CONTAINERS FOR BLAST PROTECTION ABOARD AN AIRPLANE**

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The list of catastrophic in-flight failures due to concealed explosives placed by terrorists in passenger cabins or luggage compartments is long. Analysis of main damage factors caused by onboard HE explosions has shown that the level of resulted impulse, hybrid, quasi-static and baric loads are far too high for the airplane to survive.

In 2005, based on requirements of air transportation agencies, an updating blast inhibitor "Fountain-3MK" was developed and tested. It became obvious in the process of the development that correct description of blast waves in an encumbered confinement is not possible without special experimental investigations.

Full-scale testing of the new blast inhibitor has been carried out on board a wide-body aircraft "IL 96-400".

At detonation of 0.5 kg TNT inside the working area of the inhibitor placed in the passenger cabin multiple diminution of shock blast waves (20-50 times in comparison with an "open" detonation) was reported. As that took place, the maximum overpressure in a passing blast wave measured in the cabin did not exceed 5 kPa at 1.8 m from the epicenter.

At the detonation inside the inhibitor quasi-static part of the overpressure was practically zero within 20 msec after the blast wave front passage, but at "open" detonation it did not change for 2 sec. Shock blast wave impulse was reduced significantly. A fire flash following an open explosion was not observed at all when the "Fountain-3MK" was applied. Deformation area radius and damage of the deck structure did not exceed the radius of the inhibitor. Commission of experts reported that the flight capability of the airplane was not deteriorated.