

# EXPERIMENTAL EVALUATION OF REFLECTION COEFFICIENT OF COMPRESSIBLE MATERIAL

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## Abstract

Detonation of explosive in a water tank disturbs the bubble dynamics due to reflection of shock wave from sides and floor of the tank. For simulation of free field conditions for the movement of shock wave the reflection from the sides and floor of the water tank can be minimized by deploying a sacrificial layer of compressible material on the sides and floor of the tank. Sacrificial layer is of compressible material that will reduce the intensity and reflection of blast. A typical type of compressible material has been test evaluated in instrumented explosive trials and reflection coefficient of the material has been determined from the shock data acquired in the trials. The compressible material used is an alloy of aluminum and magnesium fabricated in a special pattern to break the shock wave. A four inch thick layer of this compressible material has been fixed on MS plate of size 1 meter by 1meter (1m X 1m). The complete assembly was merged in semi buried water tank of 6 meters dia and 6 meters length. The semi buried water tank consists of 20mm mild steel with depth of 6 meters. TNT spherically charges of 100 g were detonated from the center of tank at a depth of 2.5 meters in front of the assembly at various stand –offs with compressible material facing explosion. An underwater piezoelectric gauge model PCB 138A25 was deployed to measure the incident and reflected shock .By using the incident and reflected shock data reflection coefficient of compressible material has been calculated.