

## **Enhanced blast polymer bonded explosive (EB-PBX)**

Development of weapon systems that use blast as the primary damage mechanism has been in the forefront for use in non-traditional targets like deep buried bunkers, fortified structure and caves. Worldwide lot of developmental activities are being pursued to enhance the blast performance.

Traditional high explosives, on detonation, produce very high but short duration pressure pulse. However, for structural targets in open or fortified, there is requirement of a pressure pulse with moderate peak but long lasting wave. The TNT based compositions such as Dentex, Torpex, HBX-1 and HBX-3 are widely used for this purpose. TNT has inherent limitations due to its low thermal stability, inhomogeneity, low density and exudation.

To encounter these limitations, TBRL has developed Enhanced blast polymer bonded explosive (EB-PBX) to meet the requirements of various warheads like blast warheads, fragmented warheads, enhanced blast warheads etc. for defeating bunkers, fortified structures etc.

This is HMX based aluminized composition. The ingredients with their percentage, particle shapes, particle sizes have been optimized to meet the characteristics like high density, high shock insensitivity, VOD, TNT equivalence. Besides this the composition has been evaluated for various safety tests at powder as well as charge level. The safety certification has also been provided by CQAME (Pune).

The EB-PBX based charges have been processed using planetary mixer and curing chambers. The charges at various calibers have been developed and subjected to blast, detonic trials displaying achievement of successful results.

Various warheads of various calibers have been filled with this composition and subjected to blast and fragmentation trials leading to achievement of successful blast parameters like Peak over Pressure, positive phase duration, fireball diameter etc.

The technology for processing of EP-PBX formulation is ready for ToT to industry partners.