

Write-up on

Development of HE Composition including its Filling Technology and Pyros for VISHAL Munition under New Family of Munitions (NFM)

Description of Technology:

Anti-tank (A/T) munition is a potent and vital armament in the armoury of the Army. These munitions are used to incapacitate / neutralize the advancing enemy tanks. A/T Bar mine, currently available with the Army is blast type mine initiated with a dual action pressure-actuated fuze. The RDX/TNT (55/45) filling in the mine is marginally less powerful. The Army projected a requirement to design and develop an A/T bar munition under NFM having features of reduced or same weight of munition with better safety features and similar performance compared to the existing mine in-service.

DRDO has developed a new A/T bar munition VISHAL under NFM reducing the above limitations and which would also be effective against the futuristic tanks. The performance and safety aspects have been enhanced in the munition. Exhaustive studies were carried out to finalize a HE and its filling weight for the munition to realize a performance similar to the existing mine. A relatively more powerful RDX/TNT (60/40) composition HE filling widely used as filling in warheads, ammunition, some of the land and sea mines, etc. has been selected for the munition. The modified shape of the munition body with a relatively more powerful RDX/TNT (60/40) composition HE filling has been adopted to achieve reduction in HE filling weight for comparable performance to that of the existing mine. The melt cast technology for filling the VISHAL munition has also been established. The other explosive components developed for the VISHAL munition are RDX and RDX/Wax 95/5 composition based stemming charge and booster charge respectively prepared / filled by pressing method for the fuze, RDX/TNT 60/40 composition based augmenting charge prepared / filled by melt cast method for the explosive train. Two types of pyro squibs [Squib-I (Flash cum shock) for TSIU Housing & Squib-II (Flash) for Indicator] have been developed to improve the safety. Two types of developed detonators, Detonator 100mg LZ and Detonator 135mg LZ Y have been selected for the explosive train of VISHAL munition.

Application Areas:

VISHAL is anti-tank bar munition which will be employed to incapacitate / neutralize the combat vehicle / enemy tank during hostility.

Its USP – such as Certifications and test results etc.:

All the trials including User trials of VISHAL munition have been completed successfully. VISHAL munition having features of reduced mass of HE filling, similar performance and weight of the existing mine with improved safety features will replace the existing in-service A/T Bar mine.

The selected explosives/detonators for the explosive components and filling of the VISHAL munition are established ones and are indigenously available. Two types of pyro squibs developed are used in TSIU and indicator units to improve the safety and two types of developed detonators are used for the explosive train of VISHAL munition. Existing standard facilities, machinery and equipment required for preparation of explosives and filling of the munition is indigenously available in India.

Photograph of VISHAL munition



VISHAL Munition