

Container Modifications for 120mm HE Mortar Ammunition to Improve Fast Cook Off Reactions

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The Naval Surface Warfare Center Dahlgren Division (NSWCDD) conducted three fast cook-off (FCO) tests on the Expeditionary Fire Support System (EFSS) 120mm High Explosive (HE) ammunition. The objective of the tests was to assess design changes to the PA 117A1 container and determine the feasibility of improving the EFSS HE cartridge response from a Type IV to a Type V.

The purpose of the first test was to evaluate three different design changes to the PA 117A1 container (used to transport and store EFSS ammunition). Three containers were modified and subjected to the FCO test at the same time. One container was modified to include a pressure release panel at the end of the container. The second container was modified to include the pressure release panel and a 1/4 inch thick metal mesh. The third container was modified to include the pressure release panel and a 1/8 inch thick metal mesh. The results of the first test were then analyzed and the best performing container design was chosen to be evaluated in the storage configuration.

The second test was conducted on nine EFSS HE cartridges. The cartridges were packaged in the PA 117A1 containers with the modifications that yielded the best results from the first test. The test was conducted in accordance with Insensitive Munitions and Hazard Classification Standards so that an official score could be obtained. Deficiencies were observed during the second test. So a third test was conducted to evaluate possible solutions to those observed deficiencies.

This paper will discuss the results of the mitigation methods utilized and the lessons learned.