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The determination of the energy values and the composition analysis of M-16 rifle black powders

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The determination of the energy values, specifically the heat of combustion of various M-16 black powders werethe important part of the bulletefficiency investigations. The calorimetric bomb is commonly used for these determinations. Four M-16 black powders from the differences sources were used as samples for this research. It was found that,after using calorimetric bomb technique, the gross heating value in Joules/g of sample 1-4 were 10,647, 10,416, 5,281 and 3,878 respectively. The CHNS chemical composition have also been studied. The result found that, Carbon and Nitrogen compositions of sample 1 shown the highest values and provided a few differences with sample 2 while sample 3 and 4 shown lowest Carbon and Nitrogen percentages composition. The hydrogen composition of all samples were equally values, however only sample 3 and 4 displayed Sulfur values while none Sulfur values of sample 1 and 2. Since M-16 black powders consist of the chemical part that provided energy, particularly the Carbon, Hydrogen and Nitrogen, it would be possible to comparison the energy values of various M-16 black powder samples by estimating the C and N of CHNS analysis results in the sample.

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