

Evaluation Of Acetylene Gas Produced by Reaction of Calcium Carbide with Water: CaC_2 with H_2O Ratio into C_2H_2 With Unwanted $\text{Ca}(\text{OH})_2$

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Abstract

Herein, the ratios that positively affect the production of acetylene (C_2H_2) gas, such as the calcium carbide (CaC_2) ratio and water (H_2O) ratio were determined. The combustion process resulting from C_2H_2 gas with oxygen (O_2) gas was evaluated. In this experiment 1 kg of CaC_2 was putted with 3, 4, and 5 liters of H_2O in a ratio of (1/3, 1/4, and 1/5) solid to liquid. This process was carried out using a (40 liters) Chinese-made reactor with a locally filled oxygen cylinder with a capacity of (50 liter). Acetylene gas was produced by the simultaneous reaction. This process was evaluations via (solid yield, high heating values (HHV), Brunauer-Emmett-Teller (BET) surface area, and Fourier Transform Infrared Spectroscopy (FTIR)). This work will contribute to obtaining ideal C_2H_2 gas, which will lead to better combustion and reduce harmful gas emissions.

Keywords: Calcium carbide, calcium hydroxide, acetylene gas, high heating value