



DOW CHEMICAL U.S.A.

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Caustic

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REACTIVE CHEMICALS TESTING REPORT - Caustic Plant Incident 2/25

Lab studies using Differential Thermal Analysis (DTA), have shown that carbon steel and caustic undergo a rapid exothermic reaction at temperatures near 150°C, with considerable gas evolution. In fact, in every DTA study we carried out, the sample tube ruptured from pressure between 160 and 200°C.

In a subsequent experiment, carbon steel and caustic were heated in a closed nickel cylinder for two hours at 140°C. Gas chromatographic analysis of the evolved gas confirmed that it was hydrogen.

These data support the conclusion that the Caustic Plant incident (minor explosion in Caustic storage tank while torch cutting on 2/28/80) resulted from hydrogen evolution in the immediate area of the cut due to the iron/caustic reaction, followed by ignition of the hydrogen to give a small localized explosion.

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