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Diet Coke® and Mentos® Reaction: Does Going Deeper Kill the Buzz? The True Science of Fizzy-ology

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Introduction and Background:

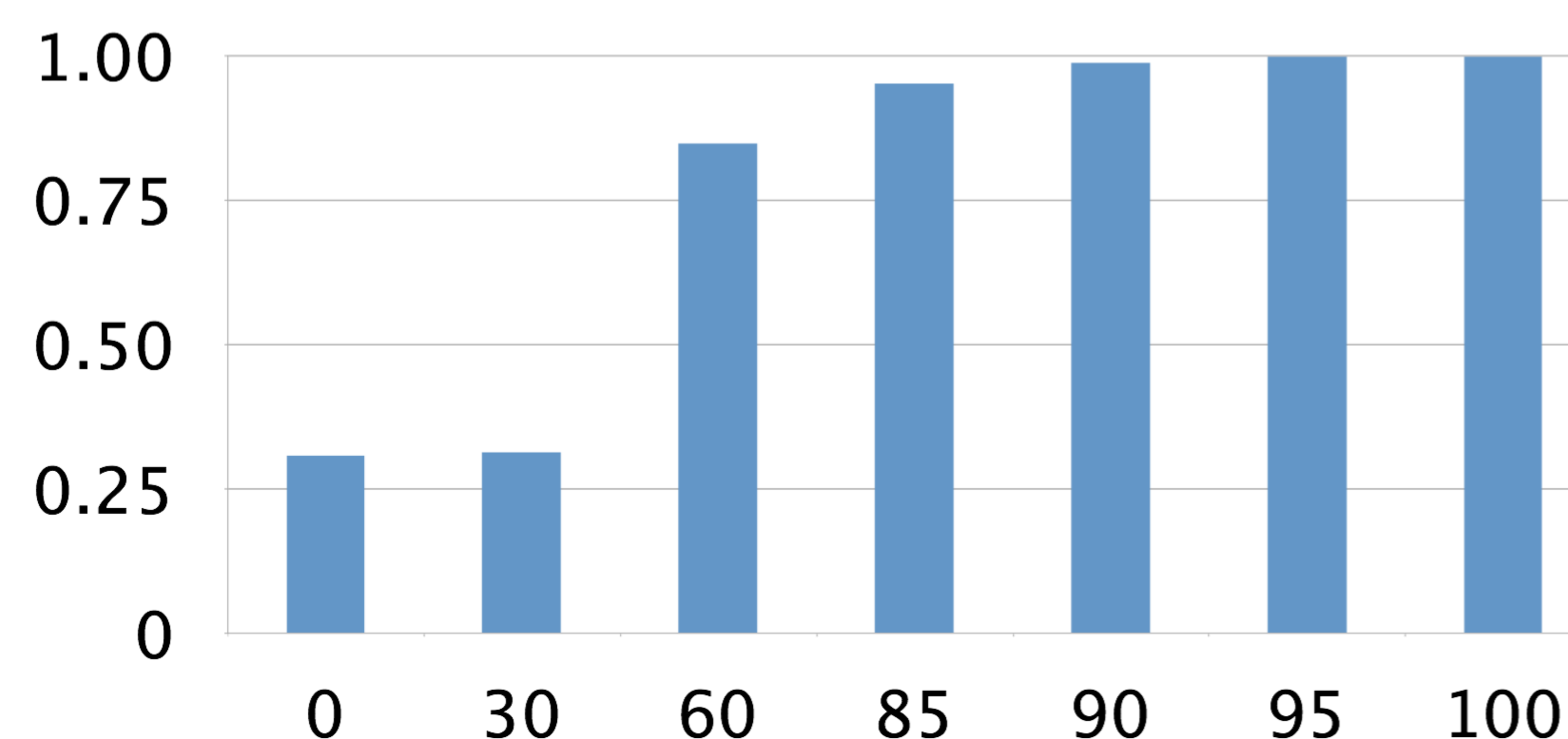
The Diet Coke® and Mentos® reaction is a fun demonstration of chemistry and physics and has been exhibited and studied in many different fields, shown on the internet and on television as well. To date, there has been no true experimental study examining the precise amount of atmospheric pressure required to suppress the explosive reaction of the mixture of the two substrates.



Materials and Methods:

Using 500cc pre-filled bottles of Diet Coke® and a pre-filled modified Mint Mentos® delivery device (modified 20cc syringe with slide release mechanism for 5 individual Mint Mentos®, patent pending), we examined the Diet Coke® and Mentos® reaction at varying depths within a multi-place (Class A) hyperbaric chamber. Depths and respective pressures included 0 (1 ATA), 30 (1.6 ATA), 60 (2.8 ATA), 80 (3.42 ATA), 90 (3.73 ATA), 95 (3.88 ATA) and 100 fsw (4.03 ATA), respectively. Three bottles were tested at each depth and their respective volume of displacement was measured after the reaction was allowed to take place (Table 1). Volume of displacement was measured and charted on a graph and complete suppression of the reaction was the main outcome and defined as no displacement of Diet Coke® from each bottle at depth.

Fraction Diet Coke Remaining vs. Depth (fsw)



Data and Results:

On average, displacement of Diet Coke® during the Diet Coke® and Mentos® reaction was 360 cc (0 fsw, 1 ATA), 357 cc (30 fsw, 1.6 ATA), 79 cc (60 fsw, 2.8 ATA), 25 cc (80 fsw, 3.42 ATA), 6.33 cc (90 fsw, 3.73 ATA), 0 cc (95 fsw, 3.88 ATA), 0 cc (100 fsw, 4.03 ATA), respectively at each depth.



Conclusions:

The depth or pressure at which a 500cc bottle of Diet Coke® and Mint Mentos® (5 individual candies) reaction is completely suppressed is 95 fsw or 3.88 ATA, or greater. No inside tenders were harmed during this study and the UCSD chamber remains closed at this time for further cleaning.