

WYK SORBENTS, LLC
11721 Lackland Road
St. Louis, MO 63146

November 5, 2012
Lab No. 12E-2246
Invoice No. 157868
P.O. No. 15685
Page 1 of 3

Attention: Jim Callaham

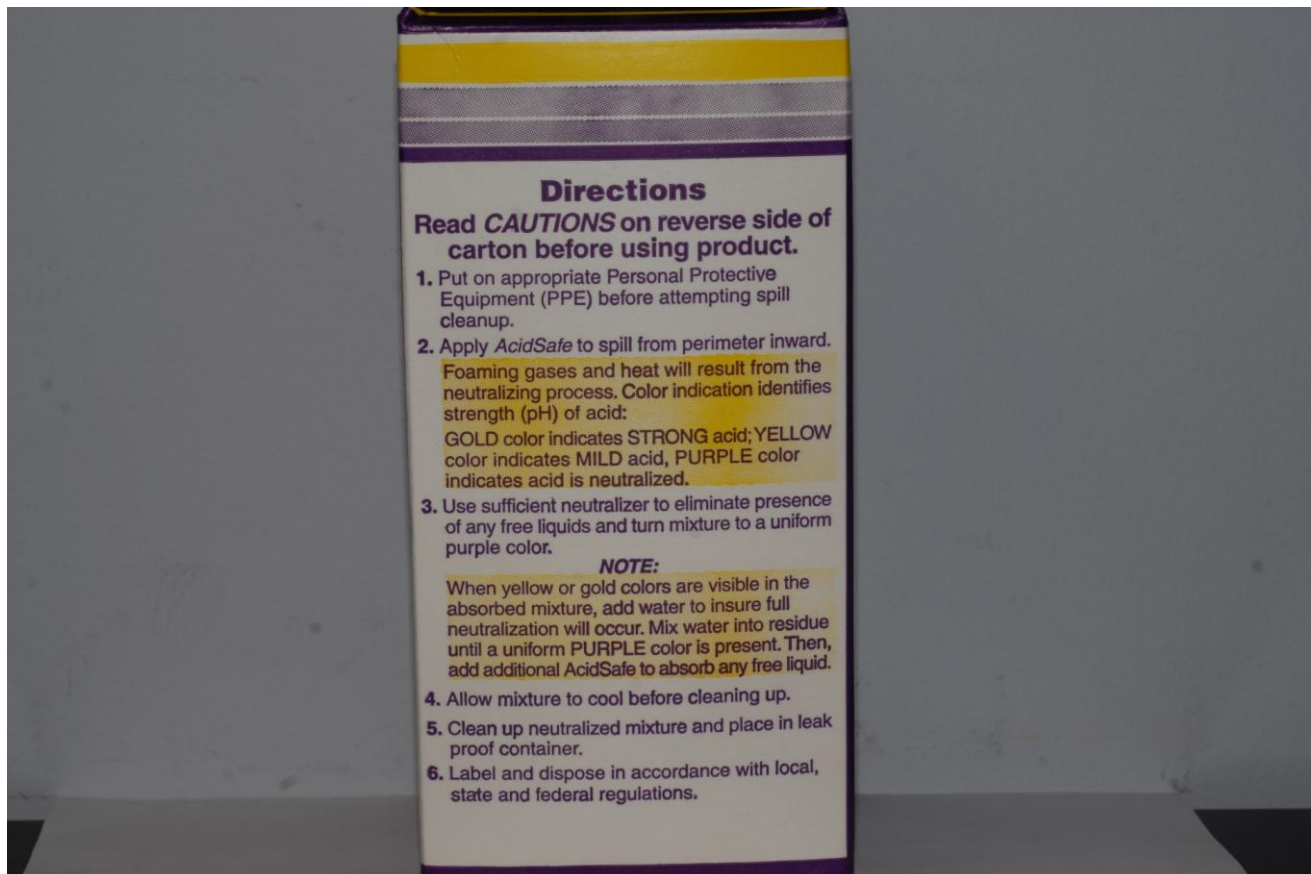
REPORT OF TESTING

MATERIAL: "Acid Safe" Acid Neutralizing Sorbent
ID: AN3002-1022121

SUBJECT: Acid Neutralization Analysis

PRELUDE:

A series of tests were conducted for the performance, observations, and neutralizing capabilities of the submitted acid neutralizing sorbent. The requested medium for the analysis was 40-60% sulfuric acid. All the testing was conducted using diluted reagent grade sulfuric acid measured by acid/base titration to be 9.80 molar or 53.3%. Testing was done in accordance to labeled directions (See Photo Below).





2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085
Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

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1.) QUANTITY OF SORBET NEEDED TO NEUTRALIZE TEST ACID TO pH 6.5-7.5

A known quantity of Neutralizer was suspended in deionized water and titrated with the test acid until the pH reached 6.5. This was determined to be 2.43 grams of neutralizer per 1 ml of 53.3% sulfuric acid. This correlates to 20.28 pounds per gallon of acid (lb/gal).

2.) QUANTITY OF NEUTRALIZER NEEDED TO DRY THE SPILL (DRY POWDER LEFT, NO FREE LIQUIDS)

A known amount of the acid was placed in a large evaporating dish with the amount of neutralizer needed according to the previous titration performed. This amount of neutralizer was also sufficient to absorb the acid. However, the instructions called for adding water and mixing to complete the neutralization process. Additional neutralizer had to be added in order to dry the spill. The total amount of neutralizer required for both neutralization and drying the spill was determined to be 2.76 grams of neutralizer per 1 ml of 53.3% Sulfuric Acid. This correlates to 23.03 pounds per gallon of acid.

This analysis was performed in conjunction with test no.'s 3 thru 6 below.

3.) COLOR CHANGE

The color change (a golden yellow) for un-neutralized areas of the spill and the purple color indicating that the spill was neutralized was obvious and clearly visible.

4.) TEMPERATURE RANGE SEEN DURING NEUTRALIZATION

The highest temperature occurred when the neutralizer was initially added to the acid. This was measured with an infrared thermometer to be 138 °F. The material returned to ambient room temperature after 5 minutes. Per the instructions, water was added and the neutralizer was mixed to complete the reaction. The temperature went back up to 85 °F. This returned to room temperature after 17 minutes.





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5.) TIME REQUIRED TO REACH A SAFE PH

The time required would be dependent on the size of the spill. The spill size we tested 20 ml. of acid. The Neutralizer was added slowly over the course of 15 seconds. The initial reaction and absorption was complete in about 30 seconds. Additional water was added with mixing until reaction was complete. This took another 30 seconds. Additional Neutralizer was added to dry the spill. The total time for neutralizing and drying was under 2 minutes.

6.) OFF GASSING THAT OCCURS AND OBSERVATION OF AND SPLATTERING OR FIZZING WHEN ADDING NEUTRALIZER

The Neutralizer fizzed and bubbled when initially added to the acid. However, this took place in a relatively slow and controlled fashion. The neutralizing compound used in this product is sodium carbonate. This can be calculated to evolve 240 ml. of carbon dioxide (CO₂) per 1 ml 53.3% Sulfuric Acid neutralized. This can be correlated to 32.1 cubic feet CO₂ gas per gallon of acid.

SR/krm

Steve Root, Manager
Environmental Testing

