

GILES CHEMICAL CORPORATION		
COMPANY PROCEDURE		
Standard Operating Procedure	Page : 1 of 3	Revision : Date : 3/27/06
Reviewed: Carl Mooney	Title: Acetic Acid Reactivity for Magnesite ( MgO )	

QA-LAB-08

**Safety:** Wear the appropriate PPE when working with acids in the lab.

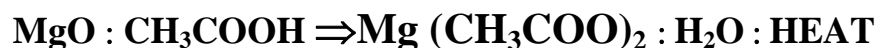
Purpose: Acetic Acid Reactivity for Magnesite ( MgO )

### Procedure:

#### Background Information :

A relative measure of the degree of calcination of a hard-burned magnesium oxide is determined by its reaction with acetic acid. A reaction of known quantities of magnesium oxide and acetic acid is monitored by observing the temperature of the reaction. This will help determine the projected yield for each car of magnesium oxide.

The reaction equation is as follows :



#### Scope :

A known amount of magnesium oxide is reacted with a known concentration of acetic acid solution. By monitoring the temperature of the exothermic reaction the rate of the reaction can be monitored. The faster the rise and higher the maximum temperature, the more reactive the Magnesite sample is ( the more pure Magnesite is contained in the sample ).

#### Equipment :

Weighing Balance  
 150-mL beaker  
 100-mL graduated cylinder  
 1000-mL volumetric flask  
 Thermometer -- -20° - 110° C  
 Magnetic Stirring Plate  
 Magnetic Stirring bar -- 1" length  
 Stopwatch  
 Acetic acid solution  
 De-ionized water  
 Sheet of 8 1/2" x 11" office letter paper

#### Acetic Acid Solution 19% ( w/v )

Weigh  $190.0 \pm 0.1$ g of glacial acetic into a 1000-mL volumetric flask.  
 Dilute to the mark with de-ionized water. Mix well.

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### Procedure :

1. 94 mL of 19% acetic acid solution is transferred into a 150-mL beaker
2. The initial temperature is checked assuring temperature is between 21° -23° C
3. The beaker is placed on the magnetic stirring plate.
4. The tip of the thermometer is set so that the tip is approximately 5mm of the bottom of the beaker
5. The stir bar is then added and speed adjusted so that the sample is in suspension
6. Initial temperature of solution is recorded.
7.  $6.00 \pm 0.01$  of magnesium oxide is added to the solution and stopwatch is started
8. The temperature of the solution is recorded at 30-second intervals over a 10 minute period, if a profile is required.
4. ( in most cases only the temperature at 10 minutes (  $T_{10}$  )is required )
5. Results are reported as the change in temperature ( °C ) in 10 minutes.

$$T_{10} - T_0 = \Delta T \text{ in 10 minutes}$$

$$T_{10} = \text{temperature ( } ^\circ\text{C ) at 10 minutes}$$

( if maximum temperature is reached before 10 minutes

$$T_{\max} - T_0 = \Delta T_{\max} \text{ at time of } T_{\max}$$

6. Data is recorded on lot analysis sheet and data for the entire analysis as well as the lot number and car number is included.

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**TRAINING DOCUMENTATION**

	EMPLOYEE	TITLE	SIGNATURE	DATE
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