1.0 Purpose

The purpose of this procedure is to describe how to determine the reactivity of Magnesium Oxide.

2.0 Scope

This procedure applies to all in-coming MgO.

3.0 Responsibility

Lab Associate is responsible for performing this procedure.

4.0 Safety Considerations

Appropriate PPE should be worn while working with acids in the laboratory.

Safety is a condition of employment. Employees are not authorized to work in an unsafe manner and are prohibited from harming the environment of the facility or community.

5.0 Materials/Equipment

- Weighing Balance
- 150-mL beaker
- 100-mL graduated cylinder
- 1000-mL volumetric flask
- Thermometer -- -20º - 110º C
- Magnetic Stirring Plate
- Magnetic Stirring bar -- 1” length
- Stopwatch
- Glacial Acetic Acid
- De-ionized water
- Sheet of 8 $^1/_2$” x 11” office letter paper

6.0 Procedure

Acetic Acid Solution 19% (w/v)

A. Weigh 190.0g ± 0.1g of glacial acetic acid into a 1000 ml volumetric flask.
B. Dilute to the mark with de-ionized water.
C. Mix well.

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 21º - 23º 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. 6.00g ± 0.01g 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.

   (in most cases only the temperature at 10 minutes (T10) is required)

   Results are reported as the change in temperature (°C) in 10 minutes.

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

$$\mathbf{T_{10} = \text{temperature (°C) at 10 minutes}}$$

   (if maximum temperature is reached before 10 minutes)

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

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

7.0 Reference Documents

MgO Raw Material Testing (L12-FM-100-004)

8.0 Change Information

Updated procedure following *SOP Template Instructions (Q12-PR-100-004)* and *Document Numbering (Q12-PR-100-003)*