MgO Feed Grade

Granulated Magnesium Oxide Feed Grade Supplement

Magnesium supplementation is critical in dairy cattle since it is not mobilized from storage in the body, an adequate level must be maintained in the blood via diet for healthy cows. Low magnesium levels may cause grass tetany or milk fever in cattle. Magnesium oxide (MgO) is the primary source of magnesium, with a high level of magnesium, typically 54%, maintains blood levels, and is a common buffer/antacid.

Commercially available Mg sources can vary widely in biological availability depending on origin of the precursor, impurity concentration, degree of calcination, and particle size. It is found that the quality, reactivity in particular, of light burnt MgO could vary so much that the workability and performance of magnesia-based final products can be significantly affected. Typically sources with smaller particle size are more reactive, however they are very dusty and difficult to handle, making bagging and bulk handling nearly impossible for very fine MgO sources. Agglomeration or granulation of MgO is a process of transforming fine particles into larger particles. The proper method may increase flowability and improve product shape, appearance and dispersability while maintaining the workability and performance of MgO.

The present method and compositions to granulate magnesium oxides significantly increased particle size. More specifically the methods and compositions increased particle size and reduced dust, increased flowability and ability to handle and store for a safer work environment, while retaining rate of reactivity and bioavailability of magnesium with a concentrated level of magnesium.

The following method determined the reactivity by weighing 1 gram of sample and reacting with 40 ml 1.5% acetic acid, pH 2.7, stirring constantly and measured pH over 30 minutes.

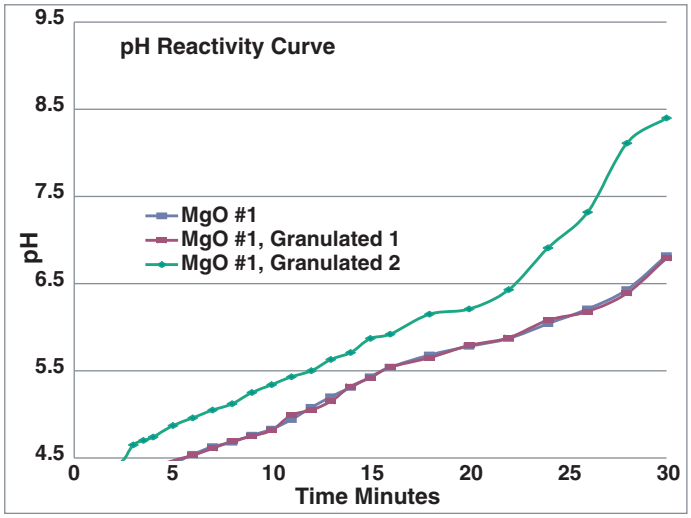

Figure 1: pH Reactivity Curve

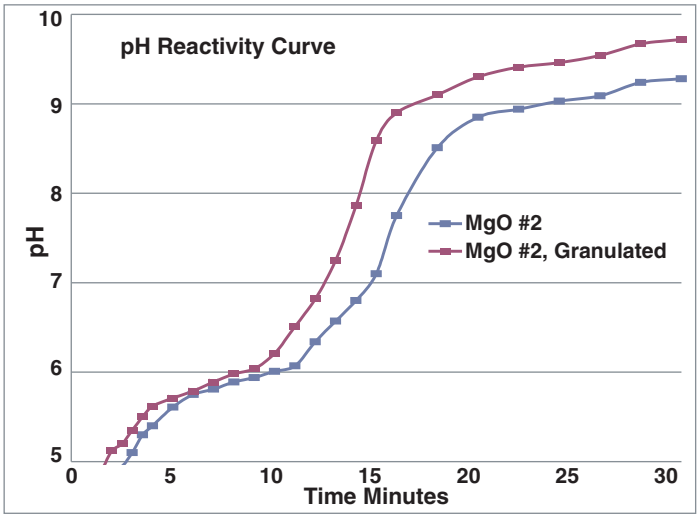

Figure 2: pH Reactivity Curve

MgO #1		
Mg=54	Mean Particle Size 179	
Particle Size Distr., US Mesh	Sieve Opening	%
Retained on a # 30 Screen, %	500 µm (0.0197")	15
Retained on a #60 Screen, %	250 µm (0.0098")	20
Retained on a # 120 Screen, %	125 µm (0.0049")	25
Retained on a # 200 Screen, %	75 µm (0.0029")	20
Passing a # 200 Screen, %		20

MgO #1, Granulated 1		
Mg=49	Mean Particle Size 358	
Particle Size Distr., US Mesh	Sieve Opening	%
Retained on a # 18 Screen, %	1.00 mm (0.0394")	10
Retained on a #30 Screen, %	500 µm (0.0197")	30
Retained on a # 60 Screen, %	250 µm (0.0098")	30
Retained on a # 120 Screen, %	125 µm (0.0049")	20
Passing a # 120 Screen, %	75	10

MgO #1, Granulated 2		
Mg=51	Mean Particle Size 445	
Particle Size Distr., US Mesh	Sieve Opening	%
Retained on a # 18 Screen, %	1.00 mm (0.0394")	20
Retained on a #30 Screen, %	500 µm (0.0197")	30
Retained on a # 60 Screen, %	250 µm (0.0098")	30
Retained on a # 120 Screen, %	125 µm (0.0049")	10
Passing a # 120 Screen, %		10

MgO #2		
Mg=52	Mean Particle Size 251	
Particle Size Distr., US Mesh	Sieve Opening	%
Retained on a # 18 Screen, %	1.00 mm (0.0394")	5
Retained on a #30 Screen, %	500 µm (0.0197")	20
Retained on a # 60 Screen, %	250 µm (0.0098")	20
Retained on a # 120 Screen, %	125 µm (0.0049")	20
Passing a # 120 Screen, %		35

MgO #2, Granulated		
Mg=47	Mean Particle Size 395	
Particle Size Distr., US Mesh	Sieve Opening	%
Retained on a # 18 Screen, %	1.00 mm (0.0394")	10
Retained on a #30 Screen, %	500 µm (0.0197")	40
Retained on a # 60 Screen, %	250 µm (0.0098")	30
Retained on a # 120 Screen, %	125 µm (0.0049")	10
Passing a # 120 Screen, %		10

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