



Light Burned Magnesium Oxide for Hydrometallurgy

Effective hydrometallurgy can be achieved through chemical precipitation with an alkali such as magnesium oxide. In order to maximize the recovery of valuable metals such as cobalt, copper and nickel from an acid leach solution, a synthetic, high purity magnesium oxide with moderate reactivity is recommended. MagChem[®] 40 Magnesium Oxide is a fine powder produced from magnesium-rich brine in Manistee, Michigan to yield a 98% MgO purity product. This synthetic powder is calcined under tightly controlled conditions to produce a uniformly burned, reactive grade of magnesium oxide.

As shown in Figure 1, since MagChem 40 is calcined uniformly, its reactivity in an acid solution is faster than that of naturally-mined magnesium oxide which has lower MgO purity (<97% MgO) and a non-uniform burn. When 90% of the magnesium oxide is reacted with acid, the naturally-mined product's reactivity slows down significantly as a result of the 10% to 20% higher, inert impurities found in natural magnesium oxide.

Figure 1. Acid Reactivity Test

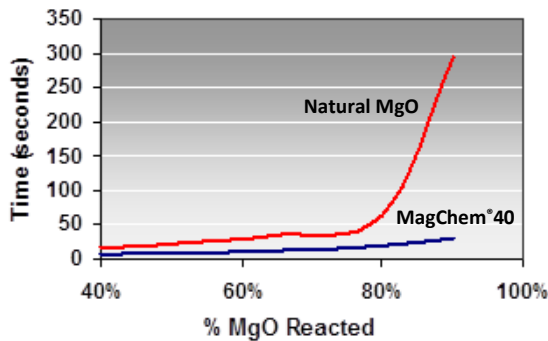
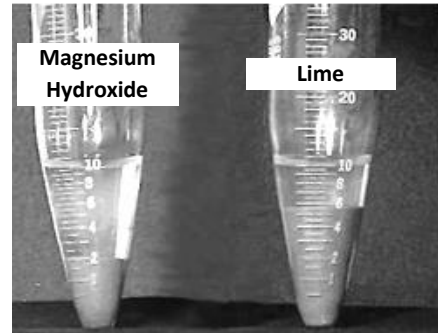


Figure 2. Metal Hydroxide Settling



The acid reactivity test is a good indicator of MgO performance in hydrometallurgy as MagChem 40 provides superior metal recovery and improved MgO utilization compared to naturally-mined products.

Compared to other alkalis such as lime or caustic soda, MagChem 40 produces a denser metal hydroxide precipitate with higher metal concentrations such as cobalt, nickel and copper. Since MagChem 40 gradually increases the pH of the acid solution, sufficient retention time is available for larger sludge crystals to grow which settle out faster and entrain less water (see Figure 2). With MagChem 40, sludge dewatering is easier compared to caustic soda or lime, greatly improving the efficiency of the hydrometallurgy process.

To learn more about MagChem[®] 40 for hydrometallurgy applications, please contact Martin Marietta today.

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Martin Marietta Magnesia Specialties, LLC

8140 Corporate Drive, Suite 220
Baltimore, Maryland 21236 USA
Phone: (800) 648-7400 or (410) 780-5500
Fax: (410) 780-5777
Email: MagChem@martinmarietta.com
www.magnesiaspecialties.com

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