CARMEUSE®
NATURAL CHEMICALS

TECHNICAL BULLETIN

Steel Industry

FerroDolime®

Iron oxide coating reacts quickly with slag and MgO is rapidly released for refractory protection...

Revision: 4/02/2003

...resulting in large savings in manufacturing costs without reduction in technical performance or product quality.

Lime, the Proven Solution!

CARMEUSE®
NATURAL CHEMICALS

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FerroDolime® provides CONSISTENCY for your MgO slag requirements based on these steel making concepts:

1. **Effective balance of oxygen and carbon injection to control FeO content of EAF slag.**
2. **Maintain correct slag basicity to optimize foamy slag characteristics.**
3. **FerroDolime® provides cost effective method to obtain the required MgO units.**

Product Information

Benefits and Advantages:

FerroDolime® is dolomitic pebble lime encapsulated with iron oxide. During the lime production phase in producing a pebble of dolomitic lime, a pre-fluxed iron oxide coating of 3mm to 4mm is formed around the pebble. It is this coating that provides a special benefit that enhances the product's performance during steelmaking.

Carmeuse can offer this "iron-coated product" either in bulk dump trucks, pneumatic trucks, rail or supersacks. The following advantages can be realized with the use of FerroDolime® in your furnace practice:

- Low cost MgO units are obtained for each heat to meet the slag requirements for various steel grades produced in the furnace.
- The dicalcium ferrite coating reacts quickly with the slag and magnesia is rapidly released into the slag.
- Environmental improvements can be realized since the product has a high mechanical strength that reduces lime dust formation during material handling from the lime plant to the steel plant. This is even more critical when pneumatic receiving and transfer systems are used.
- Improved lime yield for the steelmaker because of reduced breakage and dust formation.
- The iron oxide coating increases resistance to hydration which means increased "shelf life" as well as reduced chance for hydrogen pickup from the lime.

Typical Analysis for FerroDolime®:

- CaO – 55 % - 59 %
- MgO – 38 % - 40 %
- Sulfur – 0.025 % max.
- SiO_2 - 0.21 % - 0.67 %
- LOI – 0.03 % - 1.12 %
- Fe_2O_3 – 1.5% – 4.10 %
- Density – 80 lbs/ft^3

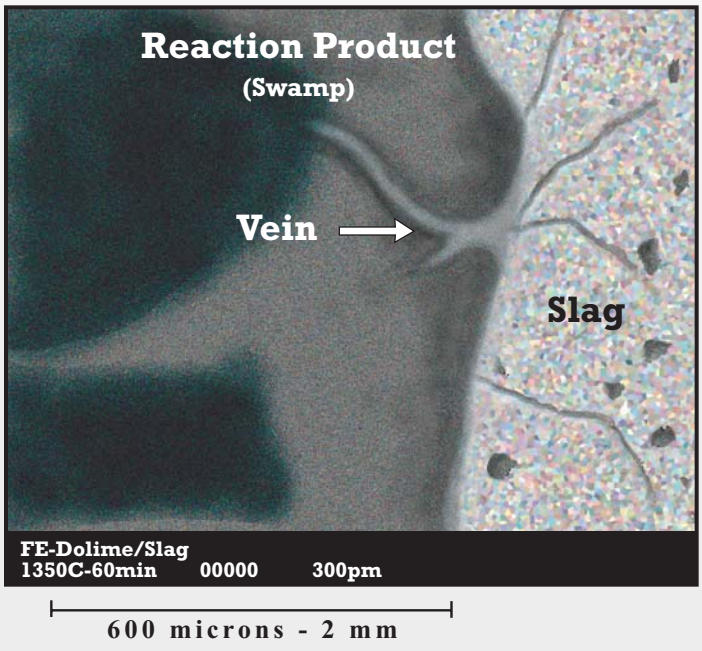
Technical Discussion

Technical Summary:

The benefits of FerroDolime® fit well into the slagmaking practices to promote optimum foamy slags and refractory protection.

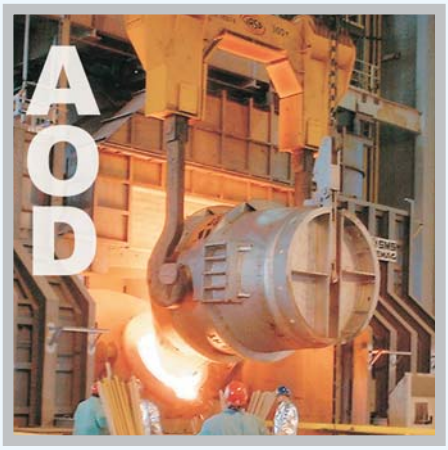
Laboratory work at the University of Sheffield in England and Lafarge Redland Aggregates from 1997 to 1998 found the following conclusions in regards to the dissolution rate of MgO and CaO:

- FerroDolime's dicalcium ferrite [C2S] coating became highly fluid at steelmaking temperatures around 2460°F.
- The iron oxide coating avoided a dicalcium silicate barrier that is formed between the slag and the dolomite. This reaction improves the reaction with the slag creating what became known as a *vein and swamp* area, whereby the barrier was continually breached by liquid slag. Therefore, the product reactivity with the slag was improved.
- The CaO reacts with the acid silicates and FeO. MgO is released quickly to form magnesio-wustite [MW] and protect the furnace lining.
- Dr. Eugene Pretorius noted in a study that second phase particles of [C2S] and [MW] are important to the viscosity of the slag and foaming properties of the slag.



SEM Photo of *Vein and Swamp* reaction in the slag.

Furnace Applications

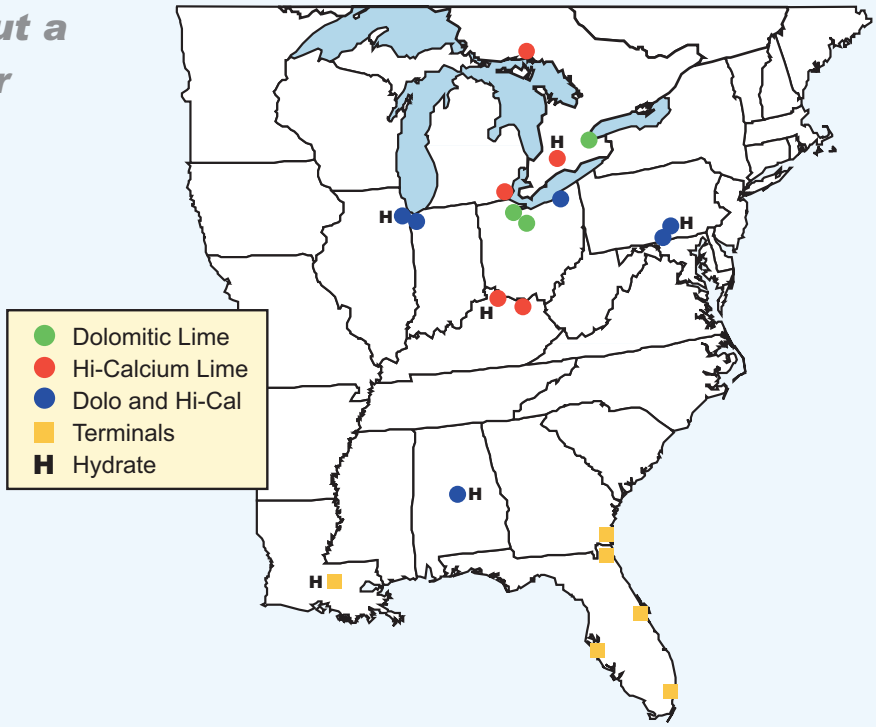


Whether you operate AOD or EAF, FerroDolime® is the "Common Sense" flux for Optimum Refractory Performance.

Carmeuse Lime Plant Locations -- Eastern and Central NA and Canada

For more information about a Carmeuse Lime plant near you call:

866-243-0965
866-780-0974



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