



OPTIMULL – Green Sand Additive Advantages

OPTIMULL creates:

- Faster activation of clay (better mulling efficiency)
- Nearly 100% activation of clay (iron foundries usually have between 65 and 80% activation)
- Low temperature parting (better mold stripping)
- High temperature parting (better sand separation at shakeout from the metal)
- Increased sand flowability (better mold corners and lettering)
- Lower moisture to reach target compactability (reduced moisture defects, better blowability, reduced cleaning room time)

Important Concepts:

- OPTIMULL lowers the amount of clay and moisture necessary to achieve target properties of Green Strength and Compactability.
- Lower moisture means less boiling and steam next to the castings. It also means the carbon levels for iron foundries can be reduced in most cases.
- Sodium bentonite is a much tougher and more economical clay than calcium, but sodium has the following shortcomings;
 - Slow activation (OPTIMULL creates faster clay activation)
 - Poor shakeout (OPTIMULL enables lower MB clay levels in the sand so shakeout is improved)
 - Poor flowability (OPTIMULL increases the flowability of sand under pressure due to its lubricious nature)

This is why OPTIMULL and high sodium bentonite is a good strategy for iron and steel foundries. Higher sodium bentonite means;

- Increased scabbing and erosion resistance
- Lower clay consumption (burns out at 1200°F where calcium burns out at 600°F)
- Lower moistures (less dead clay to compete with the live clay for water)
- Green strength and compactability create the mold; MB clay determines bond usage and moisture determines what the casting looks like. Good green sand practice means targeting the lowest MB clay and moisture possible that creates acceptable Green Strength and Compactability.

Foundry Characteristics that Improve OPTIMULL Cost Justification:

- High MB clay level – high clay consumption, poor shakeout, poor flowability
- High Pouring Temperature (Iron or Steel) – high clay consumption, high dead material/high water
- High Core Sand Input – friability, erosion
- Poor Shakeout – lower MB clay means better shakeout
- Poor Flowability – imparts higher loose flowability and high pressure flowability

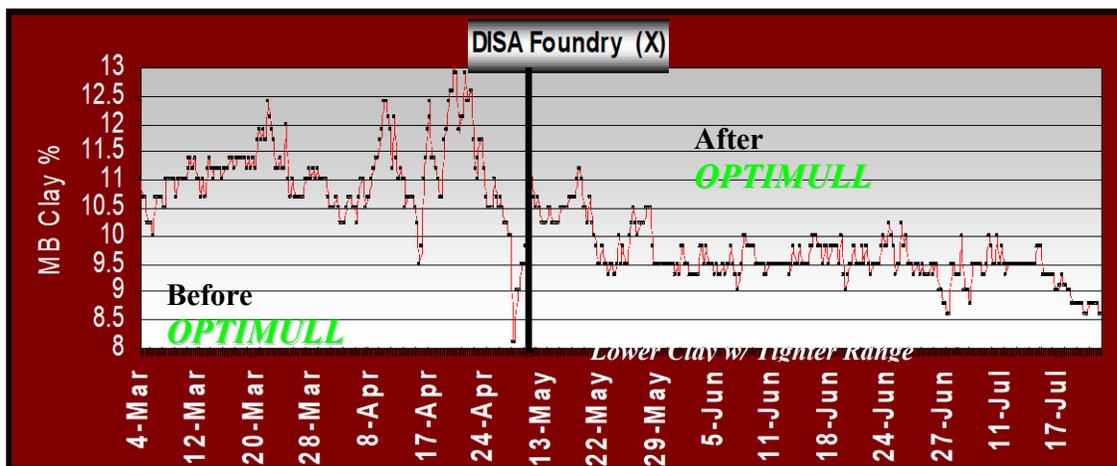




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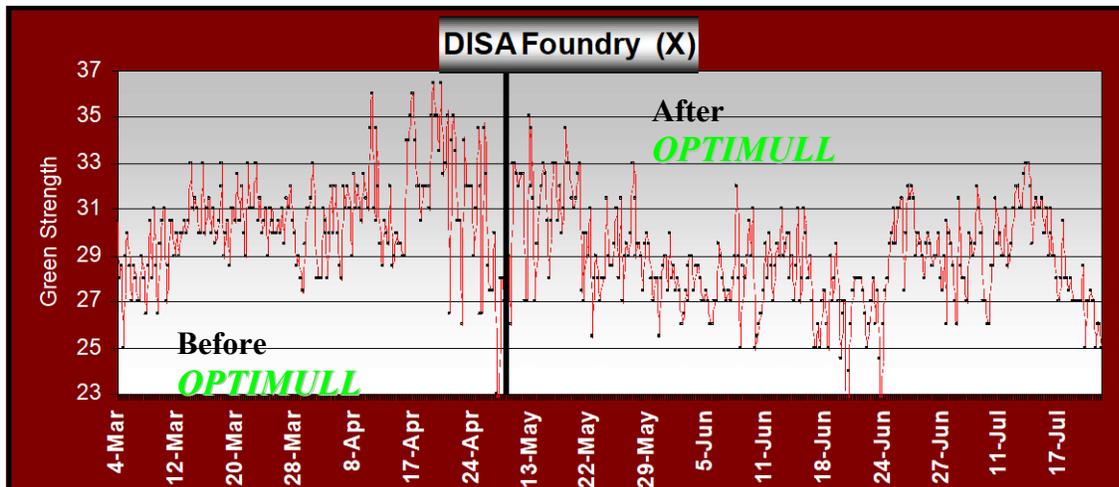
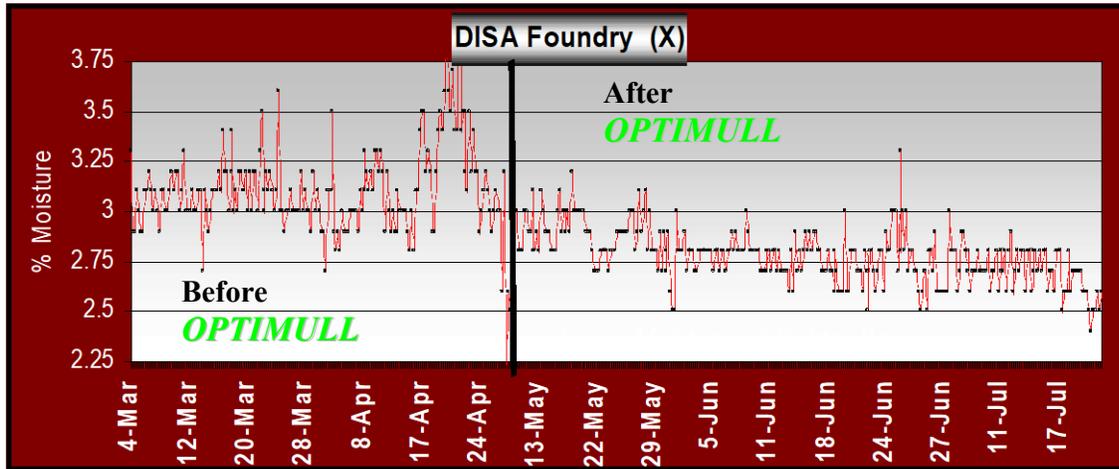
- High Moisture – lower moisture means better flowability, better shakeout, reduced moisture defects
- Environmental Emissions Concerns – enables lower carbons so lower VOC's
- Return Sand Silo Rat-holing – lower moisture in prepared sand = lower moisture in return sand = less rat-holing
- High Green Strength and Compactability Variation – OPTIMULL removes “the degree of clay activation” as a variable

Example of OPTIMULL Usage



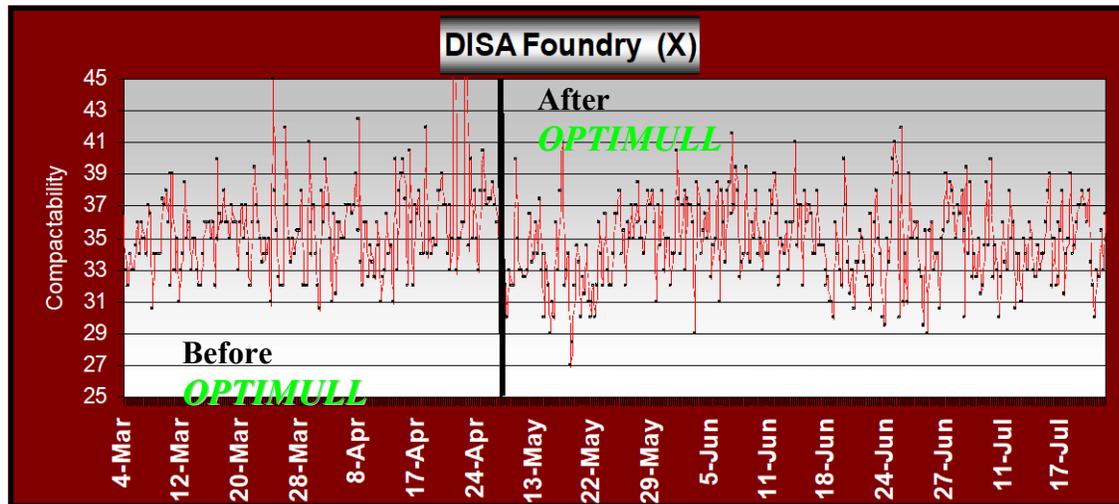


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Low-Risk Proposition

- No risking entire sand system during a trial – the OPTIMULL addition is typically only 0.5 oz / lb of clay. It can be turned on or off with the flick of a switch whereas a silo full of experimental treated clay is not easily removed or stopped. The degree of treatment can be varied instantly with liquid additions.

Other Special Notes

- Good green sand practices, controls, and monitoring are essential to maximizing the benefits of OPTIMULL.

