



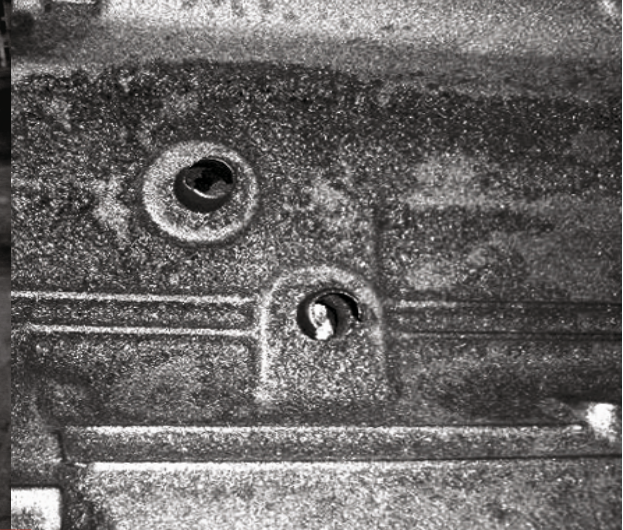
Temperatures are Rising – Is Your Casting Throwing a Tantrum

“Green Sand is just as complex as we make it. Other than that it is quite simple and simply needs to be treated as we would treat our own well-being on a daily basis. Don't overdo or under-do the additive dosages. Just observe the return sand and add each additive on a need basis, not as a daily one-dose-for-all-problems kind of prophylactic.” .”

- **Deepak Chowdhary**

- GREEN SAND DOMAIN KNOW-HOW IS
OUR CORE COMPETENCE

As temperatures rise across the Indian Sub-Continent (and elsewhere in the world) the green sand molding process in foundries undergoes subtle changes. The surface temperatures of the sand mold rises over what they were in, the months of November to mid-March. Hot winds blow across the landscape to which the factory floor is no exception in terms of rise in the ambient temperatures. Ground Water levels recede and more solids and salt concentrate in the water used in molding mix. As this subtle but important phenomena unfolds, it creates the following cascading impact on the casting process:



- Return sand residual moisture decreases (unless compensated by water cooling/sprinkler add-ons).
- Residual moisture in hoppers decrease.
- As return sand moisture decreases, sand temperatures stay relatively higher than usual, resulting in inhibited Bentonite bond. This may result in scabbing and sand drop increase.
- Bond generation from the residual clay in the return sand slows correspondingly. Maybe advisable to increase wet mix time in the mixer.
- Sand surface friability rises (rise in friability index).
- Mold moisture and compatibility indices change (on the lower side).
- Compensatory moisture additions, without change in the Bentonite dosages set before the weather patterns changed, may create mismatch resulting in increased free moisture.
- If water used for molding mix is from bore wells or untreated water sources, the solids/salts in the water increase as ground water level drops. This increase in water hardness can and will cause the Bentonite to become passive, compromising its bonding capabilities.
- As bonding capabilities reduce, free moisture increases, which may result in increased explosive penetration and rough surface.

All this and more physio-mechanical imbalances in the molding process may cause increase in surface roughness of castings as one example of casting impact.



Disclaimer: The above list is not exhaustive, nor 'cast-in-stone'. Sometimes some effects and related impacts are marginal and not evidently seen or recorded. This sharing of experience is just to make the reader aware of the logic of the use of additives in a judicious, diligent and aware manner so that the process can remain stable, reliable and repeatable with the ultimate view of keeping sand related rejects at minimum.