Reducing Slag and Dross in Ductile Iron Castings

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New metallurgical additive expedites MgO release, making de-slagging practice more effective

- Avoiding mis-runs, cold laps
- Addressing magnesium byproducts
- Improving fluidity

Q: Lately, we’ve found a lot of slag and dross in the ductile iron castings we pour. Normally, this is discovered during machining operations, at which point in the process it can be very expensive to resolve. What is the best way to reduce the occurrence of slag and dross in ductile iron?

A: Slag can never be fully prevented, but with a few steps it can be managed. Among the steps that will help manage the problem are: paying attention to charge materials (rust, debris, oil, and sand); keeping the melt covered at all times (this reduced exposure to the atmosphere); and maintaining furnace and ladle refractories in optimal condition for pouring. In addition to these steps, sound slagging practices are always encouraged.

On the other hand, dross is the byproduct of the magnesium treatment. Magnesium loves oxygen, and when introduced to cast iron the magnesium oxide compound (MgO) is formed. MgO is formed during the treatment, but it continues to be formed during the subsequent handling of metal. In addition to sound foundry practices, as mentioned above, there are additives that can be added to the ductile
iron to reduce slag and dross defects. DISPERSIT™ is a metallurgical product that, when added to ductile iron, significantly reduces those time- and cost-consuming defects.

Q: Will using DISPERSIT mean that most of the slag and dross in the melt will float to the surface, making it easier to remove during de-slagging?

A: DISPERSIT will reduce the surface tension, expediting the release of the MgO into the atmosphere. The small addition of DISPERSIT will refine and disperse the slag making the de-slagging practice more effective.

Q: During ductile production there is severe buildup in the tundish and pouring ladles. Will DISPERSIT address this problem?

A: DISPERSIT will significantly reduce buildup of slag material in the ladles, typically doubling the service life of the treatment and pouring vessels. As you may know, magnesium recovery is best when the ladles are clean, so keeping the treatment ladle clean will reduce a foundry’s alloy cost.

Q: Are there other benefits to ductile iron?

A: Besides those already stated, it should be mentioned that DISPERSIT will help to improve the fluidity of the iron thanks to the reduction in surface tension. Reduced surface tension permits pouring of thin-rangy castings at lower temperatures, avoiding mis-runs and cold laps.

Q: We also pour gray iron: is it possible to use the same product such alloys, and have the same effects?

A: Yes. DISPERSIT can be used to control slag defects in gray iron, too. We have experience at several foundries that have successfully used this product with gray iron. Of course, in these cases we have to work only about slag. Even if gray iron is not as dirty as ductile, slag is a considerable concern. For this reason, it is
important to minimize slag in gray iron too, and DISPERSIT definitely helps to achieve this.

For gray iron, it is recommended that DISPERSIT should be introduced at the inoculation step; The recommended addition rates (0.1 – 0.2% by weight) remain the same. Keep in mind that good slagging practices should be employed always.