

Mold Powder Deposits

Question

Recently, we started getting mold powder deposits on slab surfaces. The supplier insists and has provided records to show that none of the reported chemical or physical properties has changed in this lot as compared to previous lots. From time to time in the past this same type of problem has appeared. Before changing suppliers, I would like to find out if there is something in our process causing this problem. Is it possible to set up a trial to define the conditions that are causing this problem? C.C. USA

Answer

Perhaps the best way to define the conditions causing this problem would be through the use of a designed experiment. Try to pick out 7 factors, which you feel may be causing the mold powder deposits. For example, you might consider tundish temperature, casting speed, mold powder supplier, casting crew, number of heats on the mold, number of heats on the submerged entry nozzle and negative strip time. Next, you would want to consider attaching 2 different levels to each factor. So if you wanted to run every possible combination of factor at 2 different levels you would need to run 2^7 (128) trials.

Clearly this is too many trials. By using one of the designed experiment methods it would be possible to reduce the number of trials down to 8. Slabs produced during each trial would be tested and quantified for mold powder deposits. A rigorous statistical evaluation of the data would be conducted to determine the critical factors affecting mold powder deposits. After determining which factors produce the best conditions, you should run a confirmation trial. If the good results are duplicated then the indicated changes, if any, should be made. You may find out that the mold powder deposits are not due to the powder but may be due to some other previously undetected synergistic effect