

Deluxcote® Concentrate

Ransom & Randolph developed DELUXCOTE concentrate to provide investment casting foundries the opportunity to reduce shell coats; thereby reducing labor, total casting time and potentially material usage. Many casters find it hard to believe that a simple change in slurry products can significantly impact foundry economics – from shell room through casting.

Here is the story of one foundry willing to challenge a shell material, proven in their production process for 10 years, with DELUXCOTE concentrate. To protect their identity and anonymity, we will identify them as “Foundry A”.

Foundry A manufactures industrial parts. The foundry does not have an automated shell room – all trees are hand dipped. The following coating sequence was used as a baseline against which the slurry made with DELUXCOTE concentrate was compared:

- 2 primary coats.
- 5 backup coats.
- 1 seal coat.

Foundry A tested DELUXCOTE concentrate with the goal of reducing shell cracking and producing an even shell thickness along the edges. Skeptical of the product’s money saving claims, Foundry A expected DELUXCOTE concentrate to help them increase productivity by reducing, at best, one backup coat for about the same amount of money as their existing binder system. They also anticipated longer drying times due to the product’s consistency and thicker layers.

The trial took place in a controlled setting where a number of different sized parts were dipped. A 100 gallon batch of slurry was produced and the various parts were each shelled with two, three and four backup coats, plus a seal dip. All of the parts were autoclaved and inspected. Sample pieces were cut to determine if a uniform edge was formed.

The first run indicated that everyday foundry practices needed to be adjusted slightly due to the unique characteristics of the slurry made with DELUXCOTE concentrate. Due to the thick coating property of the material and little existing air flow, the dry time for the shells made with DELUXCOTE concentrate was twice that of their existing shell material. Additional airflow was added to the shell room and the dry times matched their previous slurry.

Foundry A typically dipped trees and set them on a dip tray. Due to the slurry viscosity with DELUXCOTE concentrate, the material drained and would remove itself from edges where the part was resting on the tray. Simply hanging the trees eliminated this problem and created more uniform edges – one of Foundry A’s goals was accomplished.

With relatively minor changes, the DELUXCOTE concentrate slurry was tested again. Foundry A cut two backup coats from their existing process – one more than they expected they could.



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When the shells went through dewax, there was significantly less cracking than with their existing system – another of Foundry A's goals was accomplished.

In addition to meeting the casting goals set prior to the start of the project, and removing one more coat from the process than originally anticipated, Foundry A also noticed that they were seeing:

- A more consistent shell.
- An increase in productivity, better turnover and better efficiency.
- Less material handling.
- A decrease in scrap.
- Less labor required per piece.

Overall, Foundry A was able to decrease the amount of man-hours and increase productivity, resulting in approximately \$50,000 in labor savings. Over the course of a year, Foundry A estimates they have eliminated 1,000 hours of labor time.

Because Foundry A is building a shell with two fewer coats, there is less material handling in the shell room. As a result, Foundry A has seen a reduction in the amount of scrapped parts in the shell room – something they didn't originally anticipate. Last year they realized approximately \$37,000 in savings.

When asked what shell room employees think of the DELUXCOTE concentrate, Foundry A said that employees liked the product. While there is a slightly different technique required to build a tree with DELUXCOTE concentrate, dippers see that they are cycling carts of trees through the shell more quickly than with their previous slurry material.

Overall, Foundry A believes that DELUXCOTE concentrate has increased production and improved the attitude in the foundry because of increased throughput and reduced preparation time spent patching parts. They have experienced little or no dimensional change when measuring parts.

Foundry A now uses DELUXCOTE concentrate in production and continues to push the product's performance capabilities. They use a high shear mixer to make up new DELUXCOTE concentrate slurry. While the slurry is typically ready to use within an hour, they have had a 100+ gallon slurry ready to use in as little as 25 minutes. Once Foundry A's employees become accustomed to the process changes that have already been made – they hope to push their processes to reduce another backup coat.

For more information on DELUXCOTE concentrate or to schedule a trial, contact your Regional Manager or Ransom & Randolph's Technical Department at 800.800.7496.



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