Casting Connection

• Your Link to Investment Casting News from Ransom & Randolph •

Apr 2018

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R&R Welcomes Houpt

R&R is pleased to announce Tom Houpt's appointment as Eastern Regional Sales Manager.

In this role, Tom will be responsible for managing customer needs, conducting field evaluations, and trouble-shooting. He will serve customers in the US in AL, AR, CT, DE, FL, GA, KY, LA, ME, MD, MA, MS, NH, NJ, NY, NC, OH (Cleveland), PA, RI, SC, TN, VT, VA and WV, as well as customers in Canada in NB, NL, NS, ON (Toronto), PE and QC.

Tom joins the R&R team with an extensive background in the investment casting industry; including vast experience in technical sales support and comprehensive problem resolution.

Tom Houpt

Eastern Regional Sales Manager

We are confident that Tom will complement and enhance our ability to meet the needs of our customers, providing extensive process knowledge, exceptional technical expertise and innovative product technology.

Tom graduated from Carlow University in Pittsburgh, Pennsylvania, earning his Bachelor of Science in Business Management with a Minor in History. Residing in the Pittsburgh area, he enjoys spending time with his family, as well as skiing, golfing and fishing.

Tom can be reached via cell phone at: 203.500.1797 or via email at: Tom.Houpt@dentsply.com

Please join us in welcoming Tom to the R&R team!

Tick Tock, Manage the Clock

As a jewelry caster, it is important to manage the clock and understand the difference between all of the times associated with your investment. Let's take the time and define them from the shortest to the longest time frames.

Working Time

Working time starts when you add the powder to the water and ends when the material starts to thicken.

For R&R's gypsum materials, this happens 8-9 minutes after the start of the mix.

For our phosphates, this occurs in 4-5 minutes.

Pour Time

Pour time starts with the powder to water addition and stops when the

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We wanna get digital. Let's get into digital.

At R&R, staying connected with you is very important to us. And if we can save a few trees in the process, even better!

Starting in January 2019, instead of sending Casting Connection out door-to-door, it will go out exclusively server-to-screen. You will be able to enjoy the same great articles on your desktop, laptop, tablet or smartphone.

Don't miss out on future issues! To stay in the loop, please make sure you are on our email list and subscribe today at: https://www.ransom-randolph.com/newsletters

Understanding Permeability

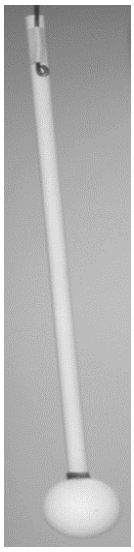
An excerpt from:

Casey M. Wolfe, Kay L. Dickerson & Michael J. Hendricks, R&R (2009). *A New Look at Shell Permeability and the Factors That Impact It*. Maumee, Ohio

For more information or to request a complete copy of this technical paper, email: RR-Marketing@dentsply.com

Shell permeability is a measurement of a shell's ability to allow fluids to pass through the material and it plays an important role in the quality of castings made at any foundry. There are two types of permeability looked at in the investment casting industry: hot and green permeability.

Hot Permeability



The investment casting industry has long been aware of the effect that a shell's permeability in the hot state has on the quality of the castings.

Measuring hot permeability is standard practice at many foundries, using the standard ping-pong ball method. Defects such as cold shut, air and gas entrapment and non-fill are associated with a shell that does not allow gas to pass through sufficiently. While much work exists on the subject, less is known as to how to adjust shell permeability to produce quality castings.

The standard belief is that a shell's overall hot permeability is controlled by primary layers of the shell. However, any changes made to shell construction to invoke a positive change to permeability often have detrimental effects to casting quality.

For example, a reduction in the number of primary coats would increase permeability, but the remaining primary coats may not capture the detail of the pattern or provide a smooth casting surface. In addition, the use of larger particle refractories in the primary slurry can increase the permeability, but it can also create a rough surface finish.

A change to the backup system provides less risk to overall casting quality and can have a large impact on the overall economics of the process. Changes to backup slurry are not traditionally linked to improved shell hot permeability. However,

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Understanding Permeability

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at R&R, we have shown that shell permeability can also be improved through changes in the backup shell system.

Green Permeability
Even though it can be measured, the green permeability of shells has not been a variable that most foundries are concerned with, but it does play an important role in the shell's dewax performance. Shells cracking during dewax not only cause a substantial decline in

casting quality, they also pose a safety risk to the operator if run-outs occur.

The same adjustments to slurry and shell composition that improve hot permeability, can be used to improve green permeability.

Measuring green permeability and knowing how backup shell systems affect the permeability of a shell can give flexibility to

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Save the Date: EICF Conference

In April 2018, the European Investment Casters' Federation

eicf european investment casters' federation

will host their 29th Annual International Conference & Exhibition in Porto, Portugal.

What: Lectures, suppliers exhibition & turbocharger seminar; addressing today's and tomorrow's investment casting challenges

When: April 22-24, 2018
Where: Porto, Portugal
Venue: Europarque

EICF 29th INTERNATIONAL CONFERENCE
eicf
PORTO 2018

Look for R&R at Booth 1!

Learn more at: www.eicf.org/events/porto2018/welcome

Tick Tock, Manage the Clock

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material is physically too thick to pour from one vessel to another.

Gloss Off Time
Gloss off time also starts with the powder to water addition, but ends when you can no longer see moisture on the top of the flask.

Set Time
Set time starts at the same point and is timed until a Vicat needle will no longer penetrate the material more than 1 mm deep.

Our gypsum products have a set time less than 20 minutes.

For more jewelry FAQs, visit: www.ransom-randolph.com/jewelry-faqs

Freight Pains

In the US, we are currently experiencing a nationwide truck shortage due to the following factors:

- Freight volumes are hitting near -record levels
- Manufacturers are shipping more cargo
- Bad weather has crimped the supply of available trucks
- Diesel prices are near a three-year high
- New federal safety rule requiring drivers to track their hours behind the wheel

While trucking fleets are adding capacity, it can take months or even

years to catch up with demand. Unfortunately, analysts expect capacity to become scarcer in April, when produce shipments pick up and full enforcement of the new federal safety rule kicks in.

When planning your material needs, please consider that arranging trucks may be more difficult this year. If you arrange your own pickups, be sure to give yourself ample planning time to secure the best shipping rate possible.

Smith, Jennifer (2018, January 25). A Shortage of Trucks Is Forcing Companies to Cut Shipments or Pay Up. *The Wall Street Journal.* Retrieved from https://www.wsj.com/articles/a-shortage-of-trucks-is-forcing-companies-to-cut-shipments-or-pay-up-1516789800

New Labels

In an effort to streamline our labeling process, all ceramic shell binder labels will get a facelift in April 2018. We will be utilizing a standard R&R label with all pertinent product information and warnings all in one spot. Plus, each product will have its own personalized logo, making brand recognition simpler.

During this transitional period, some shipments of binders may contain a mixture of old and new labels. Should you have any questions or concerns, please contact R&R at 800.253.4502.

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Understanding Permeability

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the casting process. For instance, if a foundry needs to add additional primes for a particular job, the green and hot permeability will theoretically decrease. This could potentially cause dewax cracking issues or lead to casting defects. To counteract this effect, the foundry could look at a change in the backup shell system to counteract the decreased permeability. Additionally a foundry that has high scrap due to permeability related defects can also look at backup shell systems as a means to improve the hot permeability.

Conclusions

- Shell permeability (green and hot) are important factors in the ceramic shell and can have a direct impact on the shell and casting quality.
- The green permeability is not often measured or controlled in a shell but has been shown to have a big impact on the dewax process.
- The addition of primary coats to a shell decreases the overall shell permeability in the green and hot state.
- Modifications to the backup slurry can have a positive impact on the permeability of a shell system.