

CASTING CONNECTION

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

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Simplify Ferrous Casting

In 2015, R&R developed SuspendaSlurry® FS material to eliminate costs associated with continuous mixing, to simplify the initial make-up process and to eliminate the continuous mixing requirement for a slurry. This July, we introduced SUSPENDASLURRY ZR for ferrous metal casting. After two months, casters report not only excellent results, but unanticipated benefits as well.

One foundry realized that the SUSPENDASLURRY ZR material allows them to run a small zircon-based primary slurry for improved surface finish on a subset of their parts. Rather than running the large primary tank with zircon, they keep a 30

gallon SUSPENDASLURRY ZR drum next to their prime tank. The operator opens the drum, remixes the material and dips only those parts requiring the more expensive zircon application.



SUSPENDASLURRY ZR material & cobalt aluminate

Another foundry indicates that SUSPENDASLURRY ZR material allows them to run a cobalt aluminate slurry. While the bulk of the foundry's production does not require cobalt aluminate, they do

produce a few jobs requiring nickel and cobalt based alloys. They were experiencing burn-in around letters and were painting cobalt aluminate on the trees. Now, they add cobalt aluminate to a drum of SUSPENDASLURRY ZR material and use the tank as needed in their production line. This also allows the foundry to eliminate additional polishing and finishing steps from their process.

Contact your Regional Sales Manager to find out how you can put SUSPENDASLURRY materials to use in your foundry. Ask how you can eliminate costs and simplify your process today!

Visit Us at ICI 2016

The Investment Casting Institute (ICI) is hosting their 63rd Technical Conference and 2016 Product/Literature Expo in Columbus, OH from October 16th - 19th, 2016.

We are pleased to introduce SuspendaSlurry® ZR material for ferrous metal

casting at this year's show.

Meet us at the Expo in Booth 312 to learn more or to discuss your casting goals and how R&R can help you achieve those goals.

We look forward to seeing you at the show!



Investing with Innovation™

Eliminate Drying Guesswork



ReDip™ indicator takes the guesswork out of shell drying. For use with water based binders, the color indicator prevents loss due to sloughing of undried coats, reduces time spent overdrying shells and allows the caster to produce stronger shells by ensuring that each coat is fully dried before applying an additional

coat.

REDIP indicator's unique composition tells you exactly when the moisture is out of the shell with a simple, visible color change. With REDIP indicator, wet shells are greenish-yellow in color, dry shells are orange. During firing, the

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Managing Freezable Shipments

During winter months, freezable materials, like colloidal silica based binders, should be shipped as early as possible in the week to ensure that they are continuously moving to their destination. While this does not guarantee product will not freeze, it reduces the risk associated with shipping over a weekend where product may sit at a freight

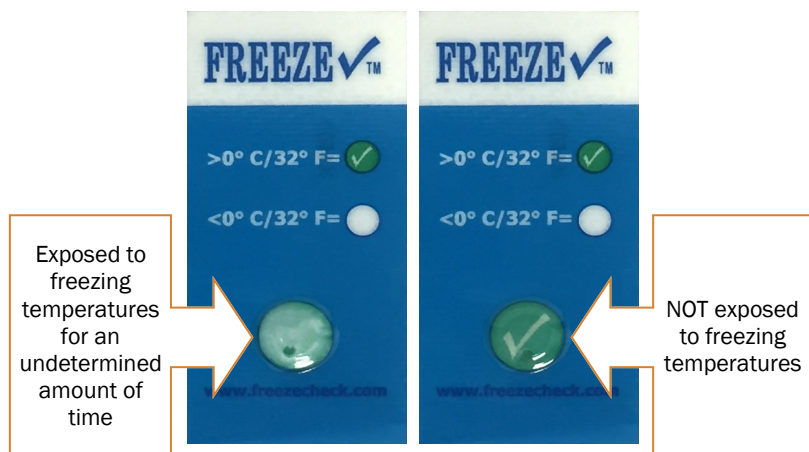
facility unprotected from freezing temperatures.

To help you ensure that the product you receive has not been damaged, Ransom & Randolph applies a freeze check indicator, which features a check mark in a green circle. Temperature-sensitive liquid is encased in a clear bubble over the check mark. The fluid will turn opaque and the

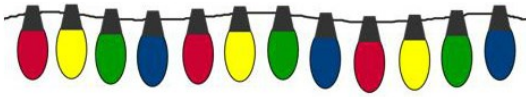
check mark is no longer visible once it has been exposed to subfreezing temperatures.

Note: This does NOT mean that the material in the package has been frozen; it only means the package has been exposed to freezing temperature.

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R&R 2016 Holiday Schedule



Happy
Holidays!

Please consider these closing dates when planning for your material needs.

Contact R&R at 800.800.7496 if you have any questions regarding this schedule.

CLOSED for Thanksgiving
Thursday, November 24th & Friday, November 25th

CLOSED for Christmas
Friday, December 23rd & Monday, December 26th

OPEN to take orders & ship materials
Tuesday, December 27th & Wednesday, December 28th
Hours of operation
Customer Service & Shipping from Ohio: 10AM – 3PM EST

CLOSED for New Year's
Thursday, December 29th, Friday, December 30th & Monday, January 2nd

REOPEN for the 2017 New Year
Tuesday, January 3rd at 8AM EST

Troubleshooting Non-Fill Wax Defects

R&R recommends utilizing the following potential causes and corrective actions for troubleshooting non-fill wax pattern related defects in your foundry.

Potential Cause	Corrective Action
Acceleration/ramp-up excessive (electronic control)	Shorten time to reach full flow rate
Cold mold	Increase mold or platen temperature
Cold nozzle, wax slugs	Increase nozzle temperature/remove slug
Cold wax	Increase wax reservoir temperature
Excessive mold release	Clean mold and decrease mold release use
Flow rate incorrect	Increase or decrease flow rate
Improper mold venting	Add or enlarge vents, clean vents or core pins
Low injection pressure	Increase injection pressure
Low wax level in reservoir	Check wax level in reservoir or wax delivery system
Shot size incorrect	Increase shot size or check equipment capacity
Small injection sprue, wax freezes during injection	Enlarge sprue, insulate mold contact with nozzle
Trapped air in mold	Slow flow rate/flip mold over (top to bottom) changing fill arrangement



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Investing with Innovation™

Founded in 1872, Ransom & Randolph is dedicated to advancing the investment casting industry. R&R has provided foundries with extensive process knowledge, exceptional technical expertise and innovative product technology since the 1800s. By coupling revolutionary product developments with experienced staff, manufacturing and warehousing facilities, R&R successfully helps customers become casting industry leaders. R&R is a wholly owned subsidiary of DENTSPLY International (NASDAQ: XRAY).

R&R's core businesses are composed of Ceramic Shell, Industrial Mold, Jewelry and Dental Investment Casting.

R&R takes great pride in providing customers with a pleasant procurement experience. R&R's Maumee, Ohio based customer service team services North America and US export customers. Our UK-based agent, HTM Tradeco, Ltd., provides service for the European Union. From initial order placement through delivery, R&R's customer service team takes responsibility for accurate and efficient processing of your material needs. As a result, R&R's customer service team is unmatched in the industry.



We're on the web!
www.ransom-randolph.com

Freezable Shipments

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If this occurs, immediately:

1. Make a notation on your carrier delivery receipt prior to the carrier leaving your facility:

"POSSIBLE CONCEALED DAMAGE - PRODUCT HAS BEEN EXPOSED TO FREEZING TEMPERATURES"

2. Contact R&R customer service to have a freeze test kit sent to you. The material will need to be tested as soon as possible. Instructions will be inside the kit as how to proceed.

Always accept a damaged shipment

unless the damage has made the goods worthless. In cases of partial damage or loss, accept the entire shipment, document the loss/damage on the carrier receipt and follow the instructions on How to Handle Lost/Damaged Shipments available at www.ransom-randolph.com/winter-weather-reminder.html.



ReDip™ indicator

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indicator is burned off and the shell returns to its normal color.

REDIP indicator is inert and will not affect the slurry or shell in any way. REDIP indicator is non-toxic and non hazardous.

Understanding what slurry additives do, when to use them and how to use them properly is imperative to appropriately maintain slurry life and performance.

Ask about REDIP indicator and take the guesswork out of shell drying today!