



CASTING CONNECTION

Achieving Sustainability While Manufacturing Jewelry Investments

sustainable (sə-'stā-nə-bəl) **adj.**

1. capable of being sustained **2a.** of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged **2b.** of or relating to a lifestyle involving the use of sustainable methods (*Merriam-Webster.com, 2024*)

R&R's goal for sustainability is to continuously support the well-being of the environment by using naturally occurring minerals as raw materials while not exhausting natural resources. One way this is achieved is through the manufacturing of R&R's jewelry investments.

Most of R&R's jewelry investments are made 100% in the USA. This means the raw materials are locally sourced and sent to the newly renovated Maumee production facility, where R&R manufactures and tests the investments before shipping



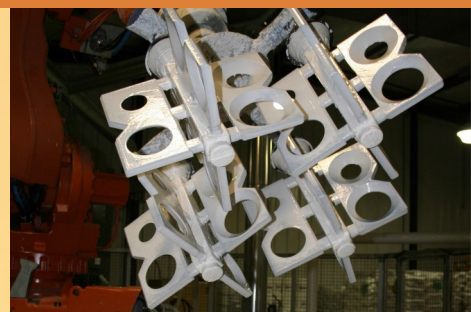
the final goods to over 50 countries worldwide.

The raw materials used to manufacture all R&R jewelry investments are naturally occurring minerals found in the Earth. For example, a key material in production, cristobalite, is naturally formed by volcanic eruptions and in a select number of rock types.

However, once the raw materials are manufactured into jewelry investments, the minerals are not just another piece of waste. At the end of the casting process, the natural minerals within the raw materials are still able to be recycled back into the Earth in many ways.

The gypsum used in the investments is a great source of calcium and sulfur, which strengthens crop roots, reduces runoff, and provides plants with the nutrients needed to thrive, earning a larger crop yield. The silica used in R&R's investments helps loosen soil to assist in increased water drainage.

R&R takes pride in using locally sourced, commonly found natural minerals as raw materials. These minerals can be recycled in a way that reduces waste and benefits the environment.



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Glass Casting Investments

R&R offers a variety of materials for glass casting applications. In addition to a simple 50/50 blend of plaster and silica, there are 4 engineered products offered for glass casting:

- R&R Glass-Cast 101 BANDUST™ investment
- R&R Glass-Cast 400 investment
- R&R Glass-Cast 910 investment
- R&R Glass-Cast 965 investment

To learn more about R&R's glass casting investments, click [here](#).

3 Tips for Properly Storing Your Glass-Cast™ Investment

1. Always store investment in a dry area.

It is important to protect Glass-Cast investment from moisture and high humidity. During the manufacturing process, raw materials are dehydrated to create a powder investment. Because the raw materials are hydrophilic (meaning they have a strong affinity for water), they naturally have a need to rehydrate and will do so however they are able. One way this happens is through absorption. If investment is stored in a wet or humid environment, the powder will absorb the excess moisture from the air, causing the investment to set prematurely.

2. Store the investment powder between 60-85°F (16-29°C).

The temperature in which the Glass-Cast investment is stored can alter the properties of the powder. When stored in cooler environments, under 60°F (16°C), the working time and set time of the investment increases. When stored in warmer environments, over 85°F (29°C), the working time and set time of the investment decreases.

3. Tightly close the unused investment powder in its protective bag and container once the seal is broken.

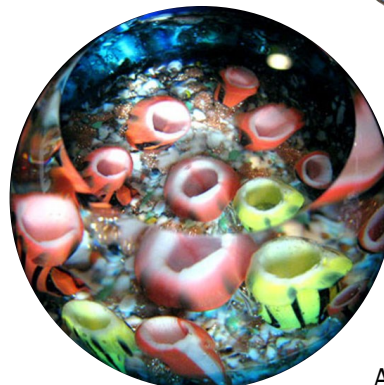
When containers of investment powders are left open, the air will affect the investment properties. Not only will the powders attract the excess moisture from the air, but the air will also alter the physical properties of the investment. One of the materials used in Glass-Cast investments is plaster. When exposed to the atmosphere for a prolonged period, the plaster will transform into gypsum. When a bag of Glass-Cast investment is opened and not properly sealed, the top layer of material is exposed to the atmosphere. This exposure can alter the physical properties of the investment, causing it to become 'stale.' When the bag is used next, the top layer of investment may not produce a casting with as high quality as the investment powder at the bottom of the bag, which was not exposed to external elements, can.



Starfish on Coral



Ammonite



Sponge

These sculptures were cast using R&R's Glass-Cast 101 BANDUST investment.

Artist:
Robin Lehman
www.robinlehminglass.com

Save the Date: October 20-23, 2024

ICI Technical Conference & Expo

Save the dates October 20-23, 2024 to visit R&R at the ICI Technical Conference & Expo at the Baird Center in Milwaukee, WI! The R&R team can be found throughout the entire Technical Conference & Expo, whether it be in booth #212, on the technical stage, or at the receptions.

Expo Participation

Throughout the entire Expo, R&R's technical experts and sales team can be found in booth #212. Stop by to identify your process hurdles, casting objectives, and company goals. R&R's experts will consult with you to customize a comprehensive solution tailored specifically to fit your foundry's needs. Whether you need to make a minor product or process change or you require a complete system overhaul, we have a solution for you.

Technical Conference Presentations

Did you miss Carel Wegman presenting R&R's paper, "*Slurry Formulation and the Impact they have on Drying Times & Cost*," at the EICF International Conference & Expo on May 13, 2024? Luckily, Carel will

be in the USA to present this paper again on October 21.

Vasko Popovski, PE will also be presenting at the Technical Conference. Vasko will be presenting his paper, "*The Investment Casting Conversion Process: An Industry Consensus*" on Tuesday, October 22.

Casting Contest

To go along with this year's conference theme, "What's Brewing in the Investment Casting Industry," the University Casting Contest asks students to design and cast a drinking vessel. R&R is proud to sponsor Joe Boorum from The University of Toledo and his participation in this contest. Joe will be creating a goblet, chalice, grail, or other type of drinking vessel that can hold ½-1 liter of a beverage. He will be using R&R's quality products from the bronze art line, such as SuspendedSlurry® materials.

Learn More

To purchase tickets or find more information about this event, click [here](#).

ICI Technical Conference & Expo Agenda

Sunday, October 20, 2024

5:30pm-7:30pm | Welcome Reception

- Meet the team at this casual networking event

Monday, October 21, 2024

11:00am-11:30am | Paper Presentation

- *Slurry Formulation and the Impact They Have on Drying Times & Cost*
 - Written by Mike Hendricks, Dave Berta, Carel Wegman, and Bastian Schulte
 - Presented by Carel Wegman

Tuesday, October 22, 2024

8:10am-9:00am | Paper Presentation

- *The Investment Casting Conversion Process: An Industry Consensus*
 - Written and presented by Vasko Popovski, PE

Wednesday, October 23, 2024

11:30am-12:00pm | Award Ceremony

- Best Paper Award
- Casting Contest Award
- University Casting Contest Award
 - Root for R&R's recipient, University of Toledo student Joseph Boorum

Schedule a Meeting

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Celebrating International Women in Engineering Day with Katie Elco

International Women in Engineering Day takes place on June 23 each year. The holiday spreads awareness and celebrates the work and achievements made by women in the engineering field. R&R is proud to have Katie Elco on our engineering team!

Katie Elco has been with R&R since January 2024 as Product Development Engineer. Katie is instrumental in the research and testing done to develop cutting edge technology for the investment casting industry.

We recently interviewed Katie to talk about her role as a woman in the engineering field. Here is what she has to share:

What does “engineering” mean to you?

“Engineering is the true combination of science and art. Creativity is at the heart of engineering, and artists see a need within society and release their works. Trial and error is the best way to see what resonates. Engineers follow a similar pattern within problem solving- when an issue or a need arises, there is always a solution to be found.”

What is your favorite part about being an engineer?

“My driving passion is helping others. I have always been one to look for problems in my surroundings and think of ways to provide solutions. Pursuing a career in engineering has given me the ability to flex these mental muscles daily.”

Is there a quote you live by?

“My small high school in New Philadelphia, OH had a tradition to read *Oh, the Places You’ll Go* by Dr. Suess during the graduation ceremony. My favorite quote from this book is, ‘You have brains in your head. You have feet in your shoes. You can steer yourself in any direction you choose!’ This tells me that with passion comes

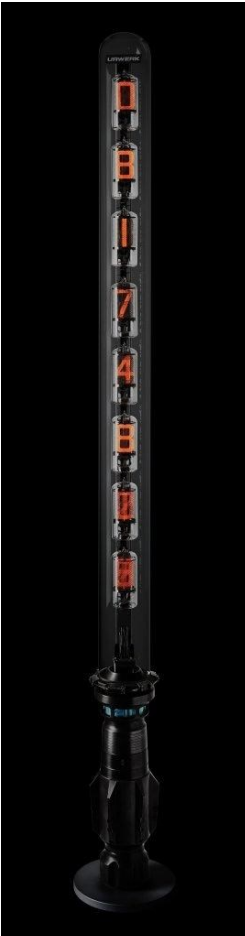
perseverance. You can push yourself through any obstacle.”

Do you have any advice for young women pursuing engineering?

“I was once struggling in one of my classes, so I met one on one with the professor. This professor provided little aid and simply stated, ‘math and engineering can be difficult for women.’ Looking back, I hope that the professor didn’t speak to other women in this manner. However, I know that these statements can be all too common. Math and science fields are difficult for anyone, regardless of gender. My time at the University of Toledo was not spoiled by this one professor. I was surrounded by wickedly smart students and professors that pushed me to my breaking point and showed me what I was capable of. My advice from this one belittling comment is to push forward. Do not let others define your abilities. This type of tenacity will only aid in the future of your career.”



Ranco-Sil™ Fused Silica, SuspendSlurry® material, and The Urwerk Spacetime Blade



The Urwerk Spacetime Blade is a multi-functional clock that shows what time and space mean in comparison to the universe. This piece stands 1.7 meters tall and weighs over 20 kilograms, consisting of bronze and glass, including 8 Nixie glass bulbs.

The Spacetime Blade was manufactured in partnership between three craftsmen from the Czech Republic using premier casting products, such as R&R's Ranco-Sil fused silica and SuspendaSlurry material.

The display functions of the clock include Mode 1- Time in hours, minutes, seconds; Mode 2- Time in hours, minutes, seconds, 1/10th seconds, 1/100th seconds; Mode 3- indication of the day, month, year; Mode 4- Earth's daily rotation measured at the

Equator (km); Mode 5- Earth's daily revolution around the sun (km); Mode 6- Earth's annual revolution around the sun (km); Mode 7- Shuffle modes; and Mode 8- Pause.

The credit for this masterpiece goes to Lukůvka, Votrubec, and Farný.

Radek Lukůvka, owner of Kedar Foundry in Moravia, is responsible for the bronze base of the clock as well as the control unit; Tomáš Votrubec, a representative of Sklo Daša sro in Železný Brod, created the 170cm round topped glass blade; and Dalibor Farný, tube maker in Brezolupy, crafted the eight-digit nixie tube display.

To learn about the assembly, craftsmanship, and functions of the Urwerk Spacetime Blade read this [Forbes article](#).

How to Use R&R Rosin Dips to Prep Models for Partial Frame Wax-Ups

Once a dental lab has duplicated a stone model using R&R's hydrocolloid duplicating material and investment, it is time to seal and prep the surface for waxing.

After trimming, the investment refractory model is dried by heating in a Vulcan® oven at 450 °F (232 °C) for at least 1 hour. Meanwhile, R&R Rosin Dip flakes are melted to 250 °F (121 °C) in a melting pot.

Once the drying process is complete, remove the model from the oven and immediately submerge it into the melted rosin dip. After approximately 8-10 seconds, remove the model from the rosin dip and place it on its heels or posterior

section to allow for cooling and drainage prior to waxing.

The refractory model will have absorbed the rosin dip into the pores of the investment, sealing the model and providing a flat, sealed surface for wax patterns to stick to.

To ensure proper adhesion, it is recommended to apply Flex-Tack® solution to the areas where the patterns will lay. Once the surface is prepped, it's time to arrange Flex-Form™ resin patterns to your desired design to create a partial frame.

Find These Products

Bronze Art

[Ranco-Sil™ fused silica](#)

Electrically fused, high purity silica with low thermal conductivity and excellent thermal shock resistance. Available in both flour and granular forms.

[Learn More](#)

[SuspendaSlurry® materials](#)

Ready-to-use ceramic shell slurry developed to eliminate costs associated with continuous mixing and to simplify the initial mixing process.

[Learn More](#)

[Other Bronze Art Casting Materials](#)

Designed for ease of use and quick drying capabilities. Exceeds industry standards, producing high quality shells and castings.

[Learn More](#)

Dental

[R&R Rosin Dip & Rosin Dip Hard](#)

A standard rosin dip and an extra hard rosin dip that holds the corners of the preps better and is less prone to chipping, reducing remakes or excessive grinding to seat the frame.

[Learn More](#)

[Flex-Tack solution](#)

An adhesive liquid formulated to increase adhesion between plastic patterns and models.

[Learn More](#)

[Flex-Form resin patterns](#)

A proprietary blend of plastic and wax made in pre-made shapes that provides excellent burnout capabilities for optimal castings. Available in 21 different patterns.

[Learn More](#)

[Other Dental Laboratory Products](#)

A variety of dental products for modeling and investing applications.

[Learn More](#)



R&R Calendar of Events



Independence Day (US)

R&R (US) will be CLOSED for the holiday and will reopen the following day under regular operating hours.

R&R GmbH (EU & UK) will remain open.



Labor Day (US)

R&R (US) will be CLOSED for the holiday and will reopen the following day under regular operating hours.

R&R GmbH (EU & UK) will remain open.



German Unity Day

R&R (US) will remain open.

R&R (EU & UK) will be CLOSED for the holiday and will reopen the following day under regular operating hours.



LMT® LAB DAY® East Dental Expo

October 5 | Tarrytown, NY, USA

Visit R&R at booth #TBD at this dental trade show!

Click [here](#) for show information and tickets.



ICI Technical Conference & Exhibition

October 20-23 | Milwaukee, WI, USA

Visit R&R at booth #212 at this ceramic shell trade show!

Click [here](#) for show information and tickets.

Stay Up to Date!

For more information on closures, trade shows, and other important events, visit R&R's online calendar of events by clicking [here](#).

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RANSOM & RANDOLPH



At R&R, *Investing with Innovation™* is more than just a slogan, it's a way of life. Dedicated to advancing the investment casting industry, we take pride in providing foundries with extensive process knowledge, exceptional technical expertise and innovative product technology. By coupling our revolutionary product developments with our experienced staff, manufacturing and warehousing facilities, we successfully help you become a casting industry leader.

R&R's core businesses are comprised 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. Ransom & Randolph GmbH, based in Rötha, Germany, provides service for the European Union and United Kingdom. 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.

Investing with Innovation™

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