

# What is Rapid Cast Investment?

Rapid cast benefits.

It seems that this term is very loosely used to classify and describe investments and we would like to take this opportunity to clear up any confusion. To be able to be considered a Rapid Cast investment the material must meet certain standards and have certain abilities. Who sets these standards? Well N&V of course, because they invented the process.

First, to be considered a Rapid Cast the material must be able to be invested in a ring and at any time after the necessary bench set placed directly into a preheated burnout furnace, this could be 3 hours or 3 days. Second, the rings must be able to be placed directly in the burnout furnace without any need to soak, trim or place them into a plastic bag. Last, they must be able to be placed directly into the burnout furnace without the fear of inconsistent results or exploding cylinders. These properties are what make a Rapid Cast investment the most beneficial tool that a laboratory can use in their casting procedures.

Investments claiming to be Shock Heat, Fast Firing, or High Speed Investments are not Rapid Cast investments. In fact they are based on theories that are the exact opposite of what Rapid Cast means. These investments place time restraints and additional rules on burnout procedures. They make technicians rush around to meet these time restrictions and take control of the casting schedule away from the lab. These theories and rules usually end up costing the laboratory time and money.

## Easily controlled casting procedures.

With Rapid Cast investments, such as N&V Z4 and Sun-Vest, restricting casting procedures become a thing of the past. Invested rings can be placed into a preheated furnace at will with no regard to programming the furnace or to when the ring was invested. This allows the technician to focus on the quality of the work rather than watching over the rings with a stopwatch.

## More consistent results.

The consistency of Rapid Cast investments can be directly linked to their bench set procedure. Why is this bench set so important to the consistency? As you may know casting investments go through two phases of expansion: Setting expansion created by the reaction between powder and expansion liquid and the thermal expansion caused by the heat of the furnace.

During the bench set the setting expansion is taking place and generally the expansion continues until the ring has cooled. With Rapid Cast investments the bench set procedures allows them to remain on the bench and become cool, dry and stable. An invested ring can be allowed to remain on the bench as long as necessary without the fear of an inconsistency in expansion.

On the other hand investments that directs you to place a ring into a hot furnace when the ring is still hot, usually a 15 or 20 minute bench set, is going to be inherently inconsistent. When you place a ring that is still hot into a preheated burnout furnace the setting expansion is still taking place and then is stopped due to the heat of the furnace. This is a major flaw in their design, a flaw that leads to inconsistent results. This flaw in their design forces the technician to become responsible for placing a ring into the furnace to stop the expansion and the ring must be placed into the furnace at the same time on every ring to insure a consistent, precise expansion. If a ring is allowed to sit on the bench for a time period longer than usual, then there will be more setting expansion. This extra expansion can be the difference between a restoration that fits perfectly and one that needs excessive adjusting and wasted time to make it fit.

So you see it is the flexibility of Rapid Cast investments that allows for more consistent results. This flexibility uses stable procedures and leaves less room for error.

## Flexibility in work planning

Rapid Cast investments allow for more flexibility in work planning by requiring fewer restrictions during the casting process. No attention needs to be paid to when the ring must be placed in the furnace, how the furnace must be programmed or when the ring must be cast. By removing these requirements Rapid Cast investments give labs the ability to plan work flow in a more productive manner.

## Increased productivity.

The flexibility, consistency and ability to fully control casting procedures all add up to a laboratory that can increase productivity. This increase in productivity can be obtained by merely embracing these new Rapid Cast investments and utilizing all the benefits that these products offer. Many times these cost savings and time savings are minimal in size but maximum in frequency. By continually following a predictable routine and using consistent materials a laboratory can reach their maximum potential for productivity without increasing work load or stress.

All of these benefits add up to a higher level of quality, less stressful casting, a cost savings for your laboratory and more money in your bank account. By properly utilizing the benefits of Rapid Cast investments, such as N&V Z4 or Sun-Vest, an immediate positive impact on your laboratory can be realized.

# Insured consistency.

How are investments tested to insure consistency?

Investments are made from numerous different types of quartz, cristobalite and other powders. But how do manufacturers know the proper blends of these materials to mix together to make a consistent, usable investment?

Some manufacturers make it sound as if they throw a little bit of each material into a mixer, blend it together and then do the testing. They tell you how they test and retest the finished product until the perfect fit is achieved. Some manufacturers even go so far as to issue new instructions with each batch they produce. However, if they blended it right in the first place they would not have to test so extensively. That is what makes this approach to quality control the wrong approach, it places more emphasis on being reactive rather than proactive.

As you probably understand the raw materials that make up investments fluctuate from batch to batch. The fluctuation of these raw materials is what makes analysis and formulating based on the results of this testing so important. Our testing consists of particle analysis, laser aided expansion testing, viscosity testing and other tests geared for each individual raw material all completed by an engineer with a PhD in materials science.

Our manufacturing procedures place great emphasis on completing tests before we blend the investments and in fact before we even purchase the raw materials that compose the investments. When we receive the raw materials we re-test them and if the raw materials that have been delivered don't meet up to our standards we send them back to the supplier. Then using the tests of the raw materials we calculate our formulations and reformulate if necessary to obtain end products that have the

desired, predictable results. What this means to you is that the different batches of N&V Z4 and Sun-Vest you receive from us may have different formulations, but you will never be able to tell the difference because your results will be predictable and consistent.

It is our job to make sure that once the materials are blended, packaged and delivered to your lab you can't tell the difference between your first batch and your last. You should not have to request certain batches, buy larger quantities of the same batch just to keep the results consistent and you should not have to change liquid ratios in order to keep your castings fitting correctly.

We use the best raw materials, the newest technology in materials testing, the finest in blending and packaging equipment so that we can offer the most consistent investments. We bring the technology of mixing and blending casting investments from the dark ages well into the 21<sup>st</sup> century.

