



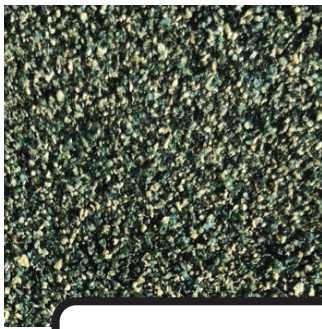
# Foundry Products Catalog



Green Diamond Performance Materials  
500 E. 6th Avenue, Riddle, OR 97469

[www.greendiamondpm.com](http://www.greendiamondpm.com)





# **GREEN** **DIAMOND™** **PERFORMANCE MATERIALS**



## **What is Green Diamond Sand?**

Green Diamond sand is, by geological definition, synthetic olivine. Garnierite ore is melted and then granulated by quenching in fresh water. The quenching process renders granules devoid of crystalline structure, and therefore contain no free silica.

## **The Green Diamond Advantage**

Green Diamond sand is a precision graded media with low thermal expansion, which minimizes or eliminates expansion defects. Green Diamond's insulating thermal properties allow pouring temperatures to be reduced by 30-50°F, resulting in a better surface finish. The lower pouring temperatures are less abusive to sand systems, which reduce the need for new sand additions, while simultaneously reducing melt cost.

The grain structure of Green Diamond is much tougher than common foundry sand, which reduces breakdown by as much as 60%. This resistance to weathering results in fewer fines and dust, further reducing the need for new sand additions.

Green Diamond has a low bulk density (+/- 90 lbs./ft<sup>3</sup>), which means you get more molds or cores per ton of sand, and it has a higher permeability. Also, the shakeout is better with chemically bonded molds and cores. Disposal costs are also less as you get more cubic feet per ton. It has no loss on ignition, which leads to reduced pitting defects, as can be seen with natural Olivine.

We produce a wide range of sizes to meet the requirements of most foundries. Custom sizing may be available depending on specific needs. Our foundry sands are available either as clean dry-sand, or as pre-mulled sand, which is mulled at our facility with additives specified by the customer.

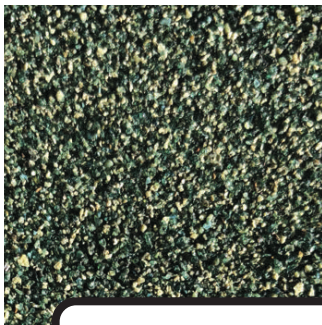
Green Diamond foundry sands are ideal for pouring temperatures up to 2600°F. Our greatest strengths are in non-ferrous and Iron foundries, with an exception for manganese steel.



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**S-F**  
**SILICA**  
**FREE**

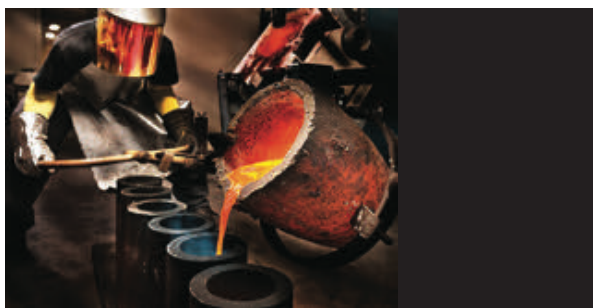
## **Silica-Free Solution**

Is your foundry focused on environmental health and safety? Are you pouring Iron or Non-Ferrous metals?

Green Diamond foundry products are an excellent alternative to olivine, ceramic media, and silica-sands. Third-party industrial hygiene testing confirms that crystalline silica is non-detectable, using an 8 hour time weighted average.

## **Advantages include:**

- Respirable Silica Free
- Better Surface Finish
- Less Veining
- Higher Durability
- Less Makeup Sand Required
- Lower Thermal Expansion



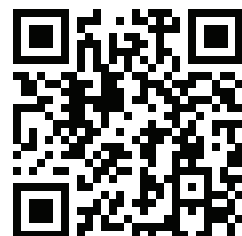
## **Let us prove it.**

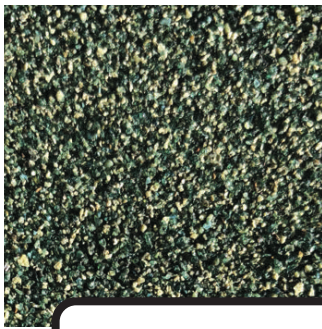
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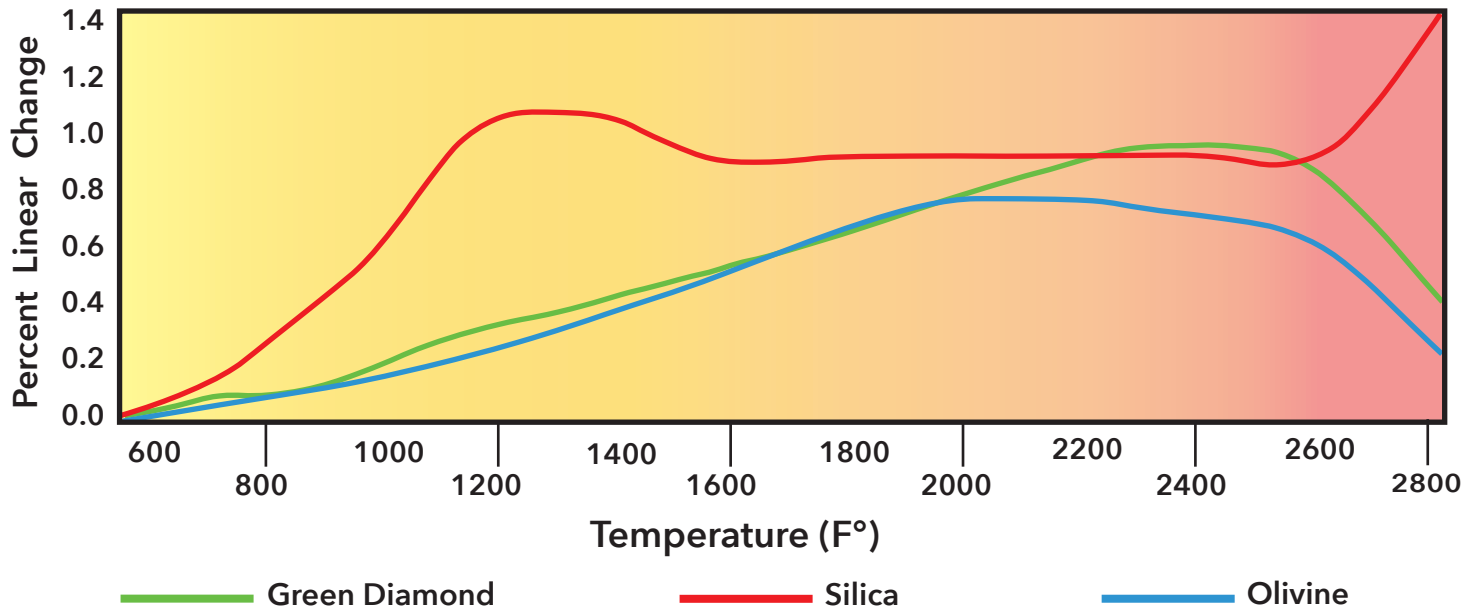
# GREEN DIAMOND™

## PERFORMANCE MATERIALS

**T-S**  
THERMAL  
STABILITY

### Thermal Stability:

When the melt meets the mold, stability matters. Whether your foundry is most concerned about surface finish and veining, or reducing the costs of sand additives and finishing room labor, Green Diamond foundry sand will deliver geometric accuracy and consistent quality at shakeout.



**Let us prove it.**

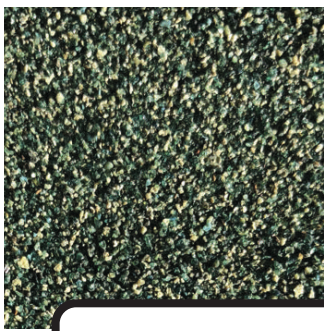
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# GREEN DIAMOND™ PERFORMANCE MATERIALS

26

Fe  
Iron

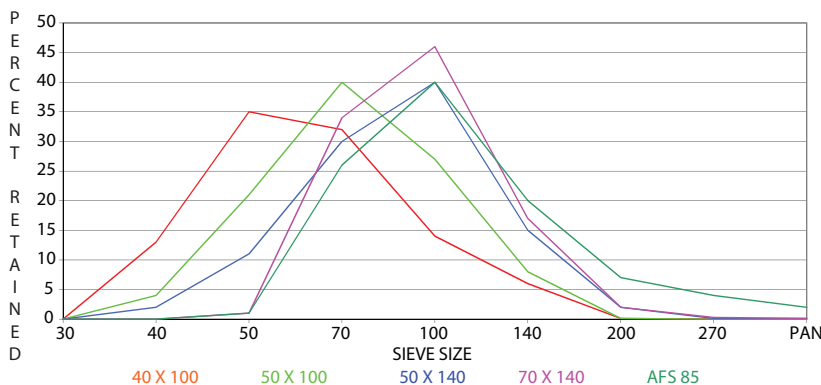
## Ferrous Metals

In today's modern foundry, a quality green-sand system is a combination of good practices, good maintenance, and of course, good sand.

Specially graded for Iron Foundries, Green Diamond recommends the use of these five products. Each production lot ships with a Certificate of Analysis listing particle size distribution and corresponding AFS GFN value. Contact us today to request a sample. We appreciate every opportunity to prove our products to new customers.

TYPICAL SCREEN ANALYSIS

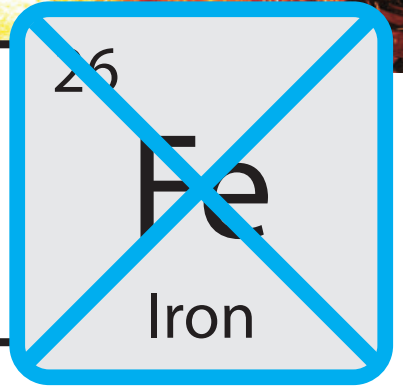
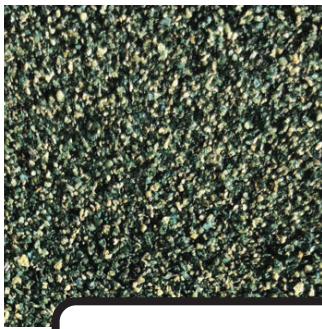
| US SIEVE | 40 x 100 | 50 x 100 | 50 x 140 | 70 x 140 | AFS 85 |
|----------|----------|----------|----------|----------|--------|
| 30       | 0        | 0        | 0        | 0        | 0      |
| 40       | 13       | 4        | 2        | 0        | 0      |
| 50       | 35       | 21       | 11       | 1        | 1      |
| 70       | 32       | 40       | 30       | 34       | 26     |
| 100      | 14       | 27       | 40       | 46       | 40     |
| 140      | 6        | 8        | 15       | 17       | 20     |
| 200      | 0.1      | 0.1      | 2        | 2        | 7      |
| 270      | 0        | 0        | 0.1      | 0.3      | 4      |
| PAN      | 0        | 0        | 0.1      | 0.1      | 2      |
| AFS GFN  | 50       | 57       | 66       | 70       | 85     |



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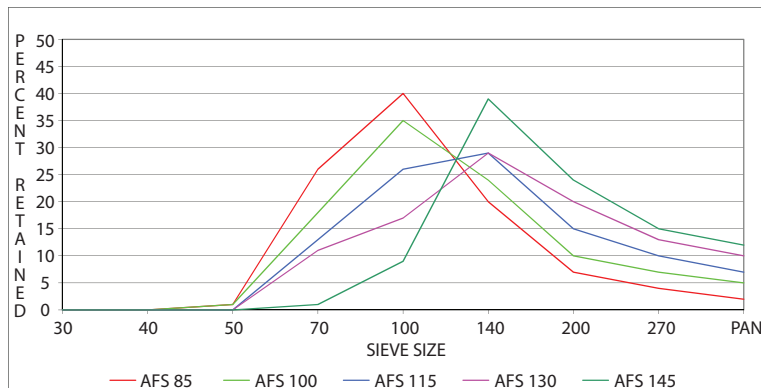
# GREEN DIAMOND™ PERFORMANCE MATERIALS

## Non-Ferrous Metals

In today's modern foundry, a quality green-sand system is a combination of good practices, good maintenance, and of course, good sand.

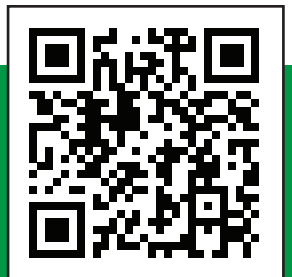
Specially graded for Non-Ferrous Foundries, Green Diamond recommends the use of these five products. Each production lot ships with a Certificate of Analysis listing particle size distribution and corresponding AFS GFN value. Contact us today to request a sample. We appreciate every opportunity to prove our products to new customers.

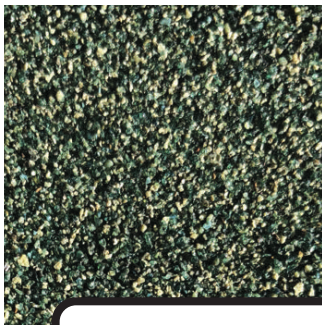
| TYPICAL SCREEN ANALYSIS |        |         |         |         |         |
|-------------------------|--------|---------|---------|---------|---------|
| US SIEVE                | AFS 85 | AFS 100 | AFS 115 | AFS 130 | AFS 145 |
| 30                      | 0      | 0       | 0       | 0       | 0       |
| 40                      | 0      | 0       | 0       | 0       | 0       |
| 50                      | 1      | 1       | 0       | 0       | 0       |
| 70                      | 26     | 18      | 13      | 11      | 1       |
| 100                     | 40     | 35      | 26      | 17      | 9       |
| 140                     | 20     | 24      | 29      | 29      | 39      |
| 200                     | 7      | 10      | 15      | 20      | 24      |
| 270                     | 4      | 7       | 10      | 13      | 15      |
| PAN                     | 2      | 5       | 7       | 10      | 12      |
| AFS GFN                 | 85     | 101     | 116     | 130     | 145     |



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**GREEN**  **DIAMOND™**  
**PERFORMANCE MATERIALS**

**C/B**  
**Chemically  
Bonded**

## Chemically Bonded Sand-Cores and Molds

Green Diamond offers solutions beyond your green-sand system. Are you looking for a more stable material in your core work? Would your foundry benefit from better surface finish, less veining, and reduced costs in your finishing room?

Our foundry sands are more stable than standard silica, with little to no thermal expansion, when exposed to metal pouring temperatures in non-ferrous and iron foundries.



Through partnerships with chemical binder manufacturers, ROMAC Industries Inc. is having consistent success with their cold-box core system, while D&L Foundry has successfully implemented Green Diamond into their no-bake core system. When using Green Diamond for cores, you can be certain to have better surface finish and reduced silica contamination in your

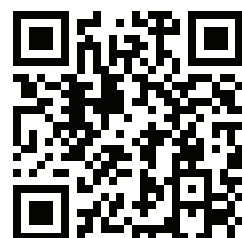
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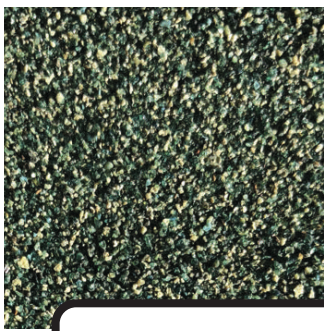
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# **GREEN** **DIAMOND™** **PERFORMANCE MATERIALS**

**S-C**  
**SHELL**  
**CORE**

## **Shell-Core Sand**

Green Diamond offers solutions beyond your green-sand system. Are you looking for a more stable material in your core work? Would your foundry benefit from better surface finish, less veining, and reduced costs in your finishing room?

Our foundry sands are more stable than standard silica, with little to no thermal expansion, when exposed to metal pouring temperatures in non-ferrous and iron foundries.



Through partnerships with resin-coated-sand manufacturers, Ferroloy, Inc. is having consistent success with their shell-core systems. When using Green Diamond for cores, you'll benefit from better surface finish and reduced silica contamination in your green-sand system.

### **Let us prove it.**

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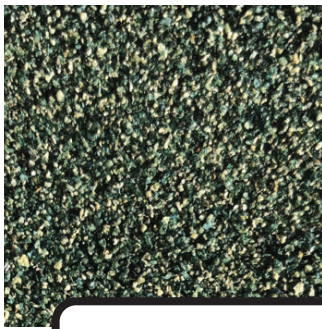


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**PERFORMANCE MATERIALS**

**P-M**  
Pre-Mulled

## Pre-Mulled System Sand

High quality sand, clay and water, Pre-Mulled and ready for use in your foundry; Green Diamond Foundry Products are fully blended and shipped ready for introduction to your green-sand system.

With an excellent reclamation rate, all that's left is a quality recipe for your molding line.



Green Diamond is proud to support our customer base by producing high quality Pre-Mulled products. We blend customer's specific recipe, or make recommendations based upon your foundry's needs. Whether pouring non-ferrous or iron, Green Diamond customers can be confident in their green-sand system investments. Contact us today to start a conversation focused on your foundry. We will work together to formulate a Pre-Mulled product tailored to your needs, and ship them directly to your facility, ready for introduction into your molding line.

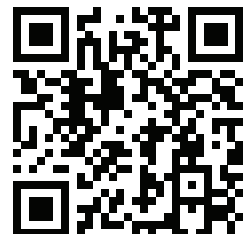
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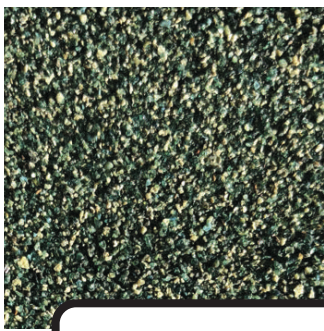
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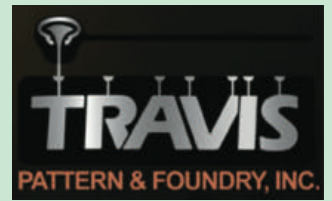


**GREEN**  **DIAMOND™**  
**PERFORMANCE MATERIALS**



**Industry Partners**

We are proud to support these foundries, who rely on Green Diamond products to maintain their standards of quality and performance:



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# Converting to Green Diamond Sand FAQ:

## Do I need to throw out all of my current sand?

The simple answer is NO. You can take out 1/4 or 1/3 of your system sand and replace it with pre-mulled Green Diamond sand, which will accelerate the conversion. Or, you can just stop adding your current system sand source and transition into our Orthosilicate. If switching from Olivine, you will not see any difference in your system sand until you reach 50% Green Diamond sand. At that point, you should start to see an increase in permeability, and you should be able to start reducing your pouring temperature. You can also start reducing the makeup sand as the insulating properties of Green Diamond sand reduce clay burnout so there is less contamination to dilute with new sand.

## What grade of Green Diamond sand should I use?

We offer AFS GFN identifiers for each of our foundry products. We prefer that you send us a sand sample to be tested so we can accurately recommend an appropriate size for your facility. In general, our AFS 100 is used by shops that pour only aluminum and have automatic molding machines. AFS 115 is typically used by shops that have squeezers, etc. and perhaps pour some brass. The AFS 130 is used for belt buckles and plaques. The AFS 145 is the next step finer.

## Is Green Diamond sand more expensive to use?

The delivered price of Green Diamond sand is very dependent on freight and packaging. Even if the delivered cost is more, you will see savings in reduced makeup sand, lower pouring temperatures, and better finish, which should negate any higher price. Also, since Green Diamond sand is 10-20% lighter in bulk density, there would be a savings in disposal if you pay by the ton and there are more cubic feet of Green Diamond sand per ton than Olivine or Silica.

## Does Green Diamond sand reclaim well?

The simple answer is YES. Our studies have shown that the makeup sand, for dry reclaimed Sodium Silicate no-bake, was reduced from 35% with Olivine to 15% with Green Diamond sand. Green Diamond sand reclaims faster, easier, and is cleaner than the natural Olivine, and doesn't break down as easily.

## What clay should I use with Green Diamond sand?

There is no need to change your clay. You can use the same mix as you were using with olivine. If using Green Diamond as a facing sand, you might want to adjust the clays up a little because of the bulk density difference. There is more surface area per pound of Green Diamond compared to Olivine.

## Can I use Green Diamond sand for cores?

YES. Green Diamond sand will work with the same binders as Olivine. If you are converting from Silica, please contact us for guidance identifying the proper binder system.



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