




ABRASIVE BLASTING

THE MAINTENANCE MANAGER'S GUIDE TO BLASTING ABRASIVES



Industrial coatings are critical to maximizing the life of your assets. But with each painting job comes a cause of downtime hiding in plain sight: **abrasive blasting**. From dust to disruption, waste slag could be what's keeping you from breaking through that 98.5% uptime plateau.

Luckily, there's a better way. By embracing alternatives to waste slag, maintenance managers are taking control of the blasting process—and looking like heroes while doing so. If you're actively seeking ways to maximize uptime, use this quick guide to ensure that abrasive blasting helps, rather than hinders, your progress.

A quick primer on abrasive blasting

Of all the common surface preparation methods, abrasive blasting is widely considered the most effective. Abrasive blasting removes contaminants from the surface that requires coating, produces an anchor surface profile that ensures proper adhesion, and does both more productively than other cleaning methods. For these reasons, it has become the preferred cleaning method for offshore and other harsh environments that require chemical resistance or weather resistant coatings.

In most cases, the coating is chosen first and surface preparation is almost an afterthought. But despite playing second fiddle to the finished product itself, **the abrasive you choose is just as critical to the quality of your paint job.** The first step to better blasting is understanding the many ways in which abrasive blasting directly affects not only the coating, but also the productivity and profitability of your facility.

WHICH METAL SURFACE IS CLEANER?

GMA Garnet™



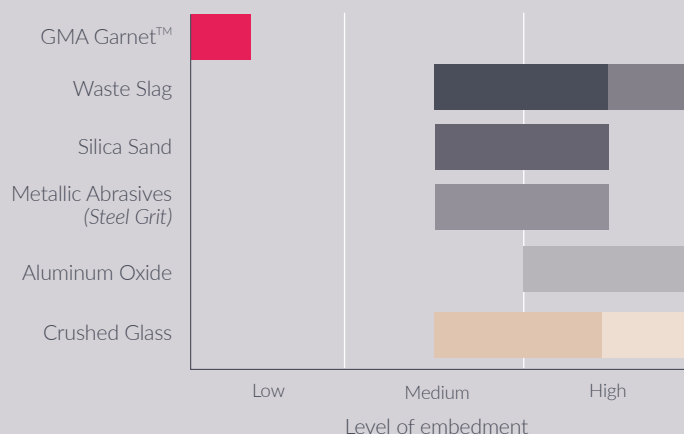
Slag Abrasive



Performance

First and foremost, the abrasive must perform the job it was created for: producing a surface profile that meets the needs of your industrial coating. But there's more to a clean surface than meets the eye. If an abrasive leaves rogue peaks, it will require more paint to fill excessive voids and/or cover high points.

SURFACE QUALITY

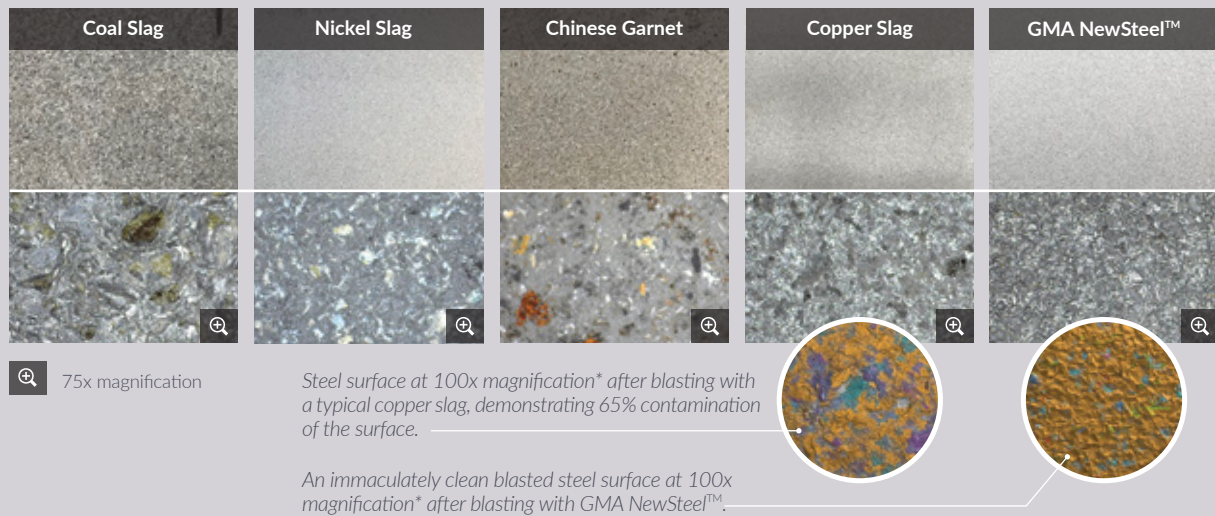


Surface texture directly impacts paint consumption, the performance of the industrial coating and, ultimately, the life of your asset. The highest-quality abrasives deliver an even-textured surface with the least amount of consumption.

Blasting with typical waste slags can result in small abrasive particles embedded into the surface. Viewing a blasted surface with the naked eye can be deceiving, as magnification shows that on average 60% of a slag-blasted surface contains residual abrasive.

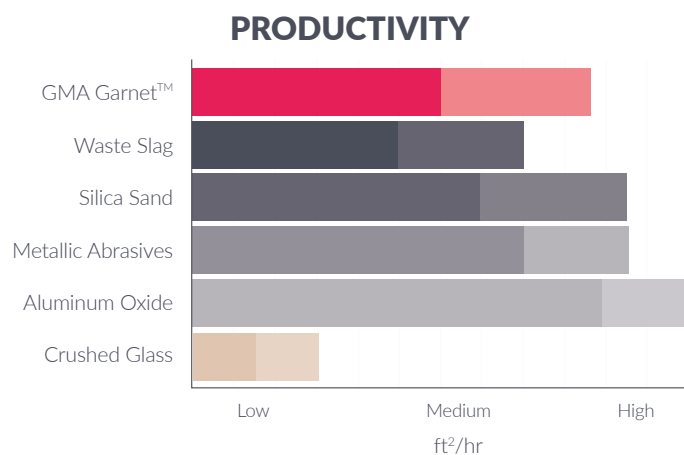
The degree of embedment from an abrasive can have a detrimental effect on coating performance and therefore can compromise the life of a coating. A cleaner surface finish plays a crucial role in passing inspections and minimizing rework.

SURFACE CLEANLINESS



Productivity

Abrasive blasting is largely overlooked as a cause of downtime. However, blasting directly impacts the speed and efficiency of your turnaround. The faster the surface gets clean, the faster your facility can get back in action. Unfortunately, conventional abrasives are often the root cause of inefficient, slow blasting. If blasting requires high levels of consumption and produces substantial dust, it could require other trades to cease work during the blasting job.



More consumption and dust also require more time—and money—for cleanup and disposal. In an industrial landscape, downtime can cost millions per day. Getting jobs done faster and better is the holy grail.

To put this into context, consider this scenario. A leading industrial blasting and coatings contractor had three blasters on an eight-ton pot with a 2mil to 4mil required profile. By switching from waste slag to garnet, it increased productivity by 71% and reduced costs by 15%. It drastically reduced its equipment and labor time—and expedited its turnaround—simply through its choice of abrasive.

Switching from waste slag to garnet

25,000Ft2 of Mill Scale Removed 71% Faster from Tank Exterior.



Results taken from the GMA Case Study - How a Leading Industrial Coatings Contractor Unlocked 71% More Productivity (at 15% Less Cost) with GMA Garnet™. To obtain the full download of this case study, visit www.gmagarnet.com.

In an industrial landscape when a single delay can represent millions of dollars per day, getting the job done faster and better is the holy grail.



Safety

You can't eliminate the risks from abrasive blasting altogether, but you can choose abrasives that minimize risks. Because slags are the waste product of burning coal and/or producing metals, they inherently include metals. Waste slags have garnered attention for beryllium, the subject of recent OSHA regulations. However, studies show that waste slags also contain heavy metals that are just as toxic, if not more toxic, to the human body. (Think: arsenic, cadmium, chromium, lead, manganese, nickel and vanadium.)

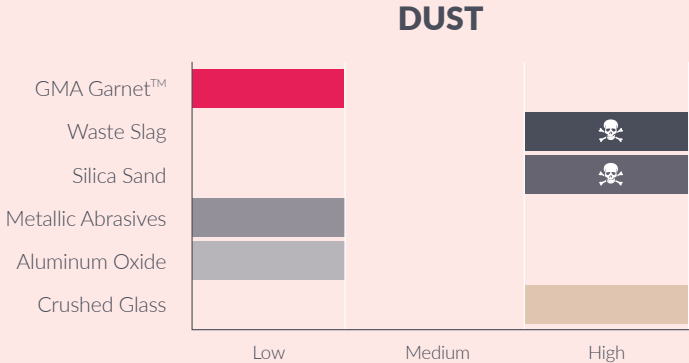
Heavy metal is for your playlist, not your work site:

	SLAG	GMA GARNET™
ARSENIC	☠	✓
BARIUM	☠	✓
BERYLLIUM	☠	✓
CHROMIUM	☠	✓
LEAD	☠	✓
COPPER	☠	✓
NICKEL	☠	✓



Minimize Dust and Keep Workers Safe

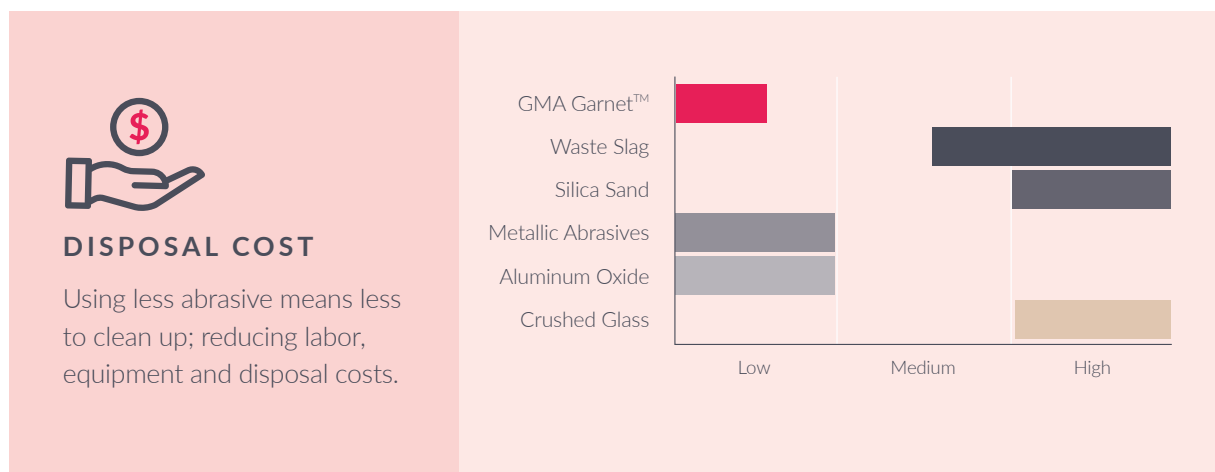
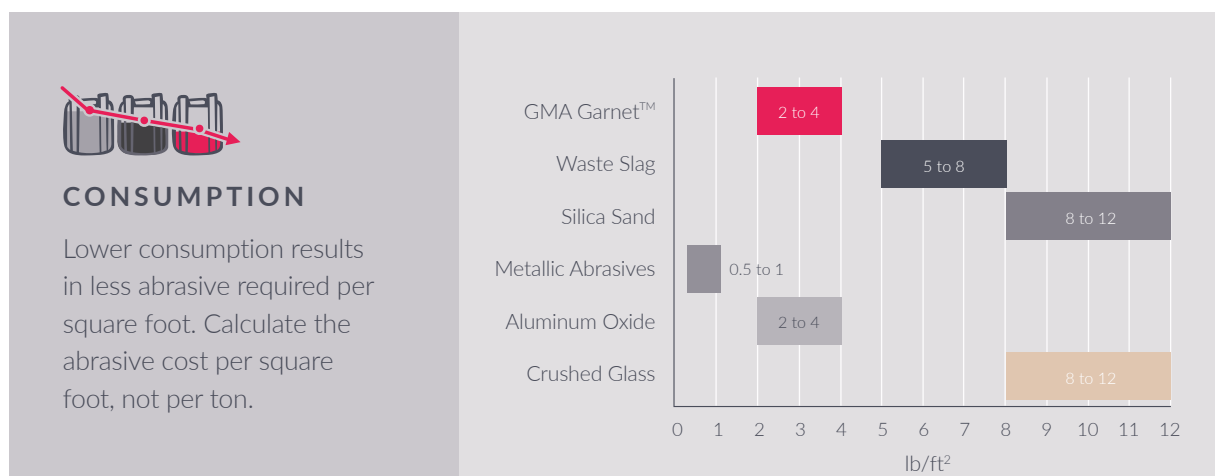
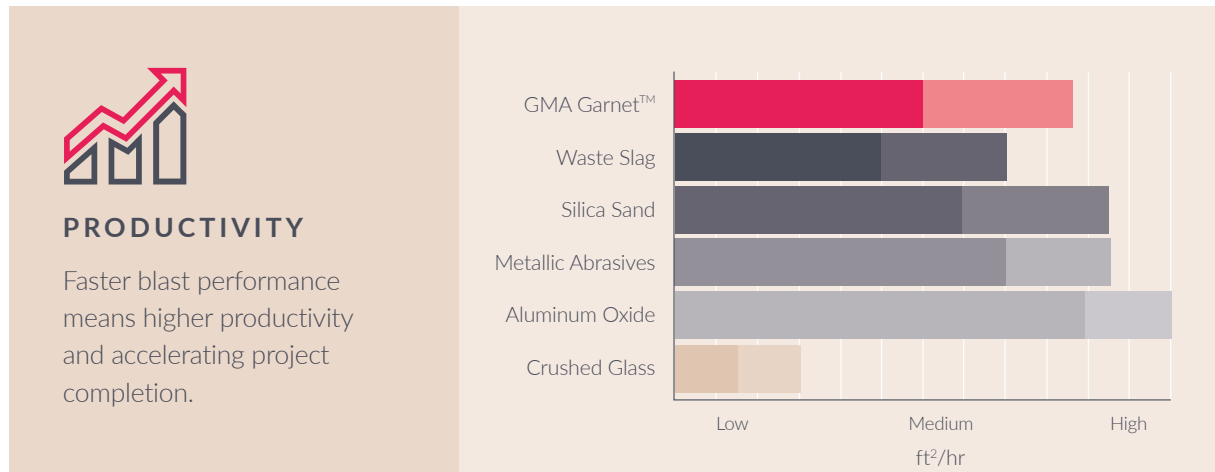
Then there's the dust. High levels of dust reduce operator visibility, a critical hazard in industrial settings. Keeping dust to a minimum improves visibility and reduces workers' exposure to toxic particles.



☠ Possibility of exceeding respirable and hazardous limits.

Cost

Although productivity, performance and safety all directly impact the cost of a blasting job, the shift from time and material to fixed bids also merits some discussion. Abrasives that get the job done faster with less consumption enable contractors to offer competitive fixed-price bids that satisfy budgets at both the corporate and plant level.



Clearing the air on alternatives to waste slag

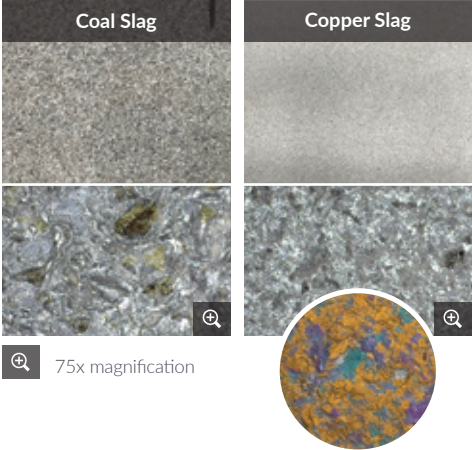
With new safety regulations, tightening budgets and the rise of fixed price bidding, more maintenance managers than ever are exploring alternatives to waste slags. Metallic abrasives from steel or iron are efficient, but they're only affordable if they can be recycled. Meanwhile, aluminum oxide is often unfeasible for general maintenance due to both cost and the cleaning required before reuse. With a balance of affordability and quality, garnet is quickly becoming a top choice for industrial teams that want to produce a cleaner surface, faster and more safely.

Here's a quick overview of how waste slag and garnet compare on key aspects of performance, productivity and safety.

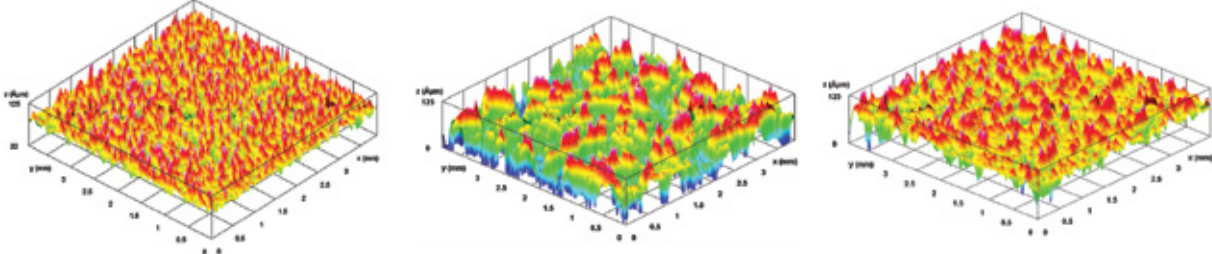
Surface quality

Waste slag is a brittle abrasive that shatters upon impact. It's prone to poor grading, resulting in an inconsistent particle size within a bag of slag. This can produce erratic surface profiles that increase paint consumption. Although the trade status quo does accept a surface blasted with waste slag, this abrasive always produces a degree of embedment that prevents a surface from being truly clean. The embedded particles produced by waste slag do make a difference—even if it does take a microscope to see them.

COAL SLAG & COPPER SLAG EMBEDMENT



HOW UNIFORM IS YOUR SURFACE



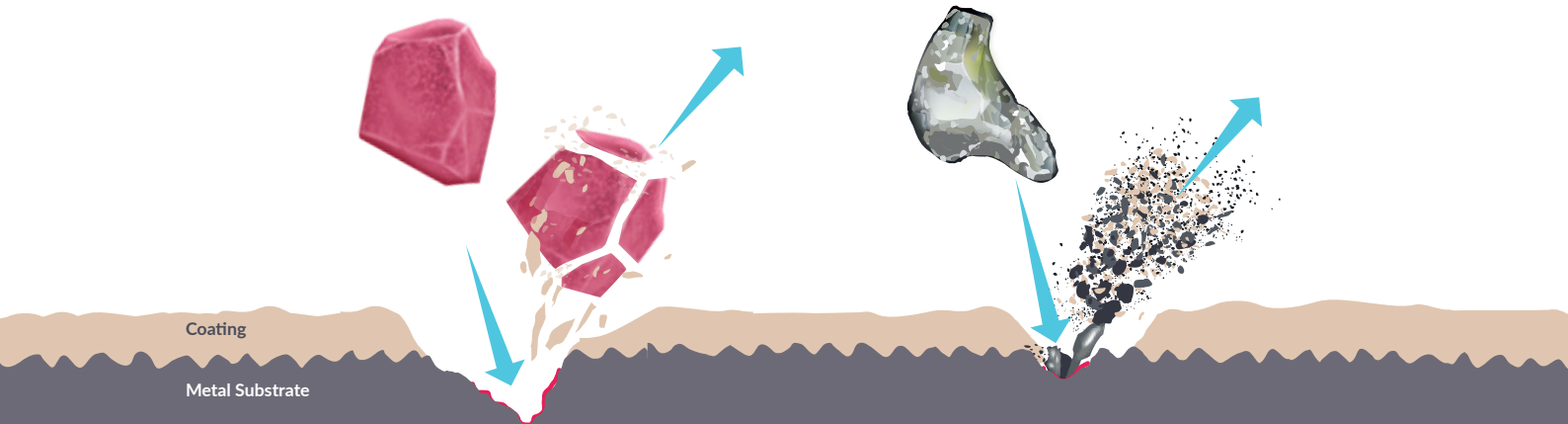
GMA Garnet™	Typical Slag	Other Garnets
<ul style="list-style-type: none"> Uniform profile with increased surface area. 	<ul style="list-style-type: none"> Non-uniform surface profile. 	<ul style="list-style-type: none"> Less-uniform surface profile.
<ul style="list-style-type: none"> Less coating required and greater adhesion. 	<ul style="list-style-type: none"> Potentially poor paint wetting resulting low adhesion between the coating and substrate. 	<ul style="list-style-type: none"> Lower peak density will reduce coating adhesion.

Source: Comparative Study of Prevalent Blasting Abrasives in the US Market, April 2019.

With garnet, maintenance managers can depend upon an even-textured finish that minimizes paint consumption on each coatings job.



Garnet is hard without being brittle. Its inherent toughness allows it to cut more effectively than waste slag, producing a clean surface without embedment. With garnet, maintenance managers can depend upon an even-textured finish that minimizes paint consumption on each coatings job. By consistently delivering the cleanest possible surface, garnet gives you the peace of mind that you're getting the anchoring surface profile required, every time.



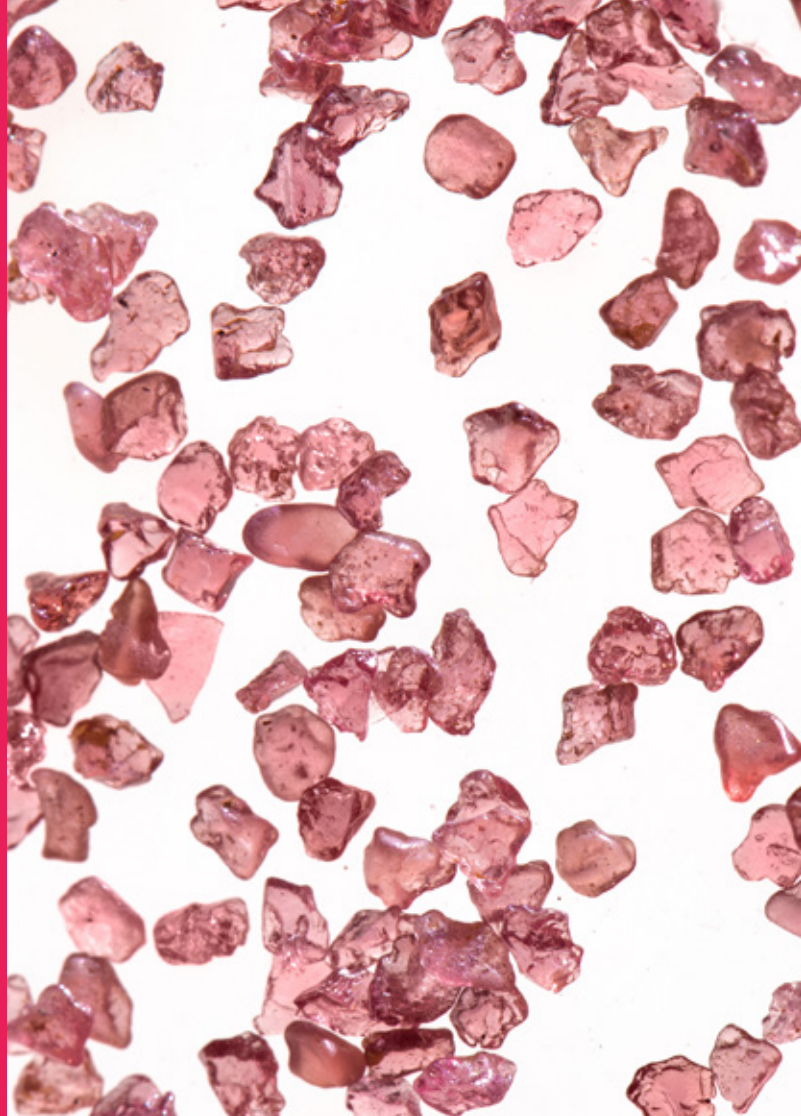
GMA GARNET™

Harder, tougher and denser grains generate a cleaner, consistent profile – the optimal surface preparation for coating application.

TYPICAL SLAG ABRASIVE

Lower hardness, toughness and density generating extremely high levels of dust, inconsistent profile and high levels of embedment.

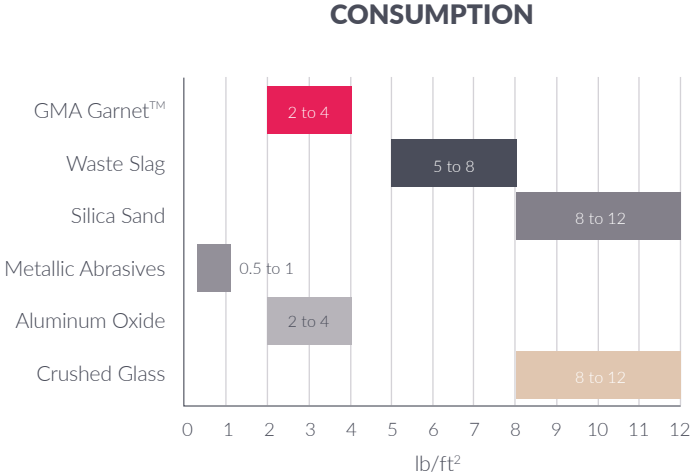
With lower consumption, higher production rates and shorter project times, garnet does much more with much less.



30%-50%
LESS ABRASIVE
TO GET THE
JOB DONE

Speed, efficiency and consumption

Waste slag produces the required finish based on particle size, and it requires notoriously high consumption to get the job done. It's not uncommon to see blasters pumping through more waste slag to tackle high build coatings and hard-to-clean surfaces.



Tough and heavy, garnet produces the required finish via velocity rather than particle size. That means it takes less abrasive to get the job done—an average of 30% to 50% less, when compared with slow, sloppy waste slag. Garnet's efficiency allows it to clean surfaces faster, freeing up equipment more quickly and keeping turnaround timelines on schedule. With lower consumption, higher production rates and shorter project times, garnet does much more with much less.





^ Other garnets or slag

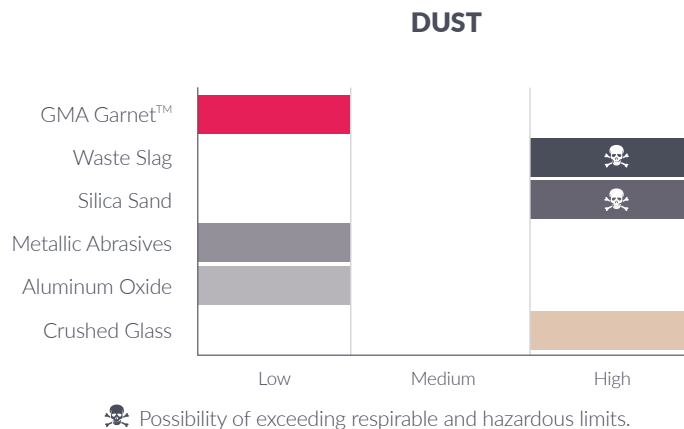


^ GMA Garnet™

Image Source: BlastOne

Dust and disruption

If your contractors blast with waste slag, you already know how disruptive dust can be. High consumption means high levels of dust that quickly spread around a work site. For many maintenance managers, it has become standard practice to take other trades off the job as blasters do theirs. But that's a function of waste slag, not blasting overall.



Because blasting removes paint or rust from a surface, it will always create a certain level of dust. However, garnet produces considerably less of it than waste slag. Waste slag has been known to halt other trades—in some cases, causing so much disruption that it nearly shuts down other forms of maintenance.

Meanwhile, garnet:

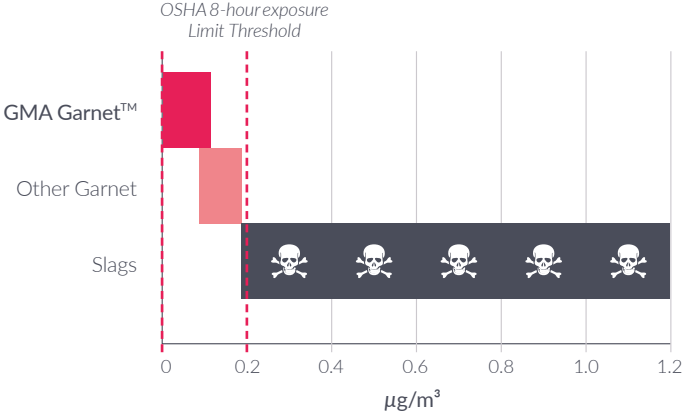
- Produces less dust that is also easier to contain
- Ensures better visibility for operators
- Provides a cleaner, safer environment for nearby workers

Heavy metals and safety

Some waste slag abrasives can produce 10 times the exposure levels outlined in the latest OSHA regulations. These abrasives can contain traces of beryllium up to 0.1% by weight or higher, along with a host of other heavy metals. Because waste slags are highly friable and shatter on impact during blasting, the levels of toxic metals released into the air can greatly exceed the highest legal limits.

When blasting with garnet, there may be trace amounts of beryllium detected. However, these are well below the new OSHA limits. Garnet is clear proof that blasters can meet OSHA regulations without having to use waste slag or equally hazardous silica sand.

BERYLLIUM AIR SAMPLE - INDOOR (CONFINED SPACE, 8-HR TWA)



Source: Industrial Hygiene Abrasive Products Assessment Report. HSE Solutions Inc. 2019. *For more information visit the OSHA website on www.osha.gov

Even blast to waste applications, garnet's speed, efficiency and lower disposal costs make it a cost-effective abrasive for industrial blasting.

Disposal and recycling

Because garnet requires 30% to 50% less consumption than waste slag, disposal costs drop considerably. Less waste means less disposal and less cleanup time. Garnet also can be recycled. However, even when used once and not recycled, its speed, efficiency and lower disposal costs make it a cost-effective abrasive for industrial blasting.

RECYCLING

	Cannot be recycled	Can be recycled 4 - 5 times	Can be recycled 25-30 times
GMA Garnet™		✓	
Waste Slag	✗		
Silica Sand	✗		
Metallic Abrasives			✓
Aluminum Oxide		✓	
Crushed Glass	✗		



Garnet's speed, efficiency and lower disposal costs make it a cost-effective abrasive for industrial blasting.

Standing up to downtime with better blasting

In the quest for that elusive 100% uptime, abrasive blasting tends to get overlooked. But in today's market, it's more critical than ever to identify every opportunity for enhanced productivity, performance and safety. By taking a hard look at their facility's blasting strategy and exploring modern abrasives, maintenance managers can tackle a cause of downtime hiding in plain sight—and start the conversation with their safety managers and contractors about the benefits of garnet.

When you're ready to take the next step, consider GMA Garnet™ your ally in uptime. The trusted global leader in industrial garnet for more than 35 years, GMA is the only partner that owns the complete supply chain, delivering unmatched quality, efficiency and support from mine to customer. With GMA Garnet™, a clean surface is just the beginning.

Let's talk about how GMA Garnet™ can produce the range of surface profiles that your protective coatings require—safely, efficiently and without disrupting your facility.

Visit www.gmagarnet.com to discover our superior range of abrasive blasting solutions.