

THE  
*Ultimate*  
GUIDE TO  
SHOTBLASTING



# INTRO

When it comes to surface preparation, there are so many different options and opinions in the market that it can be hard to figure out what is best for you. Shotblasting is one of many surface prep methods that can be used for coating removal, as well as prepping a surface for a new coating.

In this guide, we will look at:

- What is shotblasting and how it works
- When to use shotblasting vs. other prep methods
- What kind of units are on the market and how they differ
- What sort of production rates can you expect

The ultimate goal of this guide is to make your business more profitable, one way or another. You may read this and realize shotblasting isn't for you. In the end, that will end up saving you a lot of money in the long run as well.

On the other hand, you may discover a new way to speed up your crews, keep your costs down, and expand your business to different areas.

Both outcomes can be extremely valuable.

## BEFORE WE BEGIN

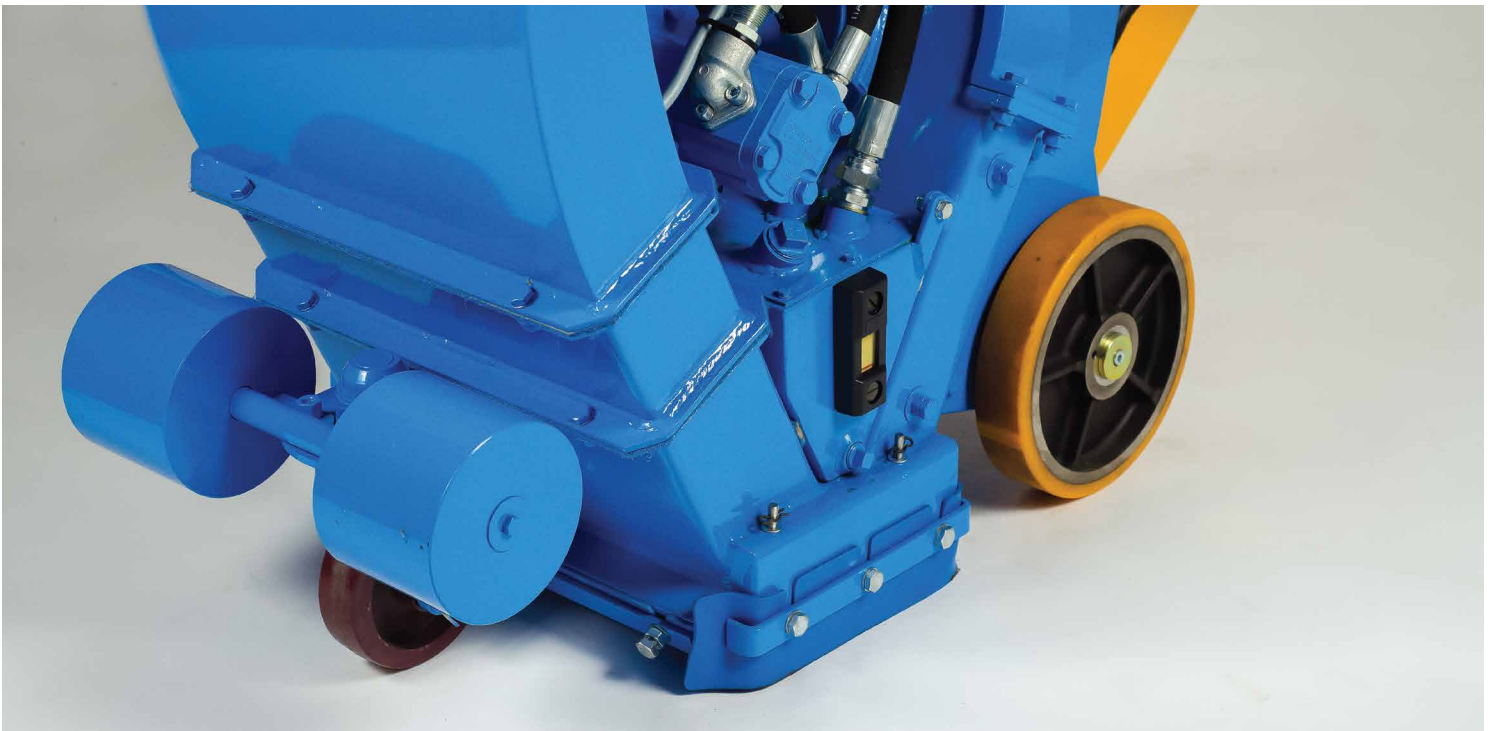
Before we get into the specifics, there is one thing we need to address. Shotblasting is not the only or best form of surface preparation. Grinding, scarifying, shotblasting and other prep methods all have their time and place. Some companies who only sell grinders for example, make the case that grinding is the best form of surface prep. The reality is, this just isn't true. It all depends on the job at hand.



# WHAT IS SHOTBLASTING AND HOW DOES IT WORK?

The basic principal of the blasting operation is preformed by abrasive being thrown at a high velocity against the surface to be cleaned. The throwing action is achieved through centrifugal force, where a wheel with paddle-type blades attached radially, is revolved at a continuous shaft speed. Onto this wheel, abrasive is fed in such a manner that it travels along the radial length of the blades, and is thrown off in a high velocity stream at the surface to be cleaned. The energy placed into the abrasive is sufficient to enable it to rebound from the work surface. The rebound (kinetic energy) is used to recover the abrasive for re-use.

The machine is designed so that the blast wheel is throwing abrasive at an inclined angle relative to the work surface. This means after striking the work surface, the abrasive rebounds at a similar angle into the reclaim duty which directs it back into the hopper for re-use. Assisting with the reclaim cycle, the air flow created by the dust collector enters the machine through a brush screen at the rear of the cabinet, and flows across the work surface, up the reclaim duct, through the separators, and in the dust collector. Then it moves through the fan and into the atmosphere. All of the surface contamination which has been collected in the dust collector must be disposed of under the COSHH and Health and Safety guidelines.



# WHAT IS SHOTBLASTING AND HOW DOES IT WORK?

## Mechanical Process

- Shot is loaded in the hopper of the machine. The hopper acts as a funnel to direct the shot to the shot valve
- The shot valve (butterfly valve) controls the volume of shot that is allowed to flow down a spout and into the blast housing. The shot valve is controlled by a cable and lever located in the operator's position for easy accessibility
- After passing through the shot valve the flow of shot is directed by a 'Control Cage'. This allows the shot to fall on the optimal position of the blast wheel. The Control Cage can be calibrated (adjusted) to ensure that the shotblaster is achieving an even blast pattern across the width of the machine
- After passing through the Control Cage, the shot is impacted by the Blast Wheel and travels at a high velocity towards the floor. Depending on the size of the machine, the blast wheel can either be a one piece unit or made up of a centre housing with a series of blades (paddles)
- The abrasive impact force of the shot hitting the floor removes surface contaminants and leaves a clean, dry
- The rebounded shot and debris then travel up the reclaim channel and land on a shelf located directly above the hopper. Once the shelf becomes full, the shot and debris overflow off the shelf. - - The lighter debris particles are removed by the suction provided by the dust collector and the heavier shot is recycled back into the hopper
- The process described above is a continuous cycle. Over time the shot breaks down (wears away) and new shot needs to be added to the hopper



# WHEN TO USE SHOTBLASTING?

Shotblasting is one of the fastest methods of prep in the right conditions. Depending on your application, it can not only prep the surface but also remove types of paint and other coatings. Here are a few scenarios where shotblasting would work best:

- Small to large jobs. Shotblasting is very quick
- Removal of coatings that are NOT elastic or rubber based.
- Very hard concrete. You can blast a floor open to expose aggregate rather than grinding.
- Prep for many different types of toppings
- Steel bridge decks
- Inside & outside of oil tanks (Vertical Blasting is also utilized in this application)
- Need to contain dust extremely well. Shotblasting produces virtually no dust if used with the correct dust collector.



# WHAT KIND OF SHOTBLASTERS ARE IN THE MARKET AND HOW DO THEY DIFFER?

Because shotblasting has been around for so long, you might think that there are hundreds of types to assess and look at. In reality, most shotblasters use similar technology. The main differences that are important to investigate are:

- 1) Direction operator is walking
- 2) Steering capabilities/technology
- 3) Build Quality

## Direction operator is walking

There are two main design groups - those machines where the operator walks in a backward motion, away from the blast pattern, and those machines that walk forward, over the blast pattern. Forward operation typically provides the operator more ease-of-use and greater control. The majority of shotblasters in the marketplace require the user to operate the machine while they walk backwards. The reason machines were originally engineered this way is not exactly clear. There are however some potential issues to consider when operating a machine with backward-motion design.

The first concern is an easy one to spot. Safety. Walking backwards restricts the operator's movements and creates visibility issues as well as increasing tripping hazards. Another concern is that the operator has to look over the machine to inspect the removal/prep quality of the blast pattern. SPE (Part of the Bartell Family of Companies) is one of the only few manufacturers who has designed their large shotblasters to allow the operator to walk forward. This results in better visibility of the operator's sight lines and blast texture. The largest benefit to the forward motion design is the increased safety produced for the operator.

# WHAT KIND OF SHOTBLASTERS ARE IN THE MARKET AND HOW DO THEY DIFFER?

## Steering capabilities/technology

Again, there are two main design approaches. Those machines that have hydraulic steering that allows the operator to spin on its axis to return the unit backwards beside the last blast pattern, and those that have a 'steer handle' that requires the operator to make large 's' pattern movements to turn the machine, and those that. Shotblasters, by design, are heavy units. They are designed with heavy steel and manganese metal construction in order to withstand the harsh process that is shotblasting. With any type of heavy equipment, maneuvering is a key element.

There are two main types of steering technology. One is a handle that extends off the back of the blaster and works like a pivot point, and the other is hydraulic. The advantage of the handle steering method is that it removes the need for mechanical steering and relies on the operators man power. The disadvantage is that it makes the machine design extended and difficult to move in small spaces. With hydraulic steering, there is a zero turning radius which gives the operator easy manoeuvrability in any type of space.

## Build Quality

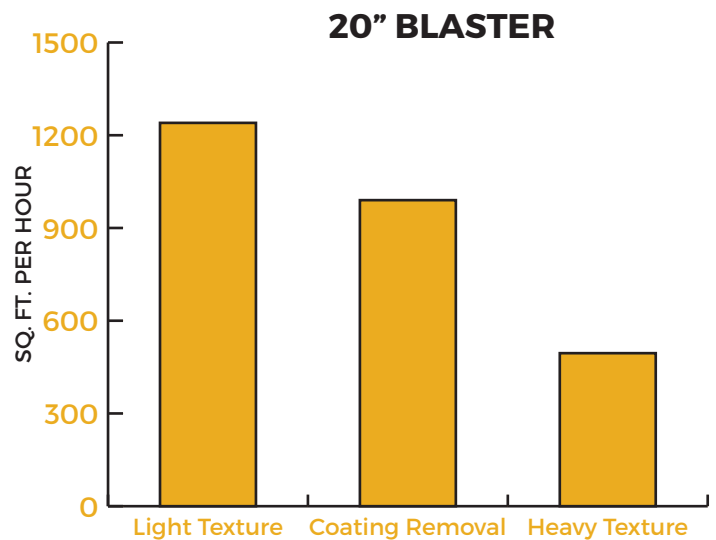
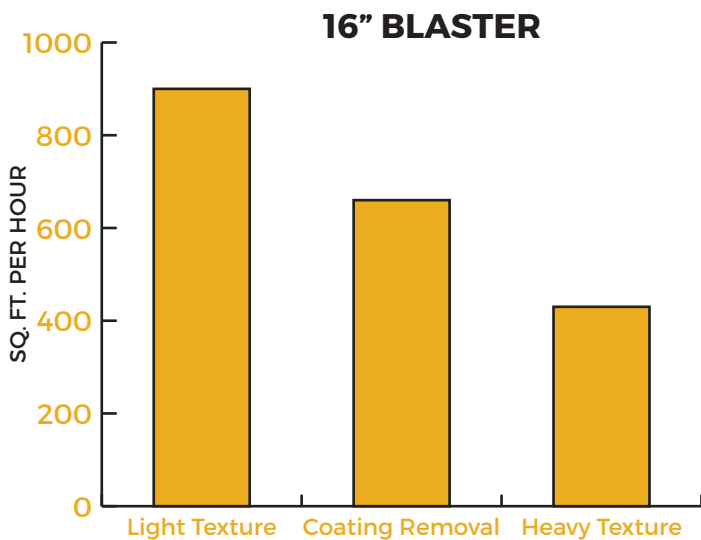
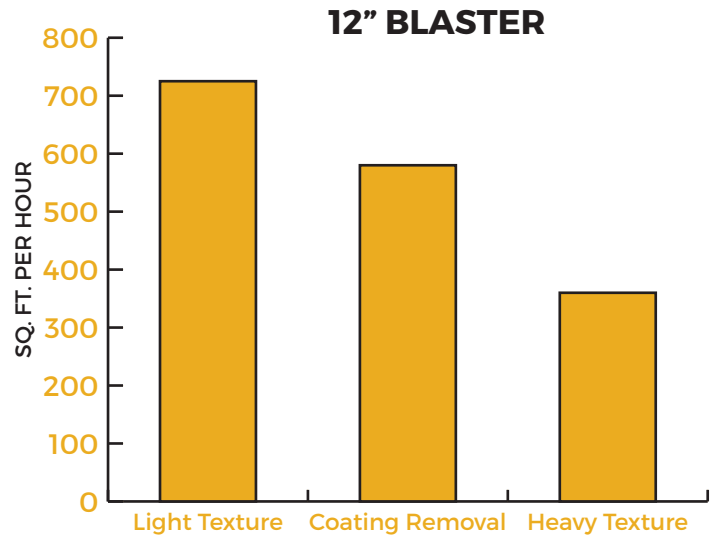
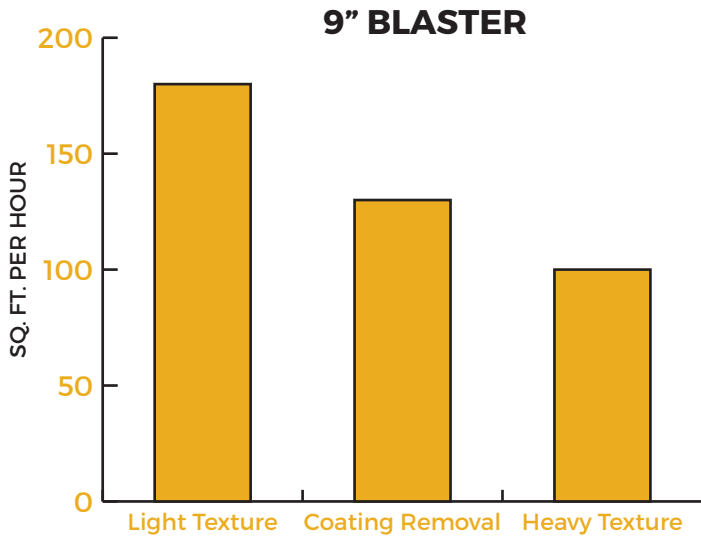
With most equipment, build quality is essential to consider when making a purchase. With shotblasters, it is no different. One of the most important factors to consider is where it is made.

Offshore manufacturing often provides an economical advantage, but overall quality may suffer. As a result quality control in the area of material composition, overall unit construction, and internal component design may suffer.

# WHAT SORT OF PRODUCTION RATES CAN YOU EXPECT?

When prepping any surface, the production rates depend on many different variables. How heavy or light the texture is, what is currently down, how hard to concrete is, what size of machine you are using, etc...

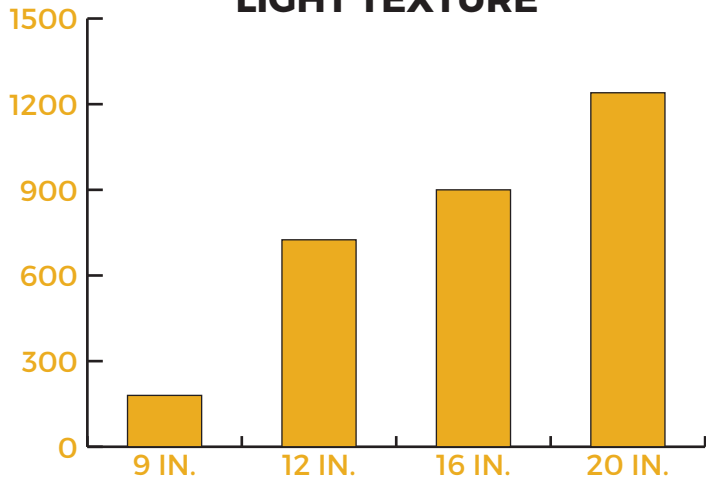
Here are some best case scenarios that will give you an idea of what a shotblaster can do.



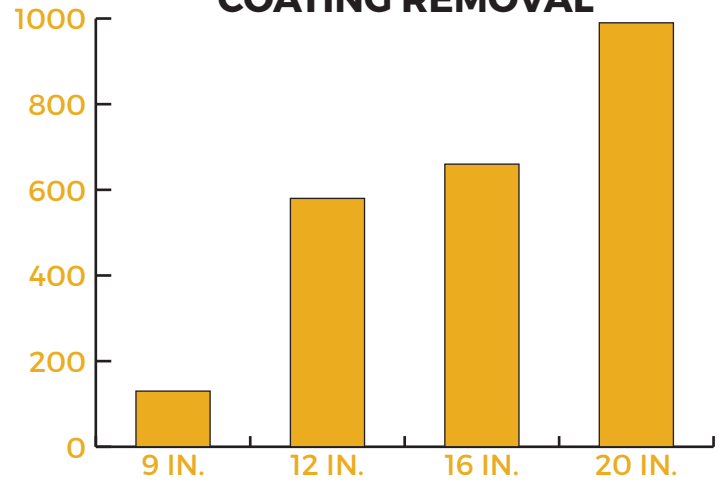


# WHAT SORT OF PRODUCTION RATES CAN YOU EXPECT?

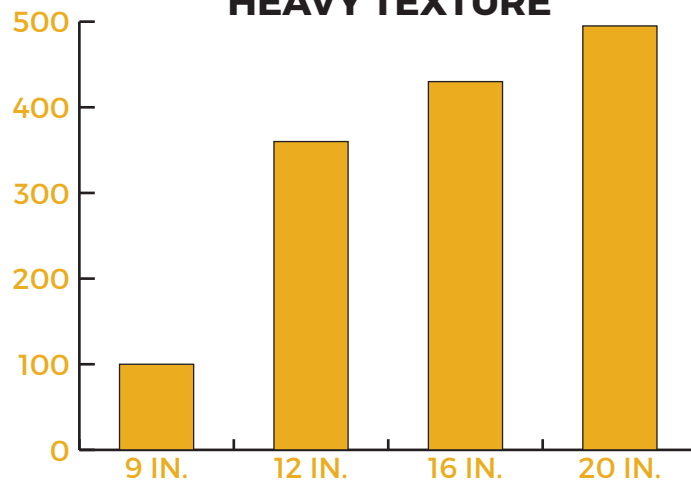
## LIGHT TEXTURE



## COATING REMOVAL



## HEAVY TEXTURE



# WHO WE ARE

The Bartell Family of Companies is a leading manufacturer of surface preparation equipment for the concrete industry. We specialize in manufacturing concrete grinders, shotblasters, scarifiers and floor strippers.

Our equipment is designed to address the needs of professional contractors and the wide range of projects they work on. We design our machines for both small projects that require easy transportation and extreme maneuverability – to larger machines that provide extremely high productivity output. Our equipment is designed to help the contractor get the job done quickly and efficiently.

## Design-Driven Machines Focused on the Contractor

The Bartell Family of Companies has over 30 years' experience in manufacturing contractor-focused equipment. Today thousands of concrete contractors over the world rely on their SPE equipment to get their job done right, done to spec, and done quickly.

## We Manufacture Equipment for:

### Floor Demolition Equipment

We manufacture both walk-behind and ride-on floor removal equipment for the professional contractor. Whether it is the removal of commercial VCT, carpet, ceramic tile or hardwood floor. Our machines are designed to be rugged, compact and highly maneuverable in tight quarters.

### Concrete Preparation Equipment

We manufacture both high performance **shotblasting equipment** and **planetary grinders** that can not only remove epoxy coatings and concrete toppings – but they can provide the right profile to provide the necessary bond for new applications. For concrete profile reduction projects like trip hazards, or concrete pours that need leveling our line of **scarifiers** provide the power and brawn needed to make light work of tough jobs.

### Concrete Polishing Equipment

Concrete polishing requires equipment that can provide weight and variable head-speed to meet the various levels of finish that may be required for commercial floor finishing. We manufacture both 3 headed and 4-headed planetary grinders that provide professionals with the flexibility and weight and power they need to achieve amazing results.



**WANT MORE INFO?**  
SEE NEXT PAGE FOR CONTACT DETAILS





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