

Soda-Blasting - THE FACTS

What is Soda-Blasting?

Soda-Blasting is a process where a surface is cleaned and coatings (of any kind) are stripped from a substrate (the surface beneath the material you are trying to remove). The Soda-Blasting compressor propels a bicarbonate-of-soda based media via compressed air onto the surface to be cleaned. This process gently removes the material without harming the substrate and can be done wet or dry.

When was Soda-Blasting developed?

Back in 1972, when New York State engineers were looking for ways to clean the Statue of Liberty, they had many concerns involving issues of the environment, waste disposal, and protection of the statues surface itself. Any use of any abrasive material to clean the surface would have been very harmful to the soft copper plates and pollution from the waste in the water surrounding the statue was also a big concern. Soda-Blasting was invented because it would not only do the job while having a negligible impact on the waterways and harbour, but it was also non-abrasive. Just like on the surface of the Statue of Liberty, this non abrasive action allows Soda-Blasting to be used on surfaces that currently popular abrasive media would damage. i.e.: aluminium, stainless steel, brick, stone, glass, fibreglass, wood, some plastics, seals, bearings, splines, radiator cores, transmission cases, and hydraulic cylinders. In some cases, using dry blasting, shutdown of electric motors and pumps is not necessary.

How does Soda-Blasting work?

The sodium bicarbonate used in the blasting process is a larger particle than the baking soda used in the food industry, although it is the same purity. The particles are propelled by compressed air through specialized blasting machines. Soda-Blasting particles remove surface contaminant by the energy released as the particles explode when pressure-driven into contact with the contaminant surface. The resulting energy release disrupts the contaminant surface and blows it away – thus leaving the substrate completely unaffected. Air pressures and the resulting Soda-Blasting particle velocity, can be varied from as low as 20 psi (pounds per square inch) on soft bases, to 150 psi or more on hard surfaces. The operator sets the air pressure depending on the nature of the substrate and the type of contaminant to be removed.

Is water used as part of the Soda-Blasting process?

Water is often not used as part of the cleaning process. Water is sometimes used as a dust suppressant. It is sometimes used to activate the baking soda to allow its cleaning qualities to be realized as well as it's virtues as a blast media. For softer substrates such as wood, water reduces the cutting action by as much as 20 to 30 percent thus preventing substrate damage. When water is used with the Soda-Blasting process it is not used to propel the blast media but to provide a moist surface to prevent dust, to activate the baking soda and/or to reduce cutting action of soda. The result of this is that only a tiny amount of water is used in comparison to water blasting/ pressure washing. When it is appropriate to use water in the Soda-Blasting process, the water literally trickles out the end of the Soda-Blasting hose.

Examples of where water would and would not be used are:

- Boat hull cleaning and preparation – no – dust and paint / anti-foul are contained in a purpose built plastic tent and disposed of in environmentally safe way. Not using water near public waterways is a major advantage of cleaning boats with Soda-Blasting.
- Food preparation equipment cleaning - sometimes – activating the cleaning quality of baking soda is generally advantageous. Water is also used after blasting to wash soda and contaminant remnants away.
- Graffiti cleaning – generally no - may be used as a dust suppressant in confined areas.
- Vehicle paint stripping – no – other than to wash away soda remnants.
- Monuments – generally no – unless required as a dust suppressant.
- Masonary – generally no – unless required as a dust suppressant.
- Machinery – generally no - other than to wash away soda remnants.

Is Soda-Blasting better than sand or bead blasting?

Sand and bead blasting remove contaminants by wearing away the surface. It is unavoidable that whilst doing this, the underlying substrate is also worn away to some degree. Depending on the substrate material and what it is being used for, it is often the case that the substrate is damaged. By contrast, Soda-Blasting particles remove contaminants by the energy released when the particles explode as they come in contact with the surface to be cleaned. This results in no damage to underlying substrates.

Soda-Blasting does not activate metal. By contrast, sand and garnet blasting do. Activating metal causes it to react to its surroundings. In the case of ferrous metals, they rust. The result is that ferrous metals that have been sand blasted will require immediate coating to prevent rusting. By contrast, metal that has been cleaned using Soda-Blasting will rust at a much reduced rate and can be coated days after blasting rather than hours.

In the manufacturing of a metal object, sometimes an engineer will specify that metal should be sand blasted using a specific grade of blast media. The reason for sand blasting is to create a specific surface profile. Except in cases of rusting, sand blasting is generally not specified because it is the best method of cleaning the metal but rather for its ability to profile. Soda-Blasting will not create a surface profile as the metal will not be affected by the process. In this case, it is appropriate to sand blast the metal rather than use Soda-Blasting.

Is there any heat build-up as there is in sand blasting?

There is no heat build up when blasting with sodium bicarbonate. Since there is no heat build up, warping is eliminated.

Is there any risk of fire with Soda-Blasting?

Its non-flammable properties allow sodium bicarbonate to be used for cleaning in the petroleum industry where other methods could not be used. Static electricity is an

unavoidable by product of using high pressure air to propel blast media. Whilst Soda-Blasting reduces the amount of static produced, there is still a need to properly ground a metal object. However, sodium bicarbonate does not produce electrical sparks the same way that sand striking metal does. This is an obvious advantage where flammable gases and liquids might be present.

Is Soda-Blasting good at cleaning engines and greasy deposits?

Sodium bicarbonate breaks down hydrocarbons, which makes it an excellent method of cleaning engines and engine parts, or other areas where oil and grease are present.

Is rusting a problem with Soda-Blasting as it is with sand blasting?

A major advantage of Soda-Blasting is the fact sodium bicarbonate does not break the surface tension of metals, thus the problem of flash rusting is eliminated. Bicarbonate of soda is also a rust inhibitor which leaves a protective coating on the surface being blasted. This allows for time to pass before the surface has to be repainted. This is unlike a sand blasted surface that must be repainted immediately.

Would soda-blasting work on graffiti removal?

Absolutely! The removal of graffiti is a difficult and costly operation using just about any conventional method. Soda-Blasting provides a very viable alternative to these methods. Since it uses a non-abrasive media it can be used to remove graffiti from painted surfaces, in some cases without damage to the base paint. On wood, brick, sandstone, marble and other sensitive surfaces, it will remove the graffiti without leaving any evidence of its use behind. With the use of a wet blasting system, you would be providing a dust free method of cleaning. Naturally, care must still be taken when setting the pressure, airflow, and media flow as damage can still occur from improper application. Testing in a non-visual area is still a good idea.

What about preparation, clean up and waste disposal?

Preparation is usually minimal as the soda causes no damage to the surrounding environment and leaves very little residue as it disintegrates on impact. Masking or tenting is always advised if there is sensitive equipment nearby. Sodium bicarbonate has a pH of 8.6 and can be disposed of in most wastewater treatment systems. Disposal regulations should always be followed, as this will vary depending on the contaminant being removed. Paint chips and other material removed can be separated by dissolving the spent media and using a filtration system. Normally only the hazardous material removed needs to be disposed of in special areas. Sodium bicarbonate can be further neutralized by either a vinegar/water solution, citric acid solution (less than 3% acid to water) or just water dilution. The Soda-Blasting method is endorsed by the USDA (United States Dept of Agriculture) and the FDA (Food & Drug Administration) and is Kosher approved.

Is protective clothing and breathing apparatus required like for sand blasting?

A protective mask is not usually necessary unless working in a confined space or tented area. As to protective clothing, there are no special requirements. Soda-Blasting operates at pressures of up to 150 pounds so it is a good idea to count on long sleeves and full

length trousers/pants to protect against blow back or possibly an error in aim. Ear protection and safety glasses or goggles must be worn at all times while blasting is taking place. Ear and eye protection should also be provided to people working in the immediate vicinity.

Do areas like glass or chrome trim need to be masked off like sand blasting requires?

Very rarely. In fact, unlike the abrasive property of sand, bicarbonate of soda does not harm window glass or the rubber seals around the glass. However, it may be harmful to certain types of plastic trim, because one is using 150+ pounds of pressure in some instances. For this reason, it is sometimes advisable to remove or protect those possible areas. Other areas that may need protection; are wood, soft plastic, membranes and electrical components.

Is Bicarbonate Soda environmentally safe?

Yes, otherwise known as baking soda and used in everyday cooking; this product is also used to settle an upset stomach. Its alkaline properties could harm plants and vegetation if not rinsed properly and all areas should be washed down with water during the clean up process. All remnants of the paint or other contaminants may need to be collected or filtered. But the soda itself has no impact on the environment and is completely safe.

How do I remove the left over paint, grease or other waste?

Clean up is easy. The soda dissolves in water when you spray the area down. What is left behind will be the waste product. Usually this waste is in such small particles that when it dries, the dust can be vacuumed up. Or, by using filter cloth or an old sheet under a small project, the waste will stay on the sheet. Disposal of waste may fall under hazardous material classification, especially when dealing with old lead based paints or oil, grease, etc. For this reason, clients will need to check with local regulations in order to make sure that any disposal will comply with local regulation regarding these materials. Most local councils have hazardous disposal sites open to the general public, specifically designed to handle waste oil, paint, and other materials that would fail under the hazardous waste classification.

What about noise?

The Soda-Blasting process is noisy as a large compressor is forcing air and media out of a relatively small nozzle. Soda-Blasting operators are required to wear ear protection at all times while blasting and anyone else in the immediate vicinity should do the same.

How much does it cost?

Soda-Blasting is usually charged at an hourly rate. Any job that takes less than one hour is still subject to a one hour charge as travel and preparation will likely be included. Marine vessels are often charged by the size and may include some preparation and cleanup time as all blast material is contained. The many benefits of Soda-Blasting including but not limited to the quality of surface finish, make the operation cost effective in pretty much all cases. Reduced costs may apply when items are brought in to our Fort Lauderdale workshops for blasting as no travel time will be involved.

How long does it take?

It is hard to estimate the length of time required to Sodablast a project without any details of the job. However, Soda-Blasting, in most applications, reduces the normal cleaning time significantly – in some cases in 1/10th of the time. Preparation and clean up are minimal thus reducing the completion time further. Please feel free to use our Request for Quote form to specify your project details and to get a job estimate.

Can Soda-Blasting cause damage?

If used correctly by a trained operator, the likelihood of the Soda-Blasting causing damage is highly unlikely. As part of their training, all our operators are taught to evaluate the surface to be cleaned, as well as surrounding surfaces carefully, and to blast a test patch if required. Soda-Blasting has been operating in the U.S for several years and there are excellent resources available for reference. Using Soda-Blasting on a surface that is softer than the soda, i.e. some plastics, soft wood, leather, vinyl, etc., may cause scratching and surface removal. Soda-Blasting operators will always make enquiries to establish whether certain surfaces are suitable for the process.

