

Cleaning with Dry Ice Will Improve Both Your Industrial Productivity and Environment

This industrial cleaning system, uses dry ice particles propelled by compressed air to remove contamination from surface areas such as metal, plastic, rubber and glass. Upon impact, the solid dry ice expands, and then converts to a gas. This results in a clean, dry, undamaged surface, with no secondary waste to clean. It's a process so versatile; it can remove dust from delicate electrical wiring or layers of heavily encrusted resins from various industrial processes.

An Environmentally Safe Service

The dry ice particles instantly and safely sublime, turning from solid to gas on impact. By using this process, you will reduce harmful air emissions from toxic chemicals and ultimately reduce employee health risks through exposure to hazardous solvents. With the Environmental Standards becoming more and more strict, this process is very well accepted by all standards of the regulations.

How does it remove contaminants?

It depends on what you're cleaning. If you're removing a brittle contaminant such as paint, the process creates a compression tension wave between the coating and the substrate. This wave has enough energy to overcome the bonding strength and literally pop the coating off from the inside out. If you're removing a malleable or viscous coating such as oil, grease, or wax, the cleaning action is that the dry ice creates small explosions in a sweeping effect to push the contaminant in your desired direction.

How does this differ from how sandblasting works?

Blasting with sand, corn, soda, glass bead etc. are all abrasive, where dry ice is not. All of these media chisel away at the substrate where the dry ice will do no damage at all.

What happens to the contaminant?

With dry ice, the dirt moves from an undesirable area to an area where you can better deal with it. If it is a dry substance, it generally falls to the floor where it is swept away or vacuumed during normal maintenance. If it is a wet substance like grease or ink, you take a methodical approach similar to hosing down a driveway. You start at one end and guide the grease to the other end where it is vacuumed or easily picked up.

Can the temperature of the CO2 damage what I am cleaning?

No. Generally the cleaning process happens quickly enough that a quick pass with the blast stream and the contaminant is removed. When a longer dwell time is required to clean the surface, then you may witness some condensation.

In many cases, where the substrate is heated, the cleaning process actually works better, for the reason that the difference in temperature causes a more vigorous transition when the dry ice sublimates into a gas.

Are there different types of Dry Ice Cleaning Methods?

Yes, there are many variations that are dependant of the application at hand.

Generally speaking, pellets are more effective with hard to remove contaminants as the greater mass behind each individual particle has greater energy to more readily travel all the way through the contaminant to remove it. Because the granules are smaller than the pellets, they produce a significantly greater number of surface impacts and are therefore more efficient at cleaning lighter contaminants

However there are 2 types of media used; dry ice pellets, which are 3mm in diameter with varying lengths, and granulated block or nuggets depending on the type of equipment, utilized.

How much air will I need to clean effectively?

Your cleaning requirements, generally determine how much air you will need as well as the air pressure required removing the contaminant.

In order to clean electrical components, you may use as little as 30psi at 25cfm. Contaminants that are very difficult to remove may require 200psi at 375cfm.

Generally 80-90psi will clean 80% of the proven applications to date.

What are the best cleaning applications for CO2?

Dry Ice Blast Cleaning has proven itself in virtually every industry in one cleaning application or another. This process eliminates the need for masking and disassembly. We have achieved outstanding results cleaning production equipment, food processors, printers, and electrical components. Competing processes such as grit blasting or solvents often present disposal problems or health hazards.

What are some examples of applications where CO2 does not work well?

-If you require a Surface Preparation Rating of 4 or higher, Dry Ice Cleaning will not work for you.

-Because dry ice blasting is primarily a line-of-sight cleaning process, if you can't see what you need to clean, you probably can't clean it with dry ice.

Can CO2 be used to remove paint?

Yes, however, the removal rate is dependent on a great many factors including: the underlying surface profile of the substrate; the thickness of the coating; the adhesive bond strength of the coating; and the cohesive strength of the coating (generally a function of age). Paint removal rates can vary dramatically, from 300 square feet/hour down to 1 square foot/hour. Generally speaking, if you have concerns with contamination, toxic substances, waste disposal, or substrate damage, dry ice blasting should be considered as a cleaning option. Otherwise, grit blasting is probably a more efficient method for paint removal.

Can CO2 be used to remove rust?

It tends to remove the loosely adhered oxidation and salts, but will not remove the deeply adhered oxidation. You will have a SP rating of 3 with no residue leftover after you have cleaned it, but you would if you use another abrasive method. In order to achieve white metal, you have to remove the surface metal, something the dry ice blasting process cannot do.

How does CO2 replace traditional media blasting methods?

If the results that you require can be achieved by the Dry Ice Cleaning process you will save on your clean up and on your disposal of the final contaminant.

You will also have a much less negative impact on the environment and the people in it.

What are the primary safety issues relating to the use of dry ice blasting systems?

- Since the atmospheric temperature of Dry Ice is -79°C , we recommend you never handle it directly without gloves.
- Carbon Dioxide is heavier than air, which will cause it to displace oxygen in low-lying areas; generally this is not a problem since you are also introducing a very large volume of air through the blast stream.
- Due to the large amount of air going through the blasting gun nozzle, double hearing protection is required for anyone working within 50ft of the cleaning area.
- Each project will require appropriate PPE (Personal Protective Equipment) according to OSHA (Occupational Health and Safety Act) standards.

Does the process generate static electricity?

Yes. Any dry air process will generate static electricity and dry ice blasting is no exception. As long as both the blasting unit and the piece you are blasting is properly grounded, you are unlikely to have static discharge problems.

Is it okay to blast in an enclosed area?

Yes, with proper ventilation. Because CO2 is 40% heavier than air, placement of exhaust vents at or near ground level is recommended when blasting in an enclosed area. In an open shop environment, existing ventilation is sufficient to prevent CO2 build-up. In a confined space application, a Self Contained Breathing Apparatus (SCBA) may be required.

