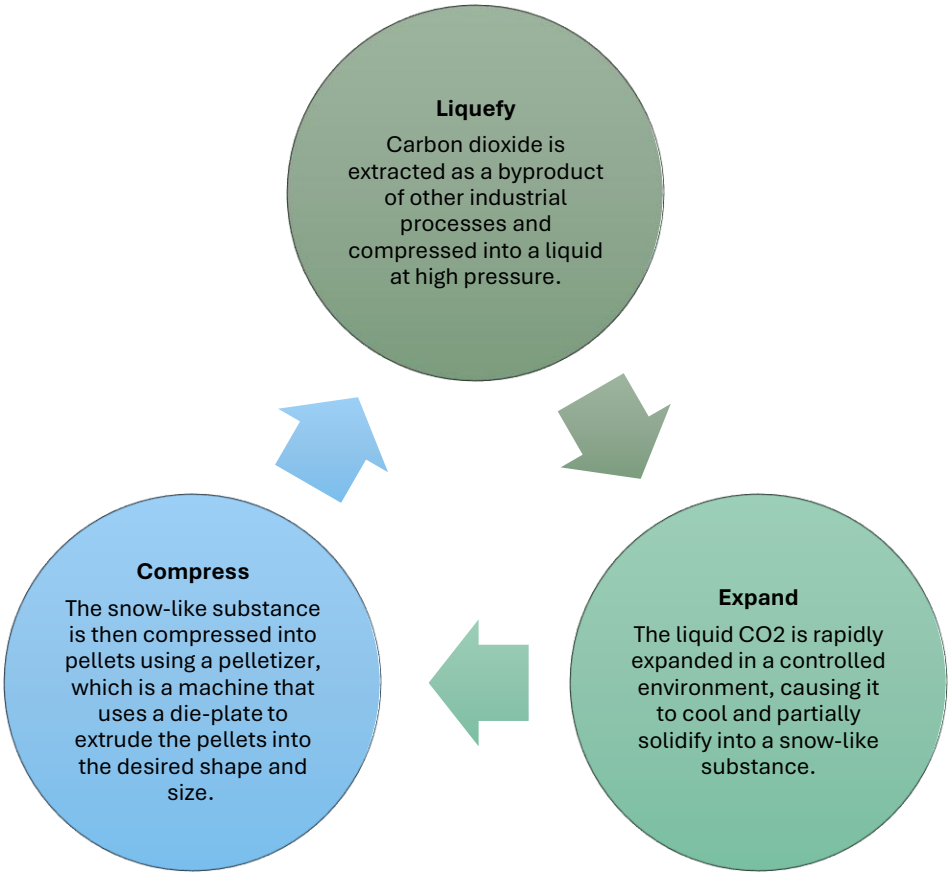
Dry Ice 101:

An introduction to Dry Ice Blasting

At Dryex, we are committed to empowering our customers with knowledge to help them feel confident in the dry ice blasting industry. To support this, we have created a comprehensive "Dry Ice 101" brochure that addresses the most frequently asked questions.

What is dry ice blasting?

Dry ice blasting is an innovative cleaning technology that uses dry ice pellets to remove unwanted contaminants from various surfaces. It's an eco-friendly and non-abrasive alternative to traditional cleaning methods. Perfect for areas where water or chemical cleaning isn't suitable, like electrical components or food processing spaces.



Different Applications:

Dry ice blasting is well-suited for a wide range of industries due to its non-abrasive, non-conductive, and environmentally friendly nature. Industries that benefit most from this cleaning technique

Power Generation

Maintenance of turbines, generators, and boilers.

Restoration

Soot removal from fire damage and mold remediation.

Marine

Removing barnacles, surface rust, and grease from ship components.

Printing

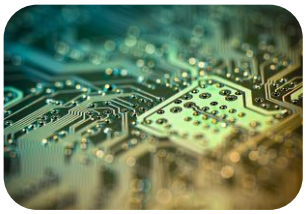
Cleaning ink rollers and presses to ensure print quality.

Manufacturing & Industrial

Cleaning molds, machinery, and production equipment in automotive, plastic, rubber, and food processing, among others.

Aerospace

Safe removal of paint and deposits from aircraft parts.



Electronics

Cleaning delicate circuit boards and electrical panels.

Medical & Pharmaceutical

Sterile cleaning of production and packaging equipment.

Dry ice blasting is particularly valuable in industries where traditional cleaning methods could damage equipment, leave residue, or require downtime for disassembly

What Industries is dry ice blasting not suitable for?

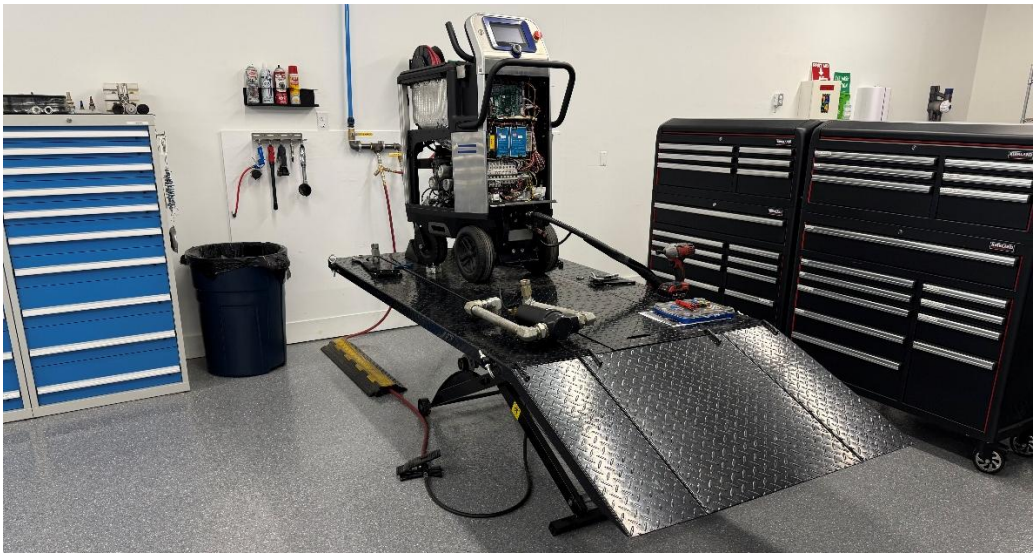
Applications Involving Highly Delicate or Soft Surfaces
Thin or fragile glass surfaces. Certain fabrics or soft polymers.

Areas Requiring Removal of Hard or Embedded Coatings
Dry ice is a non-abrasive cleaning method and is ineffective against very hard coatings, like epoxy, thick rust, and hardened concrete or adhesives.

Cleaning Oil-Soaked Porous Surfaces
While dry ice blasting removes surface contaminants, it cannot penetrate deeply into porous materials like absorbent concrete or wood soaked in oil, and deeply embedded stains or grease (kitchen grease)

New vs Refurbished

At this point it is good to consider pricing differential of new vs refurbished dry ice blasting equipment. Once a new machine is used once, it is now a used piece of equipment. The differential between the two can cost you thousands, even tens of thousands depending on the equipment you purchase. The savings can be substantial.
Dryex inventory consists of both older and newer machines.
Low hour machines are excellent value for a company looking to save money. At Dryex, all our equipment gets a full inspection and testing. We replace any components that are worn and can cause the machine to function poorly. We carry our own warranty and give our customers a warranty repair credit. This warranty credit varies depending on the value of the blaster.



What do I need to get started?

Step 1: Dry Ice

You will need to source dry ice. Contact your local industrial gas suppliers (examples: Airgas, Praxair, Air Liquide, Linde, or others.) You will want a quote on 500lbs tote, 3mm rice pellets**. It is very important you receive FRESH dry ice.** Blasting with fresh ice can improve the performance and end result by up to 30-40% in time and money.

Dry ice will sublimate, meaning it turns from a solid straight into a gas. If you purchase a 500 lb tote of dry ice and do not use it, you will lose a small percentage each day due to off gassing. This is why you need to order your dry ice as needed and schedule your work accordingly.

A common assumption we get from new clients is that they will produce their own dry ice pellets. The cost and infrastructure required for dry ice production is significant. The majority of dry ice blasters order their dry ice from a gas supplier. A very small amount of blasting contractors produces their own dry ice.

Step 2: Air compressor

The size of the air compressor required depends on the specific model of the blaster and the application. Generally, 100-120CFM (25-30HP) for an average blasting machine will be sufficient. For industrial or high-pressure models, a compressor capable of delivering 200–300+ CFM may be required.

Along with having sufficient compressed air, we need to ensure the air is cool and dry. While most shop air compressors will have a built-in air dryer, diesel tow behind compressors generally do not. In this case, we would require an aftercooler running between the compressor and the dry ice blaster to cool the hot compressed air and remove any moisture from the blast line. This is vital to ensuring the dry ice blasting process works as it was intended.

Step 3: Choosing the right equipment

Each model of dry ice blasters its targeted for a specific application. There is not one machine that does everything. At Dryex, we take the time and initiative to understand our customers unique applications and recommend a machine that's suitable, while taking budget into consideration.

1. Cold Jet

Cold Jet Aero Series:
Most common choice for industrial cleaning, including equipment, molds, and surface preparation. The Cold Jet Aero 75, 40 and 80 are among the most reliable and productive machines in the world.

Cold Jet i^3 MicroClean:
Best suited for delicate cleaning, such as electronics, medical devices, and detailed work. Its lightweight, portable, and designed for precision cleaning.

Cold Jet Aero 2 PCS 60:
Cold Jets newest release. Delivers advanced and customizable cleaning. Features Cold Jets Patented Particle Control System (PCS) to create specific dry ice particle sizes.

Cold Jet Aero 2 PLT 60:
Best suited for advanced heavy duty industrial cleaning

2. IceTech (Acquired by Cold Jet)

IceTech Xtreme 40 & Elite 20:
Mostly used for heavy industrial use in manufacturing and automotive industries. Features high performance and robust design. Included Ice Tech nozzle kit makes this machine an exceptional value and widely adaptable to different cleaning applications.

3. Kärcher

Kärcher IB 7/40 & IB 15/120:
Used for general industrial applications and restoration projects. Another excellent choice for our automotive customers.

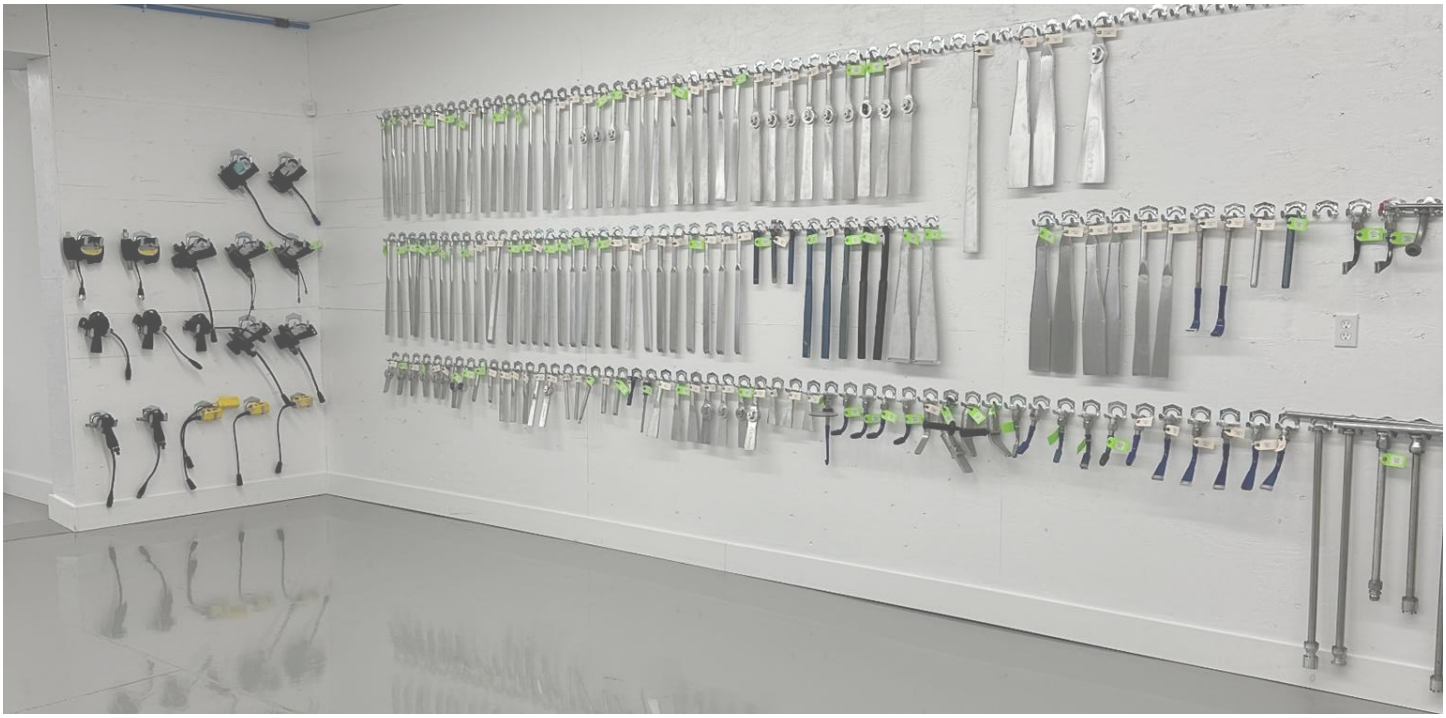
Factors to Consider When Choosing a Dry Ice Blaster:
Application: Are you cleaning delicate surfaces (e.g., electronics) or heavy-duty industrial equipment?
Portability: Do you need a compact and portable unit, or will the machine be installed in a specific environment?
Air Compressor Requirements: Ensure your compressor meets the blaster's ***CFM*** *and* ***PSI*** *needs. Dry ice blasting, like other media blasting requires sufficient air for the cleaning process.*
Budget: New models like Cold Jet PCS 60/PLT 60 will cost more.

Step 4: Nozzle Selection

Dryex carries a large inventory of refurbished Cold Jet Blast Nozzles.
The main differences between the nozzles lie in their shape, size, airflow, and intended use.

Select nozzles based on your cleaning needs.

Straight Nozzles: For narrow, focused cleaning.
Fan Nozzles: For large surface areas and gentle cleaning.
High-Performance Nozzles: For tough contaminants like rust and bitumen.
Angled Nozzles: For hard-to-reach areas.
Precision Nozzles: For delicate work (e.g., electronics).
Variable Fragmenting Nozzles: For switching between focused and more delicate cleaning.



Factors to Consider When Choosing a Nozzle:
Material Being Cleaned. Delicate surfaces require fan or precision nozzles, while robust materials can handle high-performance or straight nozzles.

Surface Area, large areas benefit from wide blast swath nozzles

Contaminant Type. Thick, tough coatings may require high-performance nozzles, whereas light contaminants might only need fan nozzles.

Airflow and Pressure. Ensure that the nozzle is compatible with your compressor's capabilities and suitable for the application.

Step 5: Business plan

All though this doesn't relate to the ice industry specifically, its important to have a good business plan to succeed at dry ice blasting.

How much will this cost?

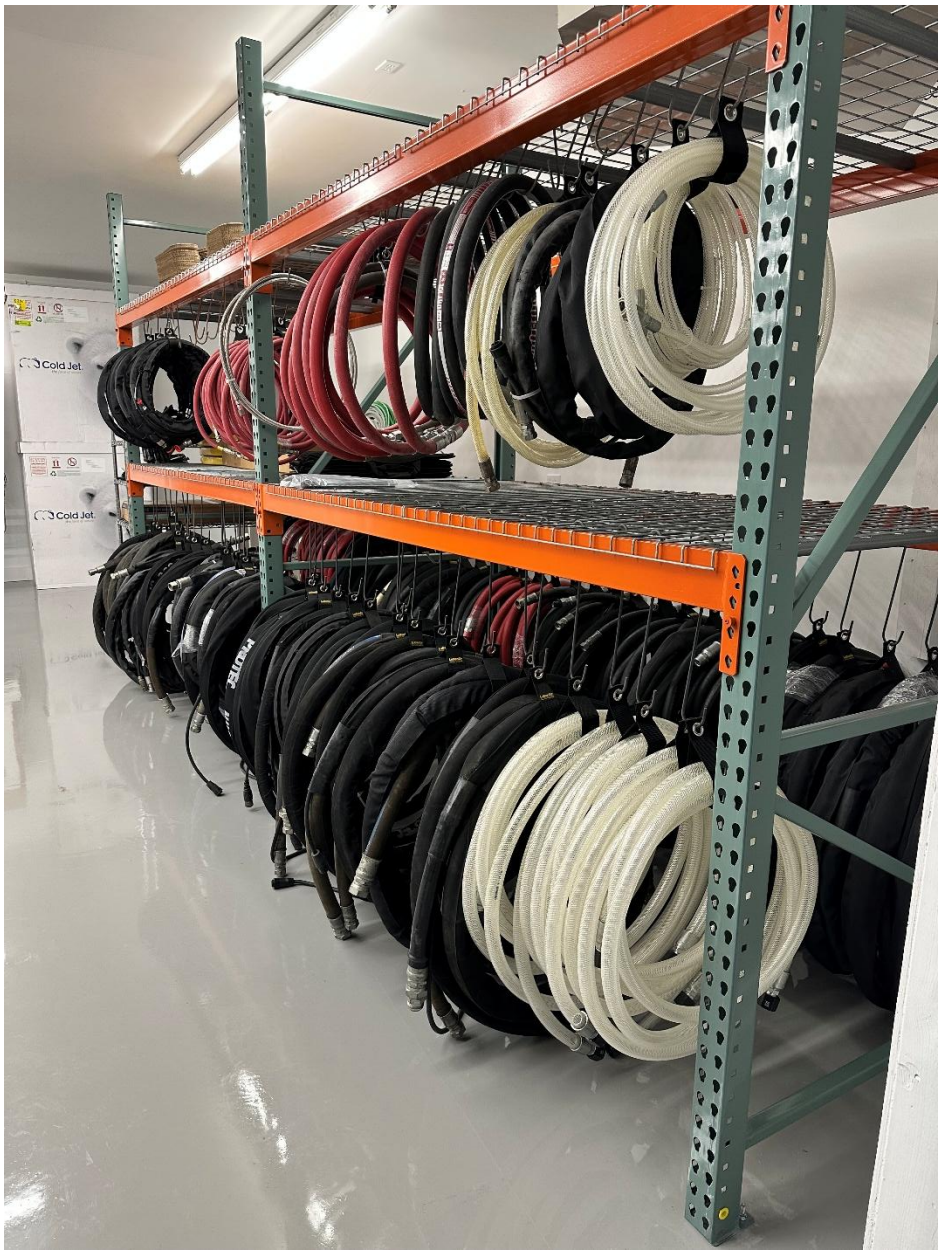
The cost of getting started with dry ice blasting depends on several factors, including the type of equipment you choose, the necessary accessories, and operational costs. For example, a general contractors start up cost will be around $30,000 USD.

Additional expenses to consider:
Air Compressor: many blasters choose to rent a diesel compressor at the outset. This can save money on initial costs and can be rented only when you have work scheduled. Keep an eye out for sales of used, well maintained compressors with low hours.

Aftercooler/Dryer: There are many aftercoolers on the market. At Dryex we carry Cold Jet P400 Aftercoolers and Nu Ice CA500. The cost can vary, expect anywhere from $1,500 USD (for unbranded) to upwards of $8,000+ USD. The average price of a refurbished P400 Cold Jet Aftercooler is $4,300-4,500.00 USD

Nozzles and additional hose length: Budget $1,000–$2,000 + each for nozzles, depending on type (straight, fan, precision, etc.).

Dryex carries a variety of hoses both used and new. We make our own Urebrade Blast hose which is light weight. We also have a large inventory of Cold Jet rubber blast hoses. Expect a cost of $800-$1,800 USD depending on size and condition.



Start with the necessities, build nozzle and hose inventory as you need.

Operating Costs: At present, dry ice typically varies in price $0.60–$1.00 per pound, depending on your location and supplier. The average consumption is about 1–3 pounds per minute, depending on the application. Routine maintenance and part replacements (e.g., pads and rotors) may cost $2,000+ as needed.

What is the upkeep/maintenance cost? How many hours until maintenance is needed?

With proper care and maintenance, the dry ice blasting equipment is built to last. The most common refurbishment involves replacing the poly pressure pad and feed rotor, which typically costs around $2,000 in parts. However, it is difficult to estimate the exact number of operational hours before replacement is necessary, as it depends heavily on usage practices. For example, we have encountered equipment with minimal hours of use, but significant damage caused by improper handling—such as using welding rods to force ice into the hopper. This practice will damage the polymer pressure pad, disrupting the airflow and ice flow through the machine.
Ultimately, the longevity of the machine and the interval before any refurbishment is required depend on how well the equipment is cared for and maintained. Proper usage ensures optimal performance and minimizes wear over time.

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