



Dry Ice Blasting for Bottling Lines

Fillers, cappers and conveyors cleaned dry and in place

Bottling and canning lines run fast, and they collect residue just as fast: sugar and syrup, beer and wine, label glue, lubricant, glass dust and general grime on fillers, cappers, labellers, rinsers and conveyors.

Most lines are cleaned with CIP for product contact parts, and with foam, hoses, brushes and scrapers for everything else. That works, but it puts a lot of water and chemicals onto drives, bearings and electrics, and hardened sugar and glue often need hours of scraping.

Dry ice blasting offers a different approach for the exterior of the line. In this guide I want to explain how it works and where it delivers real advantages for breweries, distilleries, soft drinks and other bottling operations.

What is dry ice blasting?

Dry ice is solid carbon dioxide (CO_2) at around -78.5°C . Instead of melting, it turns straight back into gas when it warms, a process called sublimation.

In dry ice blasting, small pellets of this material are fired at a surface using compressed air. Three things happen on impact:

- **Impact energy** breaks up and dislodges the deposit.
- **Thermal shock** makes the residue brittle and weakens its bond to the surface beneath.
- **Sublimation** turns the pellet into gas, which expands rapidly and lifts the residue away from behind.

The pellets disappear into the air. The only thing left to collect is the residue that has been removed. There is no water, no detergent and no blast media to clean up afterwards.

Where dry ice blasting really outperforms traditional cleaning

1. It removes glue and sugar build-up

Label glue, dried sugar and syrup are some of the hardest deposits on a line. Thermal shock makes them brittle and the expanding gas lifts them from star wheels, guides, glue rollers and conveyor frames.

2. It is a dry process

Dry ice adds no water. Drives, bearings, sensors and electrics stay dry, there is no standing water to harbour bacteria, and no drying time before restart.

3. No chemical residue

Dry ice is made from CO_2 and leaves no residue of its own. It does not replace your CIP or sanitation where your plan requires it, but it removes soil that sanitisers would otherwise struggle to reach.

4. Cleaning in place

Fillers, cappers, labellers and conveyors can be cleaned where they stand, with only guards removed. There is less dismantling and fewer changeover errors.

5. Safe around electrics and sensors

Dry ice is non-conductive and leaves no moisture, so it can be used near motors, photo-eyes, encoders and control panels where water would be a risk.

6. Less downtime

No dismantling, no drying and no scraping mean shorter cleaning windows and more production time.

Environmental credentials

Drinks producers are under pressure to cut water use, effluent and chemicals. Dry ice blasting can help on several fronts.

- **Recycled CO₂.** The CO₂ used to make dry ice is typically recovered as a by-product of other industrial processes, such as fertiliser production and fermentation, rather than produced specially. Blasting returns it to the atmosphere it would otherwise have reached, so the process adds no new CO₂ of its own.
- **Water savings.** A dry process uses no water on the jobs it replaces.
- **No contaminated effluent.** No detergent-laden water to treat or pay to dispose of.
- **Fewer chemicals on site.** Less purchase, storage and COSHH handling.
- **Longer equipment life.** Dry bearings and clean drives wear less.

At a glance

	Foam, hoses and scraping	Dry ice blasting
Water introduced	Large volumes	None
Chemical residue	Must be rinsed off	None from the ice itself
Drying time	Often hours	None
Dismantling	Often needed for glue and sugar	Usually cleaned in place
Electrical components	Must be protected from water	Non-conductive, no moisture
Secondary waste	Contaminated wastewater	Only the removed residue

Typical applications on bottling and canning lines

- **Labellers:** glue rollers, pallets, grippers and label magazines.
- **Fillers and cappers:** exterior surfaces, frames, star wheels and guides (product contact parts follow your CIP).
- **Conveyors:** chains, side guides, frames and lubricant build-up.
- **Shrink wrappers and case packers:** film and glue residue.
- **Pasteurisers and warmers:** external scale and build-up.



- **Brewhouse and production areas:** vessel exteriors, platforms and walls.

Our setup at Vortex Ice Labs, and why it matters for drinks producers

Vortex Ice Labs is a fully mobile service. We bring a complete, self-contained system to site, so there is no reliance on your own air supply. The air passes through four stages before it reaches the surface.

- 1 **Compressor.** This supplies the large, steady volume of air needed to drive the pellets. Consistent flow means consistent cleaning, with no drop in performance halfway through a job.
- 2 **Aftercooler.** Compressing air heats it, and hot air carries a lot of moisture. The aftercooler cools the air straight away so that moisture condenses and can be drained off. Without it, water would freeze inside the blaster, causing pellets to clump and block, and could be sprayed onto the surface being cleaned.
- 3 **Filtration.** Filters then remove the remaining water, any oil carried over from the compressor, and fine particles. On a drinks line this is critical. The point is to leave surfaces cleaner than before, not to deposit a film of oil or moisture.
- 4 **Dry ice blasting unit.** The pellets are metered into the conditioned airstream and delivered through the hose and nozzle. Pressure, ice feed and nozzle choice are adjusted for each task, from sensors and fine guides to heavy glue build-up on labellers.

Every stage protects the result. Clean, dry air means a clean, dry line.

Working safely, and where it fits

Dry ice blasting is a powerful tool, and it should be planned like any other cleaning activity on a drinks site.

- **Ventilation.** As the ice sublimates it releases CO₂ gas. In enclosed or poorly ventilated areas this has to be managed with suitable airflow and, where needed, gas monitoring.
- **Noise and PPE.** Blasting is loud, and operators use hearing protection, eye and face protection, and insulated gloves. People nearby need to be kept clear of the work area or protected too.
- **Containment.** Removed residue can travel, so we plan the work area, protect product, packaging and open containers, and clear up afterwards.
- **Your hygiene procedures.** Dry ice blasting is excellent at removing soil and build-up. It sits alongside your existing cleaning and sanitation regime rather than replacing it. Any change to cleaning methods should be reviewed against your HACCP plan and verified in the usual way, for example with ATP swabbing or visual standards.

Used this way, it is most valuable for deep cleans, shutdowns, labeller glue build-up and water-sensitive equipment.

Final thoughts

Drinks producers need lines running and hygienic. Traditional wet cleaning will always have a role, but it brings water, chemicals, dismantling and downtime with it.



Dry ice blasting removes many of those trade-offs. It cleans in place, leaves surfaces dry, and gets the line running sooner.

If you would like to see how it could work on your line, I would be happy to arrange a demonstration or trial clean on site. Get in touch with us at Vortex Ice Labs.

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