



Dry Ice Blasting for Packaging Machinery

Remove glue, film and dust build-up without stopping for a day

Packaging machines pick up hot-melt glue, film, label residue, carton dust and product. It builds up on sealing jaws, rollers, guides, glue systems and frames, and it causes jams, poor seals and stoppages.

Most cleaning still relies on scrapers, solvents, heat guns and taking parts off. It works, but it is slow and fiddly, solvents bring fumes and COSHH handling, and scrapers damage coated and machined parts.

Dry ice blasting offers a different approach. In this guide I want to explain how it works and where it delivers real advantages for packaging lines.

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 hot-melt and adhesive

Thermal shock makes glue brittle, so it cracks and releases from guides, nozzle surrounds, compression belts and frames.

2. Cleaning hot sealing parts

Sealing jaws and heated parts can often be cleaned warm, removing cool-down time.

3. Non-abrasive

Dry ice does not scratch non-stick coatings, knurled jaws, machined guides or rollers. Scrapers and wire brushes do.

4. No solvents and no water

There are no solvent fumes, no residue to wipe off, and no water around electrics, drives and sensors.

5. Cleaning in place

Machines can usually be cleaned where they stand, with only guards removed, so there is less dismantling and setting up afterwards.

6. Fewer stoppages

Clean machines jam less, seal better and need fewer interventions.

Environmental credentials

Packaging operations face pressure to cut waste 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.
- **Fewer solvents.** Less purchase, storage and COSHH handling.
- **Less packaging waste.** Better sealing and fewer jams mean less spoiled packaging and product.
- **No contaminated waste.** No solvent rags or wash water. The only waste is the residue removed.
- **Longer part life.** Non-abrasive cleaning protects jaws, coatings and guides.

At a glance

	Scrapers, solvents and heat guns	Dry ice blasting
Solvents	Often used	None
Surface wear	Scrapers damage coatings	Non-abrasive
Hot parts	Must cool first	Can be cleaned warm
Dismantling	Often needed	Usually cleaned in place
Electrical components	Must be protected	Non-conductive, no moisture
Secondary waste	Solvent rags	Only the removed residue

Typical applications on packaging lines

- **Sealing jaws:** film and product residue on vertical and horizontal form-fill-seal machines.
- **Glue systems:** hot-melt build-up around guns, guides and compression sections.
- **Case erectors and packers:** carton dust and glue.
- **Labellers:** adhesive and liner residue.
- **Flow wrappers and thermoformers:** film residue and product build-up.
- **Palletisers and conveyors:** dust and debris.



Our setup at Vortex Ice Labs, and why it matters for packaging lines

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. This matters, especially on food and pharma packaging. The aim is to leave surfaces clean and dry, not to deposit 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 coated jaws to heavy glue build-up.

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

Working safely, and where it fits

Dry ice blasting is a powerful tool, and it should be planned like any other maintenance activity.

- **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 glue and residue can travel, so we protect nearby product and packaging materials, and clear up afterwards.
- **Food and pharma sites.** Where packaging is in a hygienic area, the clean sits alongside your hygiene regime and is verified in the usual way.

Used this way, it is most valuable for glue and film build-up, planned maintenance and changeovers.

Final thoughts

Packaging lines need to run without jams and stoppages. Traditional cleaning will always have a role, but it brings solvents, scraping and downtime with it.

Dry ice blasting removes many of those trade-offs. It cleans in place, cleans warm, does not damage parts, and gets the line back up sooner.



If you would like to see how it could work on your packaging 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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