

ICEBITZZZ™ – a product with  
limitless possibilities. Be as  
flexible and versatile as you  
want to be.

Linde Gas

*Linde*





## ICEBITZZZ™ – more than just dry ice. For innovative solutions with many facets.

As one of the global leaders in the field of dry ice and industrial gases, Linde Gas has unmatched expertise in delivering ideas that work. We see this as our responsibility: to not simply meet, but to surpass our clients' highest expectations.

When it comes to dry ice, we closely work together with leading manufacturers of dry ice equipment, scientific institutions, and specialist technicians, enabling us to develop uniquely innovative solutions that are tailored to your specific needs. The result: the growing ICEBITZZZ™ family of comprehensive dry ice solutions for your business – with guaranteed quality from Linde Gas. Backed by the proven expertise of

Linde Gas, ICEBITZZZ™ is a versatile range of solutions, combining dry ice products, hardware, and services. ICEBITZZZ™ delivers application-specific dry ice concepts for:

- cleaning processes
- temperature controlled transport processes
- cooling solutions
- courier solutions
- merchandising and entertainment

Learn how ICEBITZZZ™ can improve the competitiveness of your business, with convenient, cost-effective, environmentally friendly dry ice technology. Today – and in the future.

# As versatile as your business: The ICEBITZZZ™ range.

## Dry ice: solid CO<sub>2</sub>

Depending on the pressure and temperature, carbon dioxide (CO<sub>2</sub>) can occur in three states: gaseous, liquid, or solid. Dry ice is CO<sub>2</sub> in its solid state. It is made by reducing the pressure and temperature of liquid CO<sub>2</sub> in a controlled manner; this causes it to convert into a clean, white CO<sub>2</sub> snow. This snow can be used as is, or it can be compressed under high pressure to form blocks, slices, pellets, or nuggets.

## Dry ice characteristics:

- Flavorless and odorless
- No residue, thanks to sublimation
- Germ and bacteria-free
- Non-poisonous
- Non-flammable
- Easy to control because heavier than air
- Requires no electricity on-site
- More than three times colder than water ice

## Physical properties of dry ice and CO<sub>2</sub>

Sublimation temperature:	-78.5 °C (1013 hPa)
Sublimation heat:	573 kJ
Sublimation rate:	1 kg dry ice = 540 l CO <sub>2</sub> gas
Density of dry ice:	1.2 to 1.6 kg/m <sup>3</sup>
Specific heat of CO <sub>2</sub> gas (-78 °C to +25 °C):	0.77 to 0.85
Density of CO <sub>2</sub> gas (at 20 °C):	1.84 kg/m <sup>3</sup>
Weight ratio to air:	1.5 times heavier
Toxic limit:	5000 vol. ppm (0.5 vol.) %
Cooling capacity of dry ice:	3.3 times water ice





## ICEBITZZ™ Clean – simply clean. Eliminating dirt has never been easier.

**Industrial cleaning with ICEBITZZ™ Clean produces more efficient, more effective results. A key element of this process is CRYOCLEAN®.**

In the CRYOCLEAN® process, small ICEBITZZ™ pellets at  $-78\text{ }^{\circ}\text{C}$  are directed at high velocity at the surface to be cleaned. The extreme cold induces a thermal shock in the contaminant, so that it separates easily from the surface. As dry ice immediately evaporates to gas, there is no residue left behind – unlike sand or water blasting. CRYOCLEAN® is non-abrasive, and the liquid-free evaporation process enables cleaning of equipment even during operation – a significant gain for productivity.



#### **Key advantages of ICEBITZZ™ for industrial cleaning:**

- Mobile blasting units are flexible and easy to use
- No solvents, no waste water, no residue
- Non-abrasive
- Enables cleaning in-line
- Reduces down time
- Cleans a wide range of contaminants: oil, grease, paint, adhesives, bitumen, synthetics, food, etc.

#### **ICEBITZZ™ Clean equipment**

Specialized equipment for dry-ice-driven cleaning applications:

- CRYOMINI® – lower air consumption, efficient pellet use
- CRYOMAX® – the power for really tough jobs

Both systems offer outstanding levels of mobility and ease of use. As pneumatic systems, they both deliver low-maintenance reliability, and are immediately ready for operation: simply attach the CRYOMINI® or CRYOMAX® to a compressed-air supply and fill the reservoir with dry ice pellets. The machines can be purchased or hired on request.

#### **Applications**

CRYOCLEAN® is suitable for use in a broad range of applications:

- Molds for rubber and PU foam
- Heat-exchange pipes
- Welding conveyors
- Food industry & chemicals industry equipment
- Removal of parquet-floor waxes
- Fire damage (soot, ash, etc.)
- Matrixes and plungers
- Ship constructions & anti-corrosion processes
- Building facades
- Printing industry
- Car industry
- Car cleaning



## ICEBITZZZ™ Fresh – simply fresh. Because cooling isn't a luxury, it's a responsibility.

**ICEBITZZZ™ Fresh delivers solutions for temperature-controlled storage and transport processes, based on liquid CO<sub>2</sub> and dry ice. These include SNOWCOOL™ for trolley transport and storage, the Fillbox system for truck transport, Cook & Chill for canteens, the QuickSnower for airline catering, CoolVent for the transport of temperature sensitive goods, and the dry ice snow generator for on-site production of snow.**

### **SNOWCOOL™**

The smallest change in temperature can quickly lead to irreversible loss of quality. SNOWCOOL™ is a new and effective solution for transporting and storing chilled and frozen goods at a constant temperature in specially designed trolleys. Cooling with SNOWCOOL™ requires no auxiliary energy source. The system can be built into any existing trolley. This makes SNOWCOOL™ considerably cheaper than other systems that require you to buy new trolleys.

The SNOWCOOL™ system fulfills individual temperature-control transportation requirements for catering, industrial kitchens of hospitals, and other institutions.



### Fillbox system

The Fillbox system is an innovative cooling-system alternative to mechanical freezing in trucks, and uses CO<sub>2</sub> gas as a cooling agent. Cool down storage rooms in trucks during the transport of temperature sensitive goods, quickly and cost-effectively, with Fillbox. The advantages: less noise, lower maintenance costs, and a faster cooling effect.

### Cook & Chill

A special food distribution system for canteen kitchens in institutions, hospitals, and retirement and nursing homes. Cold or ready-made food can be kept cool for hours in special trays or induction trolleys by passive cooling with CO<sub>2</sub> snow. According to demand, the food can then be reheated in the induction trolleys. This enables more flexible organization in canteen kitchens.

### QuickSnower

For the airline industry: The QuickSnower enables quick cooling of soft drinks to consumption temperature in serving trolleys by spraying the single trays with CO<sub>2</sub> snow. The temperatures are kept on a certain level by a slice of dry ice inside the top part of the trolley.

### CoolVent

CoolVent is another alternative to mechanical freezing in trucks. It uses dry ice or liquid nitrogen (LIN) for cooling and freezing during transportation. Powerful ventilators suck in the air from the storage room, direct it over the dry ice, and channel the cooled air back to the storage room. CoolVent ensures a sterile atmosphere and prevents spoilage of sensitive goods.

### Snow to go

The dry ice snow generator is a specially designed cooling purpose for use in supermarkets. This new concept provides consumers with dry ice snow for the transport of temperature-sensitive foodstuffs from the supermarket to their home, thus keeping the products "cooled to fridge."

ICEBITZZZ™ Cool – simply well cooled.  
Keep your cool when the heat is on.





**ICEBITZZ™Cool offers convenient cooling solutions for a broad range of applications. From catering to the cooling of foodstuffs, scientific research, and the automotive industry, ICEBITZZ™Cool performs vital roles when it comes to cooling down your product.**

#### **Food & Beverage**

Food processing experts are only too aware of the disastrous effects of excessive heat in food processing operations. Simply use ICEBITZZ™ pellets or snow for your processing operations and hold your products at the ideal temperature. Another instance of the versatility of ICEBITZZ™Cool can be found in the wine industry. Following harvest, it is important to control further fermentation of the grapes before pressing. So winemakers cover or spray the grapes with ICEBITZZ™, holding the temperature at an ideal level. This means that you get the best possible quality – and that we're assured of your satisfaction.

#### **Catering**

On planes and trains, in hospitals and institutions, at corporate events: ICEBITZZ™ products deliver mobile, convenient, cost-effective cooling possibilities for catering.

#### **Research industry**

In the research and chemical industries, ICEBITZZ™ dry ice is applied as a coolant for a broad range of laboratory tests. Today, ICEBITZZ™ plays an important role in many scientific institutions, and in industrial R&D and product development departments.

#### **Metal fabrication industry**

In the metal fabrication industry ICEBITZZ™Cool is used for cold-shrinking metal objects such as ball bearings, axles, bushings, or valve seats in order to give a tight fit after re-warming. Cooling the object that is to be inserted with ICEBITZZ™Cool causes it to shrink. It can then be precisely positioned into the correct place and allowed to expand again as it returns to normal temperature. The result: a perfect fit, every time.

#### **Car racing events**

In Formula 1 races, ICEBITZZ™ is used for cooling the car engine's air intake, reducing the engine's temperature and the risk of a blow-out.

#### **ICEBITZZ™Cool equipment**

Snow horn/nozzle:

Dry ice application for food processing and cooling of vegetables as well as for fire extinguishers.

Dry ice maker:

Small and light equipment converting liquid CO<sub>2</sub> into specified dry ice quantities whenever and wherever it is needed.

Bringing together all the components for success – that's what we mean by customized service.

**ICEBITZZZ™ Express** – simply fast. So you have more time for the really important things.





**ICEBITZZ™Express stands for temperature-controlled courier concepts using dry ice in specially designed packing material. At Linde Gas we strive to have a thorough understanding of what professionals demand. That's why we work together with leading market experts to ensure non-stop, trouble-free service.**

#### **Lab2Lab**

Lab2Lab is a one-stop courier concept for pharmaceutical and biomedical shipments that gives you outstanding efficiency and time-saving benefits – all with a single telephone call. You get outstanding, highly individual solutions: from tailor-made packaging for your samples, to customized cooling of your samples, and a specialist courier service to all destinations in Europe and several other destinations worldwide.

Lab2Lab is an alliance between Linde Gas and leading companies providing packaging and courier services.

#### **Cold2Move**

Cold2Move is a new all-inclusive shopping concept that delivers temperature-controlled packaging logistics for food sample shipments. Similar to the Lab2Lab concept, Cold2Move offers custom-made packaging, cooling and delivery on call – to any destination within Europe.

#### **Your advantages**

- Comprehensive: a very wide range of packaging for transporting pharmaceutical, biomedical, and food products
- Versatile: select the ICEBITZZ™ product you need for your shipment
- Reliable: your products are delivered on time
- Time-saving: you can arrange everything with one single phone call
- Flexible: no minimum order size – no need for you to stock packaging or dry ice
- Fast: your shipment will reach all main European destinations within either 24 or 48 hours
- Peace of mind: you know your shipments are in safe hands

- Controlled: temperatures either between 2 to 7 °C, or below –20 °C
- Efficient: ordering couldn't be any simpler with our no-cost catalog
- Competent: qualified customer service via telephone
- Convenient: we handle all the formalities for you

You can count on us to make sure your products arrive on time, and with the quality you expect. You get both reliable transportation and on-time delivery to any destination within Europe.

**ICEBITZZZ™ Fun – simply contemporary.**

Because there are moments when you need to make a statement.





**When it comes to creating a memorable impact, the ICEBITZZ™Fun range offers a unique collection of great ideas. Cost-effective, easy to use and environmentally friendly, ICEBITZZ™Fun adds a special touch of dry ice magic to live performances, corporate events, trade fairs, and product displays.**

#### **Smoke effects**

Whether for powerful theater performances, high-impact product presentations or unforgettable special events – smoke effects generated with the aid of ICEBITZZ™Fun guarantee outstanding results.

#### **Chillco**

Chillco is an innovative product within ICEBITZZ™Fun. If you don't want to follow the crowd, display and advertise your company and your products in an eye-catching way. As a dry-ice-driven display cooling unit for consumer products like soft drinks and confectionery, this concept opens up completely new selling and sampling possibilities without any limitations of electrical sockets, cables, or messy ice water. So it can be used in any location, inside or outside. Chillco creates additional awareness by its unusual shape and offers an outstanding branding opportunity thanks to the large printable area.

#### **SpaceCup**

The SpaceCup is another novel product within the ICEBITZZ™Fun range. With this double-bottom cup you can present cold drinks at parties in an unconventional way. Just use some dry ice pellets to create a memorable smoke effect, chilling and carbonizing your drinks at the same time.

#### **Equipment**

Various types of equipment such as smoke machines and dry ice chilled display units can be supplied for a variety of entertainment purposes.



## Say “Yes!” to service and safety: ICEBITZZZ™ global service guarantee.

### Services throughout the world

- Production of a standard range of ice and applications at dry ice plants and service points throughout the world
- Creation of solutions according to customer specifications
- Upgrading of production equipment
- Research and development centers
- Continuously growing number of supply centers
- Linde is a reliable and innovative supplier to a number of industries, e.g. airline, biomedical, IT, and pharmaceutical industries
- Joint projects with international companies
- Training in handling dry ice and equipment safely
- Engineering and turnkey projects
- On-site equipment for purchase or leasing
- Safety training material

With the right equipment and careful observation of the safety requirements implemented, dry ice is a perfectly safe and totally natural product for your specific needs.

Learn more about ICEBITZZZ™:  
[www.icebitzzz.com](http://www.icebitzzz.com)

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# Getting ahead through innovation.

With its innovative concepts, Linde Gas is playing a pioneering role in the global market. As a technology leader, it is our task to constantly raise the bar. Traditionally driven by entrepreneurship, we are working steadily on new high-quality products and innovative processes.

Linde Gas offers more. We create added value, clearly discernible competitive advantages, and greater profitability. Each concept is tailored specifically to meet our customers' requirements – offering standardized as well as customized solutions. This applies to all industries and all companies regardless of their size.

If you want to keep pace with tomorrow's competition, you need a partner by your side for whom top quality, process optimization, and enhanced productivity are part of daily business. However, we define partnership not merely as being there for you but being with you. After all, joint activities form the core of commercial success.

**Linde Gas – ideas become solutions.**

