



KÄRCHER – Dry Ice Blasting





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Product description

Product data sheet – IB 7/40 Classic

IB 7/40 Classic



Customer benefit

✓ **Optimized for in-house compressed air installation:** no further investment e.g. for a compressor

✓ **Small, compact housing, high mobility**

Cleaning with dry ice is superior to traditional cleaning methods:

✓ **No wetness:** Dry ice sublimates as gas into atmosphere after impact the surface, no corrosion of material

✓ **No disassembly of machinery:** Cleaning in place, no abrasives remaining > reduced machine downtimes,

✓ **No chemicals, no blasting material (e.g. sand), no wastewater:** Environment-friendly, safe, low costs, also suitable where water, sand, etc. is not allowed!

Technical Data

Dry Ice consumption	15-50 kg/h
Dry Ice capacity	18 kg
Dry Ice pellets Ø	3 mm
Blasting pressure	0.2-1.0 MPa
Air flow rate	0.5-3.5 m ³ /min
Air hose	1"
Power supply	220-240 V
Connected load	600 W
Weight	70 kg
Dimensions (l x w x h)	76 x 51 x 110 cm

Standard accessories

- **Blasting gun** without remote control
- Flat jet nozzle, long
- grease for nozzle thread
- Tool bag
- 2 wrenches
- Blasting hose (5 m)

Optional accessories

- Flat jet nozzle, short
- Round jet nozzle, short & long
- Round jet nozzle, 90° angled
- Flat jet nozzle, 90° angled
- Air hose
- Nozzle lightning
- Earth wire rewinder

Product Idea

Compact Dry Ice Blaster optimized to work with in-house compressed air installations. Great cleaning results even at low pressure and air flow. The ideal machine for foundries and injection moulding.

Application

- Plastic moulding industry, Alu die-casting
- Automotive industry, Machine building
- Printing plants, food industry
- Packaging industry
- Contract cleaners
- Restoration
- Cleaning of injection moulds, core boxes, Production / Transportation lines, printing machines, bottling plant a.s.o.
- Removal of binding/release agents, oil, grease, adhesive, silicone/rubber residues, ink, paint, etc.

Order-No.:

IB 7/40 Classic *EU 1.574-001.0

Product description

Product data sheet - IB 7/40 Advanced

IB 7/40 Advanced



Technical Data

Dry Ice consumption	15-50 kg/h
Dry Ice capacity	18 kg
Dry Ice pellets Ø	3 mm
Blasting pressure	0.2-1.0 MPa
Air flow rate	0.5-3.5 m ³ /min
Air hose	1"
Power supply	220-240 V
Connected load	600 W
Weight	71 kg
Dimensions (l x w x h)	76 x 51 x 110 cm

Standard accessories

- **Blasting gun** with remote control to adjust air pressure and ice consumption; Switch „Ice off“ (air only)
- **incl. earth wire rewinder**
- Flat jet nozzle, long
- grease for nozzle thread
- Tool bag
- 2 wrenches
- Blasting hose (5 m)

Optional accessories

- Flat jet nozzle, short
- Round jet nozzle, short & long
- Round jet nozzle, 90° angled
- Flat jet nozzle, 90° angled
- Air hose
- Nozzle lightning

Customer benefit

- ✓ **Optimized for in-house compressed air installation:** no further investment e.g. for a compressor
- ✓ **Small, compact housing, high mobility**
- ✓ **incl. earth wire rewinder**
- ✓ **Blasting gun with remote control:** to adjust blasting pressure and ice consumption direct on the blasting gun; Switch „Ice off“ (air only)

Cleaning with dry ice is superior to traditional cleaning methods:

- ✓ **No wetness:** Dry ice sublimates as gas into atmosphere after impact the surface, no corrosion of material
- ✓ **No disassembly of machinery:** Cleaning in place, no abrasives remaining > reduced machine downtimes,
- ✓ **No chemicals, no blasting material (e.g. sand), no wastewater:** Environment-friendly, safe, low costs, also suitable where water, sand, etc. is not allowed!

Product Idea

Compact Dry Ice Blaster optimized to work with in-house compressed air installations. Great cleaning results even at low pressure and air flow. The ideal machine for foundries and injection moulding.

Application

- Plastic moulding industry, Alu die-casting
- Automotive industry, Machine building
- Printing plants, food industry
- Packaging industry
- Contract cleaners
- Restoration
- Cleaning of injection moulds, core boxes, Production / Transportation lines, printing machines, bottling plant a.s.o.
- Removal of binding/release agents, oil, grease, adhesive, silicone/rubber residues, ink, paint, etc.

Order-No.:

IB 7/40 Advanced *EU 1.574-002.0

Product description

IB 7/40



Stable tubular frame with pushcart principle and big wheels

Parking position for blasting gun

Service friendly Easy to open side & rear covers

2 Castors high mobility

Handy, light and compact trigger gun with integrated remote control* for:

- Air pressure
- Ice consumption
- Switch „air only“

* Only at Advanced version

Integrated earth wire rewinder
* Only at Advanced version

Electronic control

Integrated oil and water separator

Dry ice tank emptying

Condensate water drain



Product description

IB 7/40

■ Without side covering

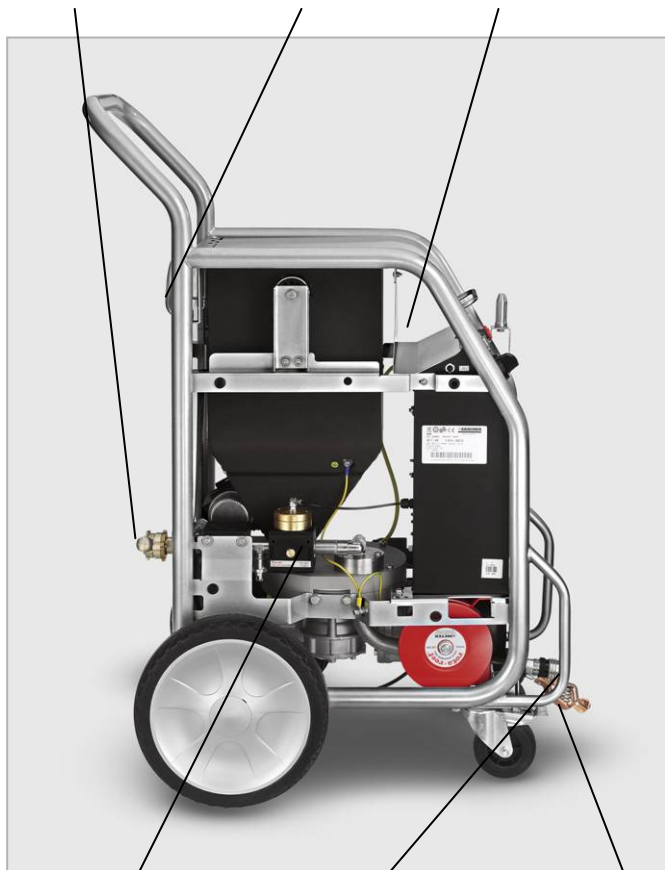
Compressed air connection

Holder for power cord

Integrated tray for nozzles and tools

Cover for dry ice tank

Hopper
(dry ice tank)



Pressure valve

Connection for blasting hose

Bumper

Electronic box

Dosage unit
electrical driven,
self regulating (self
sealing)

Product description

IB 15/80

IB 15/80



Customer benefit

✓ **Wide range of application**

Ice output: 30 – 100 kg/h
Blasting pressure: 3 – 16 bar

✓ **Blasting with switch „only air“ or „ice and air“**

Cleaning with dry ice is superior to traditional cleaning methods:

✓ **No wetness:** Dry ice sublimates as gas into atmosphere after impact the surface, no corrosion of material

✓ **No wear or erosion:** Dry ice pellets are non-abrasive, preserves equipment, long lifetime

✓ **No disassembly of machinery:** Cleaning in place, no abrasives remaining > reduced machine downtimes,

✓ **No chemicals, no blasting material (e.g. sand), no wastewater:** Environment-friendly, safe, low costs, also suitable where water, sand, etc. is not allowed!

Technical data

Dry Ice consumption	30-100 kg/h
Dry Ice capacity	35 kg
Dry Ice pellets Ø	3 mm
Blasting pressure	0.3-1.6 MPa
Air flow rate	3-11 m ³ /min
Air hose	1"
Power supply	220-240 V
Connected load	600 W
Weight	90 kg
Dimensions (l x w x h)	85 x 72 x 110 cm

Standard accessories

- Blasting gun
- Blasting hose (7 m)
- Round jet nozzle (small)
- Flat jet nozzle
- 1 insert for flat jet nozzle (10 mm)
- Grease for nozzle thread
- Nozzle case
- 2 wrenches

Optional accessories

- 2 inserts for flat nozzle (6 & 8 mm)
- Scrambler (for sensitive surfaces)
- Nozzle extension
- Hand grip for nozzle extension
- Round jet nozzle (big)
- Dry ice shovel
- Protection equipment
- Water separator (for compressed air)

Product Idea

Innovative cleaning principle with dry ice pellets (frozen & compressed CO₂). The IB 15/80 is a blasting machine which uses dry ice pellets as blasting material. The pellets are accelerated by compressed air to supersonic speed and applied to the contaminated material with a blasting hose & gun – like other blasting methods.

Application

- Service provider
- Plastic moulding industry, alu die-casting
- Automotive industry, machine building
- Printing plants, food industry
- Packaging industry
- Contract cleaners
- Restoration
- Cleaning of injection moulds, core boxes, Production / Transportation lines, printing machines, bottling plant a.s.o.
- Removal of binding/release agents, oil, grease, adhesive, silicone/rubber residues, ink, paint, etc.

Order-No.:

IB 15/80 *EU 1.574-100.0

Product description

IB 15/80

Robust housing
Completely made
of stainless steel

Control elements
Easy operation –
also with gloves

**Push cart
principle**
High mobility

**Connection blasting
hose**

Nozzle case
Detachable, accessories
always within reach

**Blasting hose
storage**



Support blasting gun
gun holder &
for easy nozzle change

Service friendly
Easy to open side &
rear covers
(only 2 locks)

Pneumatic tires
Convenient mobility

Product description

IB 15/80

- Without side covering

Electrical cabinet

With operating hour meter (non resettable)

Cover of dry ice tank with handle

Hopper (Dry ice tank)



Connection compressed air

Tread
for push cart principle

Electrical connection

Compressed air regulation valve

Dosage unit
Electrically driven dosing disc

Outlet to blasting hose

Positioning



Positioning

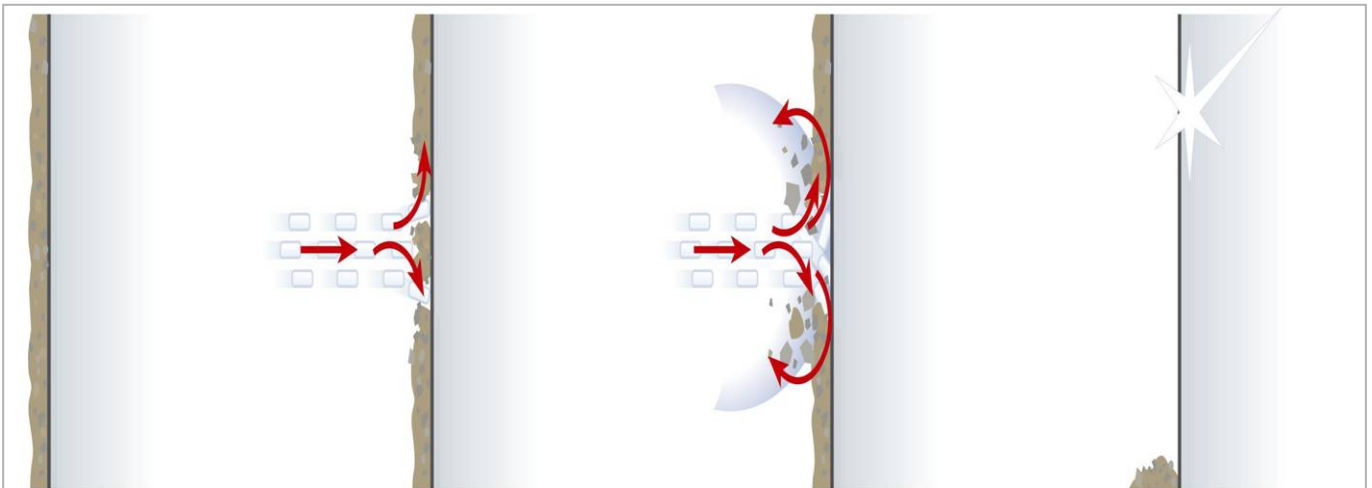
Differentiation – IB 7/40 vs. IB 15/80

IB 7/40	IB 15/80
<p>Interim cleaning</p> <ul style="list-style-type: none"> ▪ Flexible cleaning in manufacturing plants e.g. casting, bottling plant, logistic systems, ink cells, conveyor belts etc. ▪ Especially optimised for use on in-house compressed air systems ▪ Very low air flow and blasting pressure needed ▪ Very flexible and mobile, compact and easy to manoeuvre ▪ Very compact blasting gun, ideal to clean in narrow areas ▪ Mostly there are no further investments (e.g. for a compressor) because the existing air system is sufficient 	<p>Deep Cleaning</p> <ul style="list-style-type: none"> ▪ Maintenance ▪ Machine repair ▪ Blasting cubicle ▪ Big parts e.g. turbines ▪ Automation ▪ High blasting pressure for tenacious contaminations ▪ Wide range of performance for many different applications ▪ To use the complete range of performance there is a lot of pressure and air necessary. That's why mostly a mobile compressor is necessary
<p>Mobility is more important as area performance</p>	<p>Long cleaning tasks at a fixed location. Area performance is very important.</p>

Basics of Dry Ice Blasting

Principle of dry ice blasting

The principle of dry ice blasting is similar to sand blasting using no sand but frozen CO₂ pellets as blasting material. Dry ice (CO₂) pellets are accelerated to over 150 m/s speed and cleaning the surface. The pellets are accelerated by compressed air and applied using a hose and a blasting gun, just as with other blasting methods. The pellets sublimate as CO₂ gas into the atmosphere immediately after hitting the surface. Absolutely no cleaning material remains. The removed dirt falls to the ground and has to be swept away.



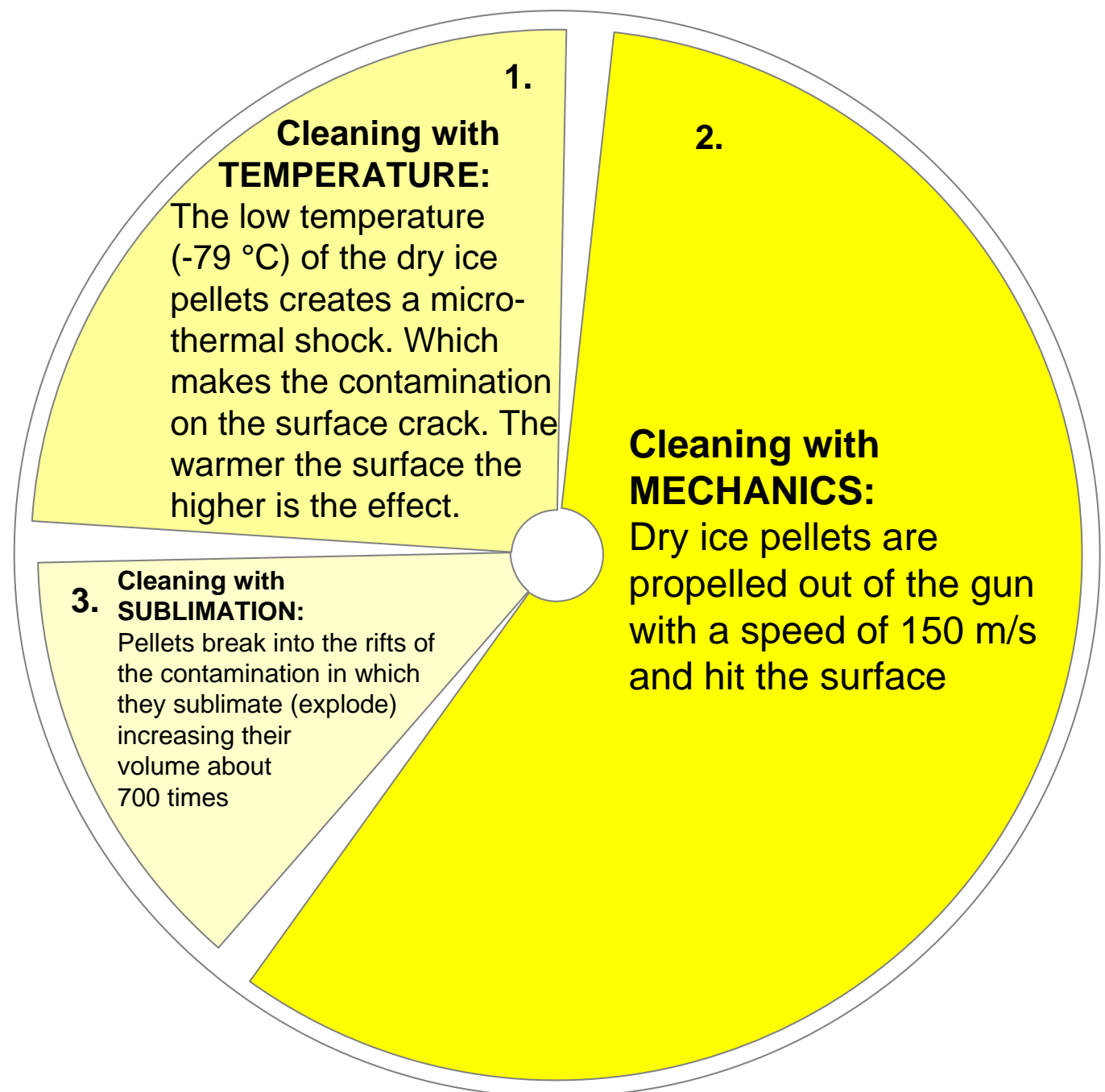
Dry Ice cleaning removes:

Paint/coating, oil, grease, tar, bitumen, dirt, ink, resin, adhesive, wax, binding/release agents, silicone/rubber residue, chewing gum, graffiti, and much more

Basics of Dry Ice Blasting

Principle of dry ice blasting

- Dry Ice cleaning principle is based on 3 effects:



Basics of Dry Ice Blasting

Nozzles, air flow rate and blasting pressure

For dry ice blasting compressed air is necessary. The air flow rate of the small machine IB 7/40 is between 0.5 to 3.5 m³ per minute.

The big machine has a air flow rate from 3 to 11.5 m³ per minute.

The available air pressure of a compressed air system is no exact indicator whether the system fits to the requirement of dry ice blasting. Some compressed air system can produce up to 10 bar air pressure but only 0.3 m³ air per minute. With this compressed air system you can not do dry ice blasting.

The available air flow is very important!

The air consumption of dry ice blasting depends mainly on the nozzles. The bigger a nozzle is in diameter, the bigger is the necessary air flow at the same blasting pressure.

The available air flow rate of compressed air systems is declared in **m³/min**, **Litre/min** or in **cfm (cubic feet per minute)**

30 Litre/Minute	=	0.03 m ³ /min	=	1.0 cfm
50 Litre/Minute	=	0.05 m ³ /min	=	1.8 cfm
300 Litre/Minute	=	0.3 m ³ /min	=	10.6 cfm
1000 Litre/Minute	=	1.0 m ³ /min	=	35.3 cfm
11500 Litre/Minute	=	11.5 m ³ /min	=	406.0 cfm

Air Pressure (bar / PSI)

1 bar	=	14 PSI
5 bar	=	72 PSI
7 bar	=	101 PSI
10 bar	=	145 PSI
16 bar	=	232 PSI

Basics of Dry Ice Blasting

Quality of dry ice pellets

Dry ice is produced by letting liquid carbon dioxide (CO₂) expand quickly. This expansion causes a drop in temperature so that the CO₂ freezes into -79°C cold "snow" which is then compressed into pellets ranging from 0.5-3 mm. Dry ice does not melt into liquid carbon dioxide but rather sublimates **directly** into carbon dioxide gas. Dry ice pellets are available almost worldwide.

The KÄRCHER Dry Ice Blasters are using dry ice pellets with a **diameter of 3 mm**.

The market price for 3 mm dry ice pellets in Europe is about 0.6 € to 1.5 € per kilogram.

The experience in dry ice blasting shows that blasting with fresh dry ice pellets is more efficient as to clean with „old“ dry ice pellets.

Therefore it is essential to always blast with fresh dry ice pellets.

A few days old dry ice loses density. The cleaning power will decrease. To do the same work you need more dry ice and also more time.

Furthermore the dry ice pellets sublime. If you have ordered 100 kg pellets after one day you just have 92 kg remaining.



Basics of Dry Ice Blasting

Quality of dry ice pellets

■ The importance of fresh dry ice

Total loss of cleaning performance (due to 'old' dry ice pellets & sublimation):

- 1 day after production: 22 %
- 2 days after production: 30 %
- 3 days after production: 40 %
- 4 days after production: 49 %
- 5 days after production: 56 %

Loss of dry ice pellets by sublimation due to early production:

- 1 day before use: 8 %
- 2 days before use: 12 %
- 3 days before use: 19 %
- 4 days before use: 26 %
- 5 days before use: 32 %

Loss of cleaning performance due to 'old' dry ice pellets:

- 1 day after production: 15 %
- 2 days after production: 20 %
- 3 days after production: 25 %
- 4 days after production: 30 %
- 5 days after production: 35 %



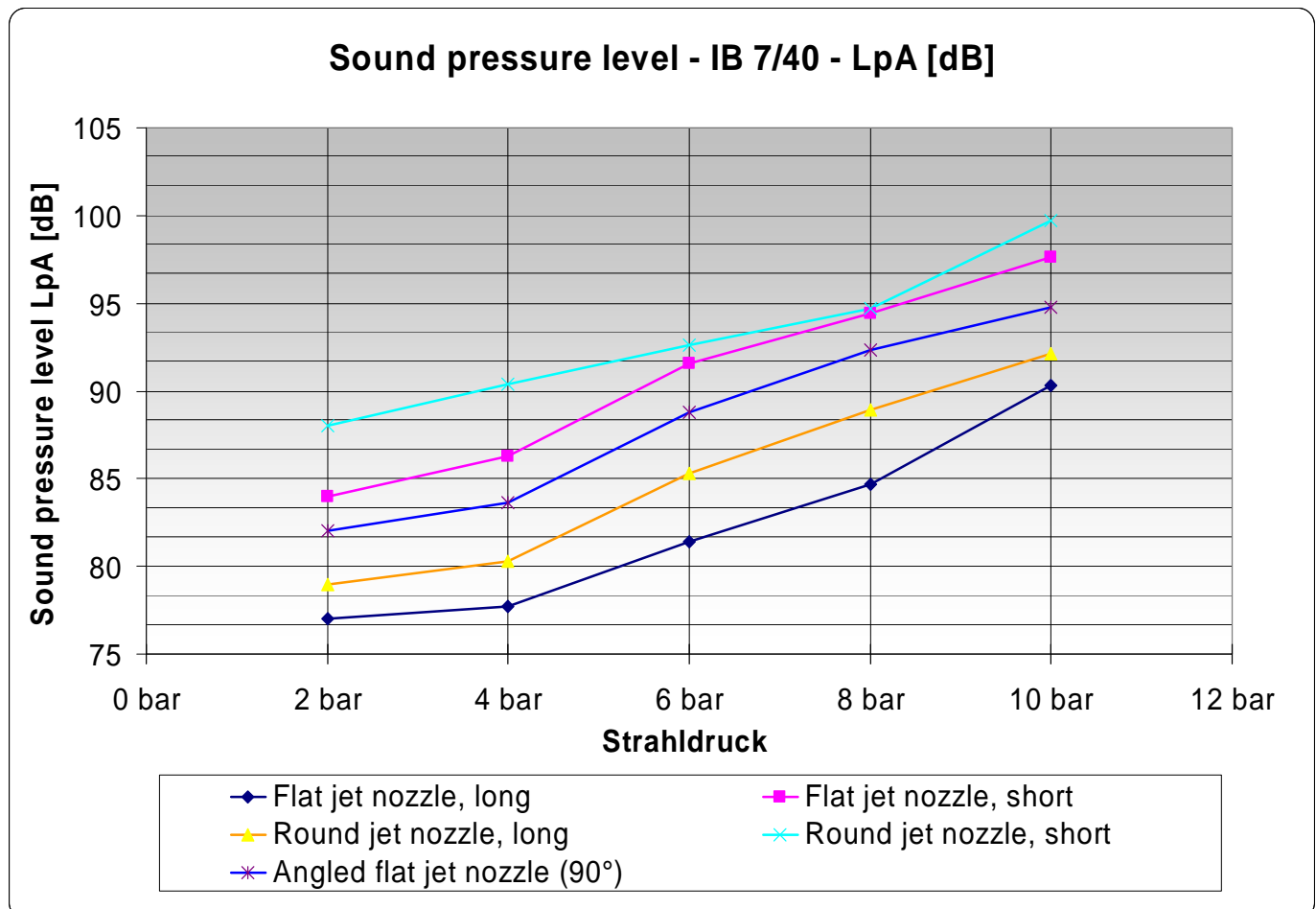
Basics of Dry Ice Blasting

Sound pressure level

The sound pressure level of the IB 15/80 is about 125 dB(A).

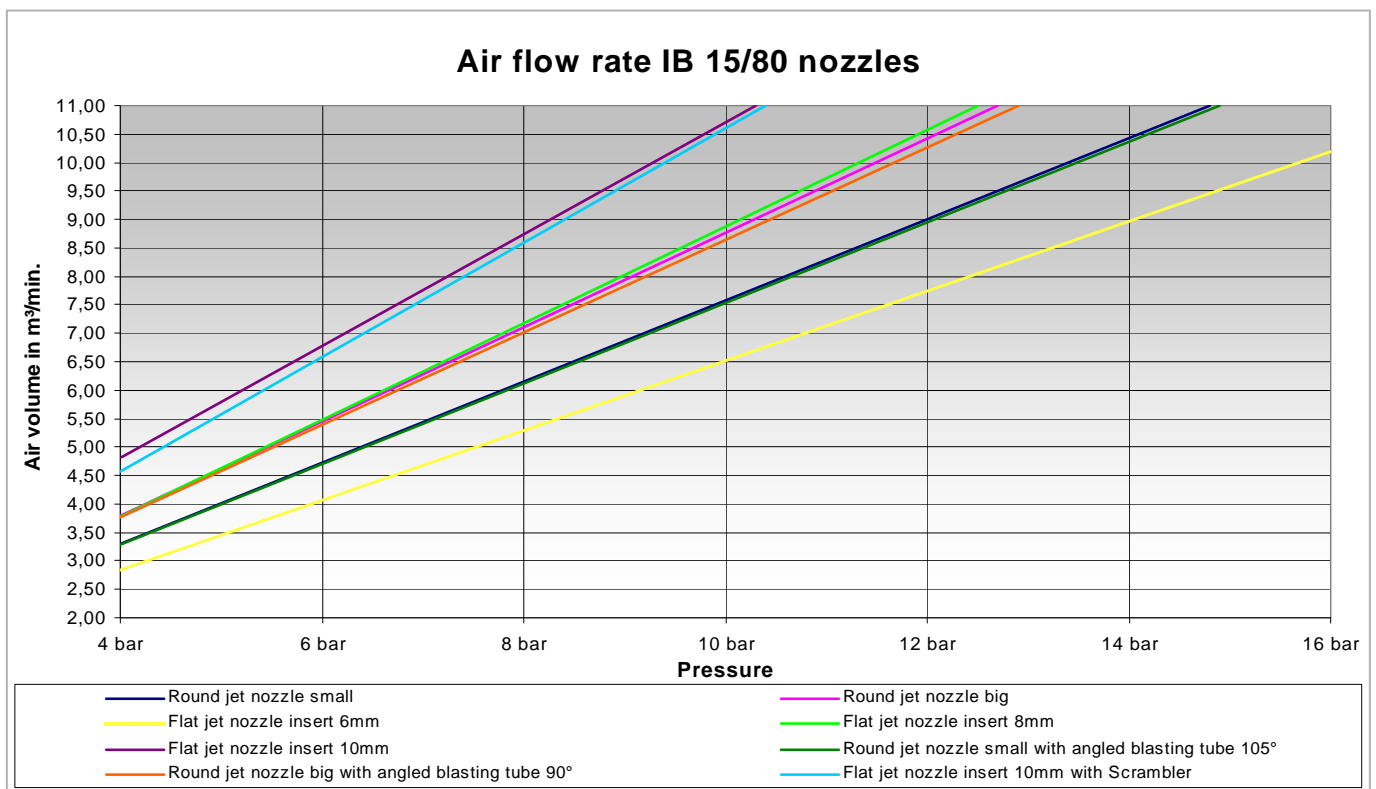
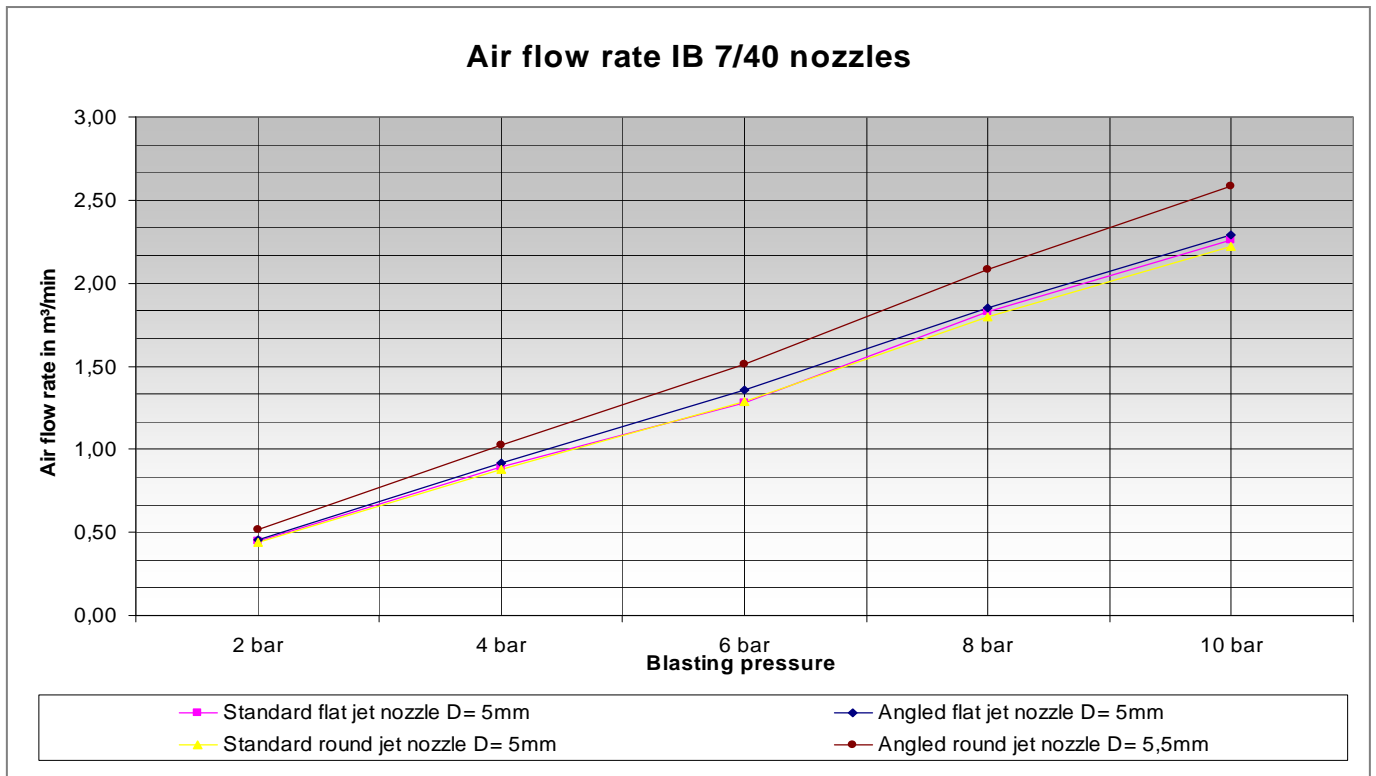
By optimizing the nozzle design the sound pressure level has been reduced dramatically. The maximum sound pressure level of the IB 7/40 is about 99 dB(A).

The occurring sound pressure referring to the blasting pressure is shown in the following diagram.



Basics of Dry Ice Blasting

Air flow rate



Basics of Dry Ice Blasting

Safety equipment

For dry ice blasting there is no special safety clothing necessary. We recommend to wear general working clothes.

The following safety equipment should be worn during dry ice blasting.

1. Ear protection: The sound level at dry ice blasting is partly well over 80 dB(A). That's why it is necessary to wear ear protection.



2. Gloves: To protect the skin for cold burns during dry ice pellets we recommend to wear protective gloves.



3. Protection goggles: To protect the eyes against loose debris we recommend to wear protective goggles.



Basics of Dry Ice Blasting

Advantages of the technology

No wetness:

Dry Ice sublimates as carbon dioxide gas into the atmosphere. There are no waste water or other contaminated abrasives remaining. The dirt falls to the floor and can be vacuumed or swept away easily.

→ very short machine downtime and no corrosion of the material.

No wear or erosion:

Dry ice pellets are non-abrasive, due to this machines and tools will not be damaged by dry ice blasting.

No disassembly of machinery:

The cleaning can be done when the components are mounted on the machine (Cleaning in place). There is no need for disassembling the contaminated parts. Because of lower machine downtime and less production downtime there is a big economical advantage.

No chemicals, no blasting abrasives (e.g. corundum, sand,..), no waste water:

There is no blasting abrasive remaining. Due to this there is no contamination of mechanics, sealings etc. There are no costs for disposal for toxic or harmful chemicals, solvents or other abrasives. Dry ice blasting is environmentally friendly, safe and economical – even in areas where cleaning with water or sand is prohibited by public authorities.

Less labour costs:

The labour input for cleaning and maintenance of assembly lines or other machinery can be reduced dramatically by using dry ice cleaning. Especially when traditional cleaning methods need a lot of preparation and post processing dry ice blasting is the faster and more efficient cleaning method.

When do you do dry ice blasting

Dry ice blasting is useful when conventional cleaning methods leads to an enormous additional effort.

If cleaning with water, chemicals, solvents or other blasting methods is prohibited by local authorities in most cases dry ice blasting is the only alternative cleaning method.

Dry ice blasting has a lot of advantages especially in areas of machinery cleaning, building maintenance or restoration. A lot of cleaning tasks can be done by using for example water (high pressure or ultra high pressure). The consequence are high machine downtime which results in a huge economically loss.

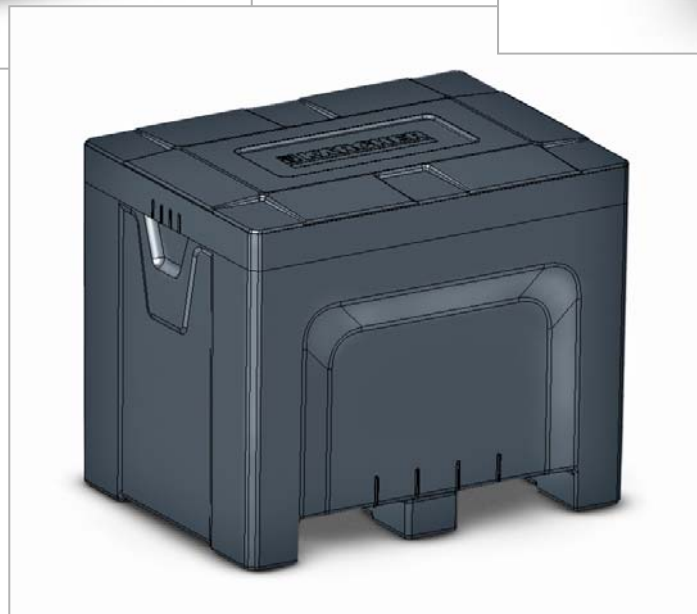
Machine downtimes results in:

- disassembly
- transportation of the cleaning objects
- the cleaning process
- drying / cleaning
- transportation back to manufacturing plant
- mounting back on the machine

Dry ice blasting can be done directly in mounted conditions. The machine downtime can be reduced dramatically.

Complete Dry Ice package

The complete dry ice system from KÄRCHER



Complete Dry Ice package

The complete dry ice system from KÄRCHER

What do you need for dry ice blasting?

1. Ice Blaster:



2. Compressed air



3. Dry ice pellets



Complete Dry Ice package

The complete dry ice system from KÄRCHER

What do you need for dry ice blasting?

1. Ice Blaster:

KÄRCHER dry ice blasters are high quality machines. The feedback from the market is very positive. Compared to our competitors KÄRCHER dry ice blaster have a great cleaning result and are besides very reliable and robust.



Complete Dry Ice package

The complete dry ice system from KÄRCHER

What do you need for dry ice blasting?

2. Compressed air:

For dry ice blasting a lot of air is required. For blasting it is possible to use in-house compressed air networks. Such compressed air networks often have a limited air volume.

A further possibility is the use of mobile compressors. They can be rent or bought. Important for the choice of the right compressor is the supplied air quality. The air should be dry and oil-free. Furthermore should the compressor be equipped with after cooler and a oil separator.

Big compressor manufacturers are for example:

- **CompAir**

www.compair.de

- **Kaeser**

www.kaeser.de

- **Atlas Copco**

www.atlascopco.de



Complete Dry Ice package

The complete dry ice system from KÄRCHER

What do you need for dry ice blasting?

3. Dry ice pellets

The supply of dry ice pellets can be arranged in different ways:

I. The customer supplies himself with dry ice:

All big gas suppliers normally offer 3 mm dry ice pellets. Possible suppliers are:
ASCO, Linde, AirLiquid

II. The customer produces himself his own dry ice:

For this Kärcher has the Ice Pelletizers in the product range. They offer the possibility to the customer to cover his requests for dry ice all times. The pelletizers are available in 3 different classes – 55 kg/h, 120 kg/h, 220 kg/h.

For running the Pelletizer an additional CO₂-tank is required (11 tons or 32 tons). It can be rent at one of the gas suppliers.

III. The subsidiaries or the dealers provide the dry ice pellets to customers:

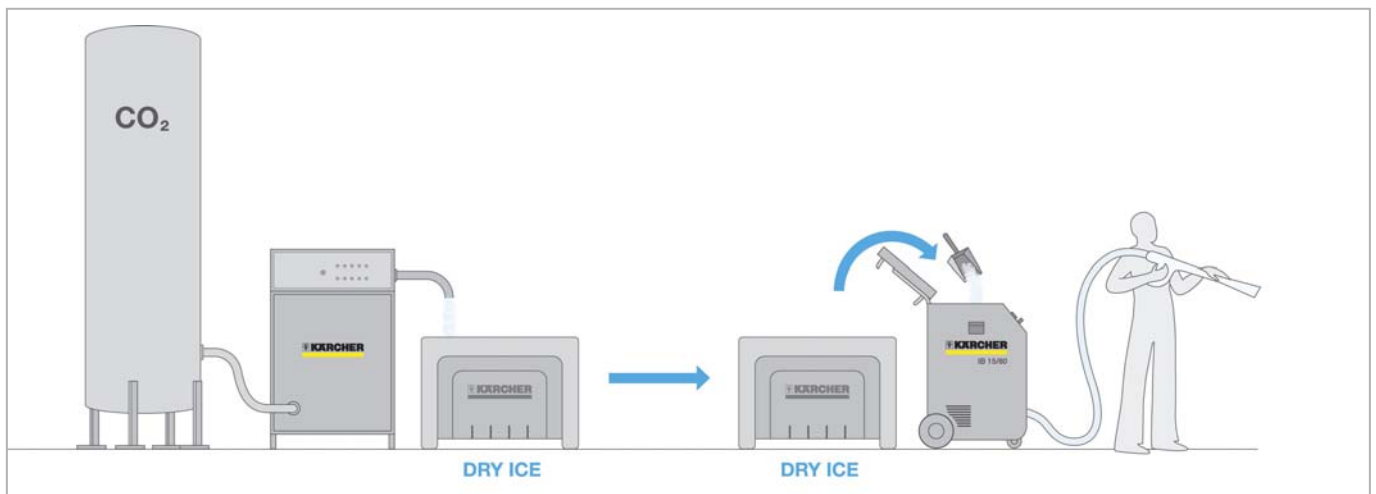
The subsidiaries or the dealers can produce dry ice themselves with the KÄRCHER Pelletizers. The market has shown that very often low quality dry ice is used. Low dry ice quality does partly lead to dramatically worse cleaning results than with fresh dry ice. The customer then quickly finds the reason for the worse cleaning result at the unit itself.

If we supply the customers ourselves always with fresh dry ice, their cleaning results are constantly high. Furthermore the customer gets everything from one source.

Complete Dry Ice package

The complete dry ice system from KÄRCHER

- KÄRCHER offers a complete solution for a dry ice cleaning system



Tank for
liquid CO₂

Pelletizer

Dry Ice Box

Ice Blaster

Alternative Cleaning methods

Dry Ice Blasting ... the cleaning of the future!

Issue	Traditional Cleaning	Dry Ice Blasting
Equipment downtime	Disassembly/reassembly, cleaning in dedicated cleaning area, drying time required	Equipment can be cleaned in place, even hot surfaces (!), equipment restart immediately after cleaning possible
Wear & potential equipment damage	Corrosion through water, grit abrasions, grit contamination, movement of equipment to and from cleaning area	Non abrasive, no equipment damage, no wear or erosion → preserves equipment, long lifetime
Labor hours	Disassembly/reassembly, intensive hand scrubbing, lengthy cleanings, follow-up cleaning can be lengthy	Dramatically reduced - often completed in a quarter of the time or better
Quality of cleaning	Poor to average	Excellent
Cleaning material & waste	Water / waste water, grit (becomes contaminated and so additional hazardous waste), chemical cleaner, ...	No cleaning material remains, dry ice pellets sublime into CO ₂ gas. Also suitable for applications, where water, grit, etc. is not allowed (e.g. aircraft)
Costs	Cleaning material becomes additional hazardous waste, expensive solvents, labor & downtime costs	Cost of dry ice and compressed air
Safety	Health threats from solvents, water dangerous around electrical equipment, threats to environment	Only standard safety precautions, environmentally friendly, non conductive - safe around electrical equipment

Alternative Cleaning methods

Blast Cleaning Comparison Chart

Blasting Cleaning Technique	Waste for disposal through cleaning material	Abrasive	Toxic	Electrically conductive	Performance Comparison
Dry Ice	No	No	No	No	Excellent
Sand	Yes	Yes	No*	No	Excellent
Glass Beads	Yes	Yes	No*	No	Excellent
Walnut Shells	Yes	Yes	No*	No	Limited
Steam	No	No	No	Yes	Good
Solvents	Yes	No	Yes	Yes	Good

* Each of these blast cleaning materials becomes contaminated upon contact if used to clean hazardous objects. When that happens, these materials are then classified as toxic waste requiring safe disposal.

Alternative Cleaning methods

Cost comparison example: Tire moulds cleaning

Dry ice blasting is unlike conventional cleaning methods that are both – **time consuming and harmful to the mould and the environment**. Traditional mould cleaning methods also **increase down-time and limit productivity** as follows:

- Wait for mould to cool down
- Remove mould from the press
- Transport mould to the cleaning area
- Clean mould with grit blast, bead blast, etc.
- Remove particles from intricate cavities and grooves
- Reinstall mould into press
- Ensure correct alignment
- Bring mould to correct temperature
- Produce product
- Dispose of contaminated waste

	Bead Cleaning	IB 7/40
Cleaning location	Out of press	In press
Cleaning labor time per mold	2,5 hours	0,33 hours
Cleaning labor cost (50€/h)	125,00 €	16,50 €
Cleaning operational cost	15,00 €	20,00 €
Average down-time per mold	8 hours	1 hour
Downtime cost (35€/h)	280,00 €	35,00 €
Cost per mold cleaning	420,00 €	71,50 €
(+ not taken product profits!)		

Removing and reinstalling the mould may lead to tool wear as well as risk damage to the tool during out-off-press handling. In addition, grit blasting **is abrasive** and causes **round corners, opens tolerances** and **roughen the finish** of the mould.

Dry ice blasting eliminates these sources of mould and tool damage!

Environment

No hazardous agents or substances:

With dry ice blasting there are no toxic or environmentally harmful chemicals or solvents used. Due to this there is no toxic or environmentally harmful vapour (Steam). No endangerment of employees when handling with toxic and harmful substances.

Easy disposal:

No blasting material is left by dry ice blasting. The removed dirt falls to the floor and can be swept away. Only the removed dirt has to be disposed.

If you are cleaning with chemicals or solvents there is toxic hazardous waste remaining. The cost for disposal are very high.

No secondary waste:

When blasting with sand, soda or water the abrasive itself becomes to hazardous waste when removing hazardous contaminations. Thereby a huge amount of secondary waste occurs. This waste has to be disposed with high costs. Especially when blasting with soda the vegetation in the surrounding area can be affected negatively.

CO₂ production:

CO₂ occurs as a side product of other industrial manufacturing processes. Carbon dioxide is for example manufactured as a by product in ammonia and hydrogen plants, where methane is converted to CO₂. A big amount of CO₂ is made of a raw gas which occurs in the chemical processing of crude oil and natural gas. Furthermore CO₂ occurs in combustion processes of power plants or at fermentation processes. In industrialized countries CO₂ is no longer produced separately. CO₂ is always a side product of other manufacturing processes.

Target groups

Target Groups & Applications

→ Automotive industry, machine building:

IB 7/40

IB 15/80

Cleaning solution for:

Maintenance (e.g. production lines, units, motors / drives), stamp shop, cleaning of body parts for further processing

Contaminations:

Residue of silicone / rubber / polyurethane / thermoplastics, spatters, greases, oils, paintings etc.



Target groups

Target Groups & Applications

→ Plastics industry, aluminium foundries, foundries:

IB 7/40

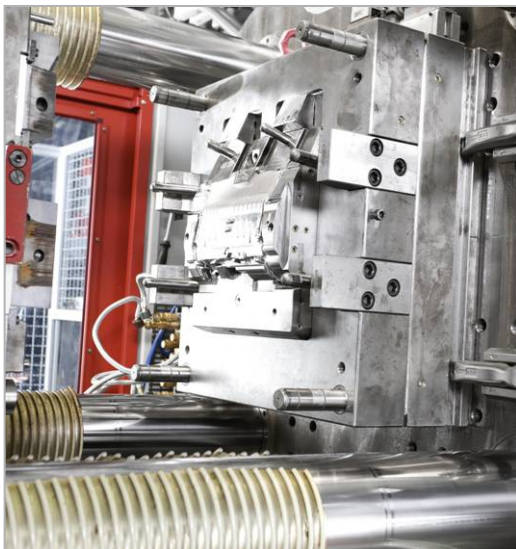
IB 15/80

Cleaning solution for:

Casting (z. B. core boxes), casting moulds, sensitive surfaces in injection mouldings, aluminium moulds, cleaning / deflashing of plastic parts

Contaminations:

Binders / mould release agents, residue of silicone / rubber / polyurethane / thermoplastics, greases, oils, paintings, etc.



Target groups

Target Groups & Applications

→ Food industry, pharmaceutical industry, cosmetics industry:

IB 7/40

IB 15/80

Cleaning solution for:

Bottling and mixing plants, production lines & handling-systems
(e.g. conveyor belts in bakeries), tank cleaning, cleaning of kilns

Contaminations:

Carbonization, burned oils, greases, resins, lecithin, foulings, etc.



Target groups

Target Groups & Applications

→ Print shops, repair shops, maintenance:

IB 7/40

Cleaning solution for:

Printing units and there periphery, print cylinders, ink vats, tools

IB 15/80

Contaminations:

Dried ink, oils, greases, etc.



Target groups

Target Groups & Applications

→ **Wood Industry:**

Cleaning solution for:

Cleaning of wood processing machines, furniture industries, sawmills, carpenter's shops

Contaminations:

Splints, wood residue, dust, oil, greases, resins

IB 7/40

IB 15/80



Target groups

Target Groups & Applications

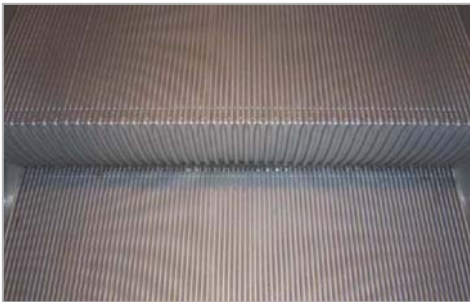
→ **Local authorities:**

Cleaning solution for:

Escalators, graffiti, chewing gums,
facade cleaning, memorials

IB 7/40

IB 15/80



→ **Electrical industry:**

Cleaning solution for:

Maintenance on generators, turbines,
control cabinets (e.g. also fire restoration)

→ **Contract cleaners**

- In many cases external contract cleaners are commissioned by manufacturing companies with the cleaning of their machines or tools / moulds.

In Germany e.g.:

www.dryiceclean.de

www.trockeneisreinigung.net

→ **Cooperation's**

- Gas suppliers are often requested to provide the whole blasting equipment. Those companies are primarily interested in a business with the CO₂ and buy ice blasting units independent from the brand in addition!

Target groups

Target Groups & Applications

→ Packaging and paper industry:

Cleaning solution for:

Production lines & handling-systems, machines

Contamination:

Residue of paper and glue

IB 7/40

IB 15/80



Applications

Moulds

Cleaning task

Cleaning of moulds, removing oil and grease

before



after



- Pressure: ca. 6 bar
- Dry ice consumption: ca. 50 kg/h

Notice:

On flat surfaces flat jet nozzle, in edges and corners round jet nozzle.

Applications

Floor cleaning

Cleaning task

Floor cleaning, removing chewing gum

before



after



- Pressure: approx. 10 bar
- Dry ice consumption: approx. 90 kg/h
- Area performance: approx. 25 sqm/h

Notice:

Because of stubborn dirt use of round jet nozzle.

The named area performance is an approximately value. The base is one hour blasting with no stops on a flat surface with always the same kind of dirt.

Applications

Paint removal

Cleaning task

Grid cleaning, removing paint

before



after



- Pressure: approx. 12 bar
- Dry ice consumption: approx. 90 kg/h

Notice:

Good cleaning result, low area performance, use of round jet nozzle.

Applications

Paper & Wood industry

Cleaning task

Removing fragments of paper and wood

- Pressure: approx. 5 bar
- Dry ice consumption: approx. 40 kg/h

Notice:

Good area performance, flat jet nozzle

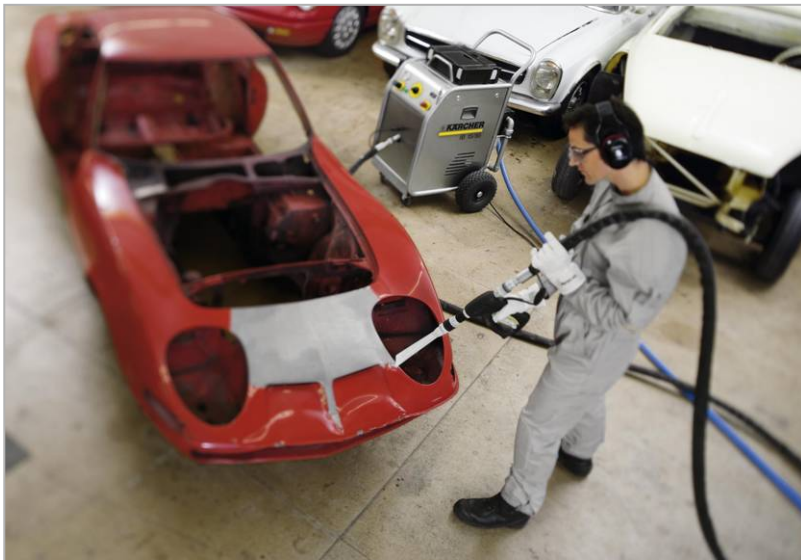


Applications

Car paint removal

Cleaning task

Car paint removal



- Pressure: approx. 12 bar
- Dry ice consumption: approx. 80 kg/h

Notice:

Small round jet nozzle

Applications

Oil and grease

Cleaning task

Removing oil and grease

before



after



- Pressure: approx. 5 bar
- Dry ice consumption: approx. 40 kg/h

Notice:

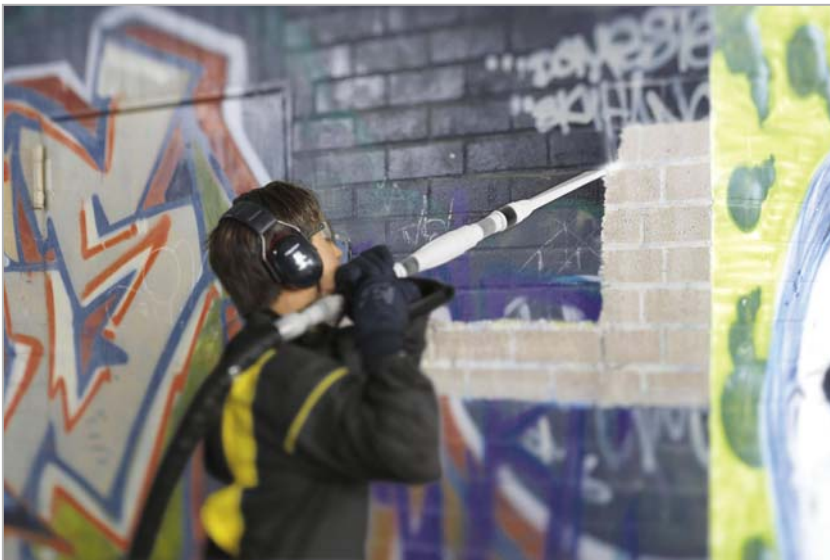
Good area performance, flat jet nozzle, in tight areas round jet nozzle.

Applications

Graffiti removal

Cleaning task

Graffiti removal



- Pressure: approx. 12 bar
- Dry ice consumption: approx. 80 kg/h
- Area performance: approx. 10 sqm/h

Notice:

Use of scrambler and flat jet nozzle, low area performance

The named area performance is an approximately value. The base is one hour blasting with no stops on a flat surface with always the same kind of dirt.

Applications

Injection mould

Cleaning task

Injection mould



- Pressure: approx. 5 bar
- Dry ice consumption: approx. 40 kg/h

Notice:

Very good cleaning result

Applications

Printing plant, printing machine

Cleaning task

Printing machine



- Pressure: approx. 5 bar
- Dry ice consumption: approx. 40 kg/h

Notice:

Use of flat and round jet nozzle (edges and corners)

Surroundings has to be covered because of loose paint fragments

Applications

Carriage cleaning

Cleaning task

Carriage cleaning with mould, removing PU-foam

before



after



- Pressure: approx. 4 bar
- Dry ice consumption: approx. 60 kg/h

Notice:

Low pressure, surface made of plastic, in holes only with round nozzle

Applications

Electronic parts

Cleaning task

Electronic components



- Pressure: approx. 6 bar
- Dry ice consumption: approx. 40 kg/h

Notice:

Low pressure, surfaces made of plastic

Applications

Wood restoration

Cleaning task

Wood restoration, removing old paintings

- pressure: approx. 12 bar
- dry ice consumption: approx. 50 kg/h

Notice:

Partly very hard layers of paint, therefore the high blasting pressure



References

Fischer Automotive – injection moulder

The company **Fischer Automotive Systems** uses the IB 7/40 for cleaning of injection moulds.



Every time fine structured surfaces are required, the mould is cleaned every 15 runs with the IB 7/40.

To better get between / into the opened moulds Fischer Automotive uses the Kärcher angled nozzle. Furthermore the extremely compact blasting gun offers a very good handling in very narrow places between / in moulds.

The IB 7/40 at Fischer-Automotive can be comfortably pushed through narrow corridors between the injection moulds. Thanks to the push cart principle steps are no handicap.

References

Royal Protec – Service provider

The company **Royal Protec** uses our IB 15/80.

Royal Protec offers cleaning services in the sectors:



Power and heat supply stations, foundries, rubber and roller plants, fabrication of corrugated boards and paper, splinters and plastic plate fabrication, fire restoration, textile and chemical industry, food industry, traffic and transport industry, ship yards, paint shops and racing.

As for Royal Protec time is money reliable blasting units are extremely important. There is nothing worse than standing at the customer and the blasting unit is not working. A service contractor is permanently under pressure of time. A breakdown of a unit always causes an immense economic loss

Royal Protec blasts under hardest conditions. Tenacious contaminations or dusty environments are no problem for the IB 15/80.

References

CarBlast – Car restoration

The company CarBlast is specialist in removing underbody coating on bitumen basis.



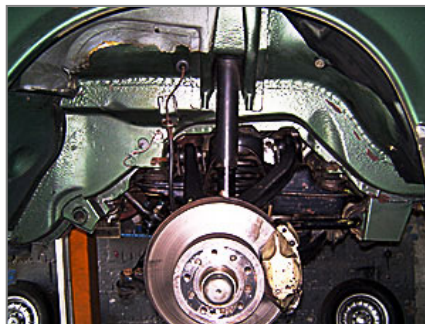
CarBlast works with the IB 15/80. They are blasting in a blasting cabin. One operator is equipped with full breathing protection as the removed bitumen coating is harmful to health. The bitumen dust is distributed in the air and deposits also on the unit. The IB 15/80 runs reliably without any breakdowns.

Further services the company CarBlast offers are general vehicle cleaning and conservation.

before



after



FAQ

Frequently Asked Questions

→ **Does dry ice blasting lead to cooling down of the base material? Might that lead to any damages?**

Generally dry ice blasting leads to a little cooling down of the base material, but only for a very short time max. -40°C will be reached. The risk of damages is only marginal.

Experiences in dry ice cleaning of hot injection moulds show that the short-term cooling down is absolutely no problem. Especially different heat expansion coefficients of contamination and base material ease the removal of contamination due to the thermal shock of the -79°C cold pellets. The cleaning success with dry ice is mainly due to the high speed / kinetic energy of the pellets of hard (fresh) dry ice.

→ **As no thought has to be given to collecting abrasives when dry ice blasting, is it possible to clean moulds directly in the machine? Is that also possible with hot moulds?**

Those questions do exactly covering the advantages of the dry ice blasting technology: Yes of course (as long as the removed contaminations are not problematic). One of the major advantages of dry ice cleaning is the cleaning of tools / machines in mounted status. Low downtimes, wear, setup times. Experiences also show that it is often easier to clean hot tools than cold tools. The reason for this is that some contaminations have lower adhesive forces when they are warm. Furthermore the effect of the thermal shock is emphasized. The tool / mould is not damaged.

FAQ

Frequently Asked Questions

→ **What do I need for blasting with the IB 15/80?**

Answer: The mobile dry ice blasting unit IB 15/80

A suitable compressor (air quantity 8 – 11,5 m³/min; pressure: 7-16 bar)

230V AC voltage (0,6KW)

Dry ice pellets in an isolated box (3mm diameter)

→ **What do I need for blasting with the IB 7/40?**

Answer: The mobile dry ice blasting unit IB 7/40

A suitable compressor (air quantity 3 – 4 m³/min; pressure 6-10 bar)

230V AC voltage (0,6 kW)

Dry ice pellets in an isolated box (3 mm diameter)

→ **What kind of compressed air system do I need to demonstrate all application areas?**

Kärcher recommends a screw compressor that supplies approximately 10 m³/min water and oil free compressed air at a pressure of 8-12 bar.

If it is not possible to guarantee a good quality of the supplied compressed air it is recommended to use the add-on kit with the water separator for the IB 15/80! It ensures an unproblematic continuous run under all conditions. At the IB 7/40 the oil and water separator is already integrated.

FAQ

Frequently Asked Questions

→ **Is it possible to use the in-house compressed air system of the company for dry ice cleaning with the IB 7/40?**

Yes, the IB 7/40 has been especially optimized for that kind of application. For using the in-house network some conditions exist. The typical pressure of in-house networks varies between 6-10 bar. In that pressure range the IB 7/40 works in an optimum. As the air consumption is up to 3,0 m³/min the following points should be taken into account:

- It must be made sure that no problems occur in other areas / machines if the pressure of the in-house network should temporarily drop-off.

→ **Is it also possible to work with the IB 15/80 on a compressed air network of a company?**

Yes, the IB 15/80 also works on in-house networks. For using the in-house network some conditions exist. The typical pressure of in-house networks varies between 6-10 bar. With that pressure it is possible to fulfil many applications if the following points are considered:

- It is necessary to use nozzles with a low air consumption e.g. the small round nozzle
- It must be made sure that no problems occur in other areas / machines if the pressure of the in-house network should temporarily drop-off while working with the IB 15/80
- In most cases the air in the in-house networks has to be dried and freed of oil (here it is necessary to use the add-on kit water separator!)

FAQ

Frequently Asked Questions

→ **It is known that cleaning with dry ice is loud. What is the effective audio pressure?**

The audio pressure depends on a multitude of working parameters, hereunder e.g. blasting pressure, air quantity, used nozzle etc. and varies for the IB 15/80 between 75-125 dB(A). The IB 7/40 has clearly lower noise emissions. At max. pressure the audio pressure of the IB 7/40 is around approx. 99 dB(A). The operator definitely has to wear some ear protection. This is the reason why dry ice blasting works in plants are often done after work or during the week-end.

→ **Have special protection clothes to be worn when dry ice blasting?**

Yes, for personal safety reasons and for personal comfort. The operator should wear an overall, safety glasses or helmet with visor, gloves and ear protection. If the cleaning has to be done in a tank, it is recommended to wear special and suitable breathing protection.

→ **Is CO₂ harmful for health?**

The MAK (maximal working place concentration) for CO₂ is limited to 0,5 percent by volume. When cleaning an average production hall the existing aeration is sufficient to prevent a too high CO₂-concentration. In closed rooms or in blasting cabins an aeration device has to be installed in any case. As CO₂ is approximately 40% heavier than air, the aeration of such cabins has to be done at ground level.

→ **Is it unproblematic to touch dry ice pellets with the naked skin?**

Dry ice pellets must never be touched without gloves. They are -79°C cold and will cause burnings of the skin due to the extreme cold.



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