

## Basics of beam technology

Blasting technology is general term for the surface treatment by abrasive blasting. The adhesion and the quality of old coatings can be improved by blasting different substrates. The abrasive medium, in most applications a granular medium, is accelerated by means of compressed air, liquids, or blasting wheels, and adjustable nozzles are used to direct the high energy blasting jet onto the workpiece surfaces. The result is heavily dependent on the beam method and the selected parameter settings - and the abrasive medium used.

Owing to the silicosis risk (pneumoconiosis) for personnel, “sandblasting” (blasting with quartz sand), for many years by now, is permitted only when comprehensive precautionary measures are taken. The beam system requires regular maintenance and the blasting medium must be monitored depending on the type and degree of contamination on re-use and condition of the granularity.

## Safety measures

Hazardous substances such as e.g. antimony, tin, arsenic, lead, and cadmium may be present in the abrasive medium within the legally fixed limits

Self-contained breathing apparatus for blasting work as well as special protective clothing e.g. clothes, safety shoes and personal hearing protection should be used.

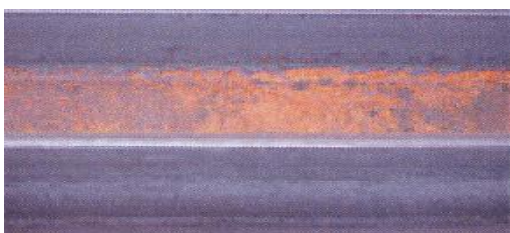
Deposits or suspended dust can be ignited by ignition sources. The alternating or simultaneous blasting of light metals and ferrous parts increases the risk of fire and explosions, particularly with the presence of aluminium and rust.

The relevant statutory provisions and regulations must be observed.



## How Blasting works

By using blasting technology outstanding results can be achieved; see pictures below. As you will see, the process achieves de-scaling, rust removal, paint stripping, sand removal, cleaning, deburring, shot blasting, matting, roughing and other surface finishes.



Steel girder - before



Steel girder - after

## Blasting materials

The state of the present and the desired surface condition determine which type of blasting medium should be used. Factors to consider for the choice of blasting medium are: price, object material, material thickness and the required blast profile, viz. surface roughness. On thin material “softer” beam techniques are recommended to preclude deformation or other damage to the material.

On structural steel the surface roughness normally is between 25-60µm, rarely up to 80 µm.

Different blasting materials:

				
Aluminium oxide	Granulate	Steel grit	Steel shot	Plastic

Other types may include: Glass beads, ceramic, dry ice, corundum, steel ball, cut wire, emery, blast furnace slag, bronze shot.

Common methods are:

<b>Air blasting</b>	Dry abrasive
<b>Dry ice blasting</b>	CO2-pellets, temperature at least -78°C, embrittlement of coatings by cold to roughen the surface
<b>Wet abrasive blasting</b>	Moisturized blasting, dust control
<b>Wet blasting</b>	Abrasive with the addition of water, dust control
<b>Slurry blasting</b>	Water with slurry abrasive, damped mechanical particle impact
<b>Hot water and steam jet</b>	Hot water or superheated steam at 50 -160 bar
<b>Pressure liquid jets</b>	Water using granular abrasives pressure by 50 – 2000 bar
<b>Centrifugal wheel blasting</b>	(dry) High speed wheels with dry abrasive medium
<b>Centrifugal wheel blasting</b>	(wet) High speed wheels with water and dry blasting agents
<b>Ultrasonic cleaning</b>	Balls, acceleration caused by mechanical vibrations and electrical shock

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