



SAND BLASTING: A COMPLETE GUIDE TO SURFACE PREPARATION AND CLEANING

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TABLE OF CONTENTS

- 01** Introduction
- 02** What is Sand Blasting?
- 03** How Does Sand Blasting Work?
- 04** Main Components of a Sand Blasting System
- 05** Types of Abrasive Media Used in Sand Blasting

- 06** Types of Sand Blasting Methods
- 07** Applications of Sand Blasting
- 08** Industries That Commonly Use Sand Blasting
- 09** Maintenance of Sand Blasting Equipment
- 10** Conclusion

INTRODUCTIONS

Surface preparation is one of the most important steps before painting, coating, or repairing any metal or concrete surface. A clean and properly prepared surface helps coatings last longer, improves product quality, and reduces maintenance costs. Among the many surface preparation methods available today, sand blasting remains one of the most effective and widely used techniques.

From construction sites to manufacturing plants, sand blasting is used to remove rust, paint, dirt, and other contaminants quickly and efficiently. It creates a clean and roughened surface that improves the adhesion of paints and protective coatings.

In this guide, we will explain what sand blasting is, how it works, its benefits, applications, different types, and important safety practices.



WHAT IS SAND BLASTING?

Sand blasting, also known as abrasive blasting, is a surface preparation process that uses high-pressure compressed air or mechanical force to propel abrasive materials against a surface. The impact removes unwanted layers such as rust, paint, corrosion, scale, grease, and dirt.

Although the name "sand blasting" is still commonly used, modern blasting often uses other abrasives because silica sand can create harmful dust. Depending on the application, materials such as garnet, aluminium oxide, steel grit, glass beads, or crushed glass may be used instead.

The main purpose of sand blasting is to clean, smooth, roughen, or shape a surface before further processing.

HOW DOES SAND BLASTING WORK?

The sand blasting process follows a simple but highly effective method.

First, compressed air generates enough pressure to move abrasive media through a blasting hose. The abrasive particles travel at high speed and strike the target surface.

As the particles hit the surface, they remove contaminants, corrosion, old coatings, and surface imperfections. At the same time, they create a slightly rough texture that allows new coatings to bond more effectively.

The blasting pressure, nozzle size, abrasive type, and distance from the surface are adjusted according to the material being cleaned.

MAIN COMPONENTS OF A SAND BLASTING SYSTEM

A standard sand blasting setup includes several important components.

Air Compressor

The air compressor supplies high-pressure air required for blasting operations.

Blast Pot

This container stores the abrasive material before it is mixed with compressed air.

Blast Hose

The hose carries compressed air and abrasive media to the nozzle.

Blast Nozzle

The nozzle directs the abrasive stream onto the work surface at high speed.

Abrasive Media

Different blasting materials are selected based on cleaning requirements and surface sensitivity.

Safety Equipment

Operators use protective helmets, gloves, respiratory protection, safety suits, and hearing protection during blasting.

TYPES OF ABRASIVE MEDIA USED IN SAND BLASTING

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Different materials provide different finishing results.

Silica Sand

Traditionally used but now limited in many industries because of health risks caused by silica dust.

Garnet

Produces excellent cleaning performance with low dust generation and can often be recycled.

Aluminium Oxide

A durable abrasive suitable for heavy-duty cleaning and repeated use.

Steel Grit

Commonly used for removing heavy rust and preparing steel surfaces.

Glass Beads

Ideal for gentle cleaning, polishing, and creating smooth finishes.

Crushed Glass

An environmentally friendly abrasive that effectively removes paint and rust.

Plastic Media

Suitable for delicate materials where aggressive blasting could cause damage.

TYPES OF SAND BLASTING METHODS

Several blasting methods are used depending on the application.

Dry Sand Blasting

The most common process where dry abrasive media is blasted using compressed air.

Wet Blasting

Water is mixed with abrasive material to reduce dust and provide smoother cleaning.

Vacuum Blasting

The blasting system immediately collects used abrasive and dust, making it suitable for enclosed environments.

Wheel Blasting

Instead of compressed air, rotating wheels propel abrasive media for high-volume industrial cleaning.

APPLICATIONS OF SAND BLASTING

Sand blasting is used across many industries.

Manufacturing Industry

Manufacturers use sand blasting to prepare machine parts before painting, powder coating, or galvanising.

Construction Industry

Steel structures, bridges, pipelines, and buildings are cleaned before protective coatings are applied.

Automotive Industry

Vehicle restoration projects rely on blasting to remove rust and old paint from car bodies and components.

Marine Industry

Ships, offshore platforms, and marine equipment require blasting to remove corrosion caused by seawater exposure.

Oil and Gas Industry

Pipelines, storage tanks, pressure vessels, and industrial equipment undergo abrasive blasting before protective coating.

Aerospace Industry

Aircraft parts are cleaned carefully using specialised abrasive materials.

Concrete Surface Preparation

Concrete walls and floors are prepared before waterproofing, repair, or decorative coatings.

INDUSTRIES THAT COMMONLY USE SAND BLASTING

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Many industries depend on sand blasting, including:

- Construction
- Manufacturing
- Automotive
- Shipbuilding
- Aerospace
- Oil and gas
- Petrochemical
- Power plants
- Infrastructure maintenance
- Metal fabrication

MAINTENANCE OF SAND BLASTING EQUIPMENT

Regular maintenance helps improve equipment life and blasting performance.

Important maintenance practices include:

- Inspect hoses regularly.
- Replace worn nozzles.
- Clean moisture separators.
- Check compressor performance.
- Store abrasive media properly.
- Inspect valves and fittings for leaks.
- Replace damaged protective equipment.

Preventive maintenance reduces downtime and ensures consistent results.

CONCLUSION

Sand blasting remains one of the most reliable and effective methods for surface preparation across a wide range of industries. Whether removing rust, cleaning old coatings, preparing metal for painting, or restoring concrete surfaces, this process delivers fast, consistent, and high-quality results.

Choosing the correct abrasive media, maintaining equipment properly, and following strict safety practices are essential for achieving the best outcome. With ongoing advancements in blasting technology and environmentally friendly materials, sand blasting continues to play a vital role in modern industrial maintenance, manufacturing, construction, and restoration projects.





THANK YOU!!

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