

ABRASIVE SELECTOR GUIDE

How to Choose the Right Media for Your Substrate, Finish and Process

Choosing abrasive on price alone is one of the easiest ways to increase total cost. The right media does more than clean a surface. It affects cleaning speed, surface profile, finish consistency, dust levels, media consumption, equipment wear, waste handling and downstream coating performance.

We believe there are six core factors that shape performance, they are:

1. Density
2. Particle size
3. Recyclability
4. Dust levels
5. Media shape
6. Hardness

This guide is designed to help operations, production and engineering teams make better abrasive decisions by looking at the whole process, not just the price per bag or tonne.



1. Start with the job, not the media

Before comparing abrasive types, define the process requirement clearly.

Ask these six questions first

1. What substrate are you blasting?

- Carbon steel
- Stainless steel
- Aluminium
- Non-ferrous metals
- Stone or masonry
- Wood
- Composites
- Delicate or heritage surfaces

2. What is the desired outcome?

- Heavy coating removal
- Rust or scale removal
- Surface preparation before coating
- Decorative finish
- Peening
- Polishing
- Light cleaning
- Controlled low-aggression cleaning

3. What finish or profile do you need?

- Coating-ready anchor profile
- Fine, uniform surface
- Minimal profile
- Controlled cosmetic finish

4. Where is the work taking place?

- Open blasting
- Blast room
- Blast cabinet
- Confined or dust-sensitive environment

5. Is recovery possible?

- No, media is expendable
- Yes, media is recovered and recycled
- Possibly, depending on equipment and contamination level

6. What matters most commercially?

- Faster throughput
- Lower cost per part
- Lower dust
- Reduced contamination risk
- Better finish consistency
- Less waste
- Longer media life



2. The six abrasive properties that matter most

Time three cycles and write your totals.

Density

Higher-density media generally hits harder and can clean faster, often creating a deeper profile. That can be useful for heavy-duty cleaning and profile creation, but too much impact can be excessive on delicate surfaces. SurfacePrep states that denser abrasives deliver more kinetic energy over a smaller area, contributing to deeper indentation.

Particle size

Large particles generally create a deeper profile. Smaller particles usually provide more impacts and better coverage, often producing a more uniform finish. SurfacePrep notes that the most efficient approach is usually to use the smallest particle necessary to achieve the required profile.

Recyclability

This changes the economics of the process. SurfacePrep explains that expendable abrasives are mostly used in open environments, while recyclable abrasives are more often used in blast cabinets and blast rooms with recovery systems.

Dust levels

Dust affects visibility, clean-up, containment and operator environment. In open blasting, lower dust can be a major advantage. In enclosed systems, dust can be managed more effectively through extraction and recovery.

Media shape

Angular abrasives usually cut more aggressively and are better suited to coating removal and profile creation. Rounded or spherical media is often more appropriate where the objective is peening, polishing, or a gentler finish. SurfacePrep explicitly notes that angular abrasives have more effect on a surface than rounded or spherical media.

Hardness

Harder particles generally cut more aggressively and can produce a deeper profile, although very hard particles can also shatter under certain conditions. This must be balanced against finish requirement, substrate sensitivity and media life.



3. Quick selector, which abrasive type is usually right?

If you need heavy cleaning and coating-ready profile on steel

Typical priorities:

- fast cutting
- profile creation
- production speed

Usually worth assessing:

- JBlast
- Garnet
- Steel grit
- Chilled iron
- Aluminium oxide

Why:

These media types offer varying combinations of aggression, profile generation and cleaning speed. SurfacePrep positions JBlast as a long-established expendable abrasive for portable air blast cleaning, while steel grit, chilled iron and aluminium oxides offer more aggressive reusable options depending on process and environment.

If you need a recyclable abrasive in a cabinet or blast room

Typical priorities:

- media recovery
- lower long-term consumption
- process stability
- enclosed blasting efficiency

Usually worth assessing:

- Steel shot
- Steel grit
- Stainless steel shot or grit
- Glass bead
- Aluminium oxide

Why:

In enclosed systems with media recovery, recyclable media can become more commercially attractive. SurfacePrep's cabinet and blast room materials support this logic, alongside their abrasive guide.

If you need a finer or more cosmetic finish

Typical priorities:

- lower aggression
- uniform finish
- controlled surface appearance

Usually worth assessing:

- Glass bead
- Fine aluminium oxide
- Crushed glass
- Plastic media, depending on substrate

Why:

Glass bead is spherical and commonly used where a more refined finish is required, while fine aluminium oxide can give tighter control depending on the specification.



If substrate contamination matters

Typical priorities:

- compatibility with non-ferrous or stainless parts
- reduced risk of ferrous contamination

Usually worth assessing:

- Stainless steel shot or grit
- Glass bead
- Aluminium oxide
- Plastic media

Why:

SurfacePrep's abrasive catalogue includes stainless steel shot and grit specifically for use where substrate compatibility matters.

If the surface is delicate or must be cleaned gently

Typical priorities:

- controlled aggression
- low pressure
- minimal damage risk

Usually worth assessing:

- Calcium carbonate
- Fine glass bead or grit
- Sodium bicarbonate
- Fine stone grit
- Specialist soft-clean media

Why:

SurfacePrep's Soft Clean system is designed specifically for delicate controlled cleaning and can use extra-fine stone grit, calcium carbonate, glass bead, grit, and bicarbonate of soda.

If dust is a major concern in open blasting

Typical priorities:

- dust suppression
- visibility
- environmental control

Usually worth assessing:

- Aquagrit for wet or slurry processes
- Garnet, depending on application
- other lower-dust options depending on substrate and setup

Why:

SurfacePrep notes that Aquagrit is suited to wet and slurry blasting, and their wet systems are designed to reduce airborne fines and dust during the blast process.

4. Abrasive selector matrix

Requirement	Usually points towards	Watch-outs
Fast rust and coating removal on steel	JBlast, steel grit, chilled iron, aluminium oxide, garnet	May create too much profile or dust if over-specified
Cabinet blasting with recovery	Steel shot, steel grit, stainless shot/grit, glass bead, aluminium oxide	Media must suit recovery and separation system
Decorative or refined finish	Glass bead, fine aluminium oxide	May be too gentle for heavy contamination
Non-ferrous or stainless components	Stainless shot/grit, glass bead, aluminium oxide, plastic media	Avoid contamination risk from unsuitable ferrous media
Delicate stone, wood or heritage work	Calcium carbonate, sodium bicarbonate, fine stone grit, glass bead	Aggressive media may damage substrate
Low-dust or wet blasting need	Aquagrit, selected wet-blast-compatible media	Check equipment compatibility and water use
Lowest possible cost per part in an enclosed system	Recyclable media with recovery, often steel, stainless, glass bead or aluminium oxide	Lowest purchase price may not deliver lowest process cost



5. Open blasting vs cabinet vs blast room

Open blasting

Often best suited to expendable abrasives, especially where media recovery is not practical. Dust, clean-up, containment and waste disposal become more important here. SurfacePrep states expendable abrasives are mostly used in open environments.

Blast cabinet

Often better suited to recyclable media where recovery, visibility and process consistency matter. SurfacePrep's cabinet range is designed to work across multiple abrasive types, with pressure and suction systems suited to different production demands.

Blast room

Often the strongest environment for recyclable media, especially where recovery and dust extraction systems are in place. SurfacePrep's blast room literature highlights integrated recovery, cleaning and extraction options that support this kind of process.



6. Common mistakes when selecting abrasive

Choosing purely on price

A cheaper media can increase blast time, media usage, clean-up, rework and total cost per part.

Ignoring the substrate

The wrong abrasive can contaminate sensitive materials or damage delicate surfaces.

Over-specifying aggression

Abrasive that is too hard, too dense or too coarse can create an excessive profile or unnecessary damage.

Under-specifying aggression

Abrasive that is too soft or too fine may clean too slowly and raise labour costs.

Forgetting the equipment

Media must suit the blasting system, recovery setup, air availability and environment.

Ignoring downstream implications

The wrong finish or profile can create coating adhesion issues, inconsistency and avoidable rework.

7. A simple decision framework

Use this sequence before making a final selection:

Step 1 - Define the substrate and contamination.

Step 2 - Define the required finish or profile.

Step 3 - Confirm whether the process is open blasting, cabinet blasting or blast room blasting.

Step 4 - Decide whether expendable or recyclable media is commercially more appropriate.

Step 5 - Compare the six key properties:

- density
- particle size
- recyclability
- dust levels
- media shape
- hardness

Step 6 - Sense-check the impact on:

- cleaning speed
- finish consistency
- media consumption
- clean-up
- equipment wear
- cost per part

Step 7 - Validate the choice before scaling up.



8. What good abrasive selection looks like

Good abrasive selection is not about finding the cheapest media.

It is about choosing the media that gives you:

- the right finish
- the right profile
- the right process speed
- the right environmental fit
- the right total cost outcome

That may be an expendable abrasive in one job, a recyclable metallic in another, and a fine, low-aggression media in a third.

The point is not to standardise blindly. The point is to match the abrasive to the real process need.

9. Next steps

Request an abrasive and process review

If you want a more confident recommendation based on your substrate, finish, equipment and working environment, request an abrasive and process review from SurfacePrep.

Use this guide as a starting point, then compare your current abrasive choice against the process factors above.

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