



UNDERSTANDING WORK MIX

The hidden variable that controls cleaning performance, surface profile, and abrasive media economy across every blast system type — and how to manage it.

4
CORE
PRINCIPLES

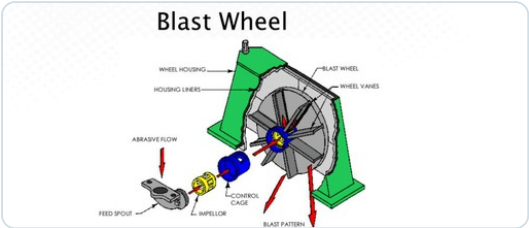
The **work mix** — also called the **operating mix** — describes either the particle size distribution cycling through an airless wheel blast machine, or the abrasive-to-air ratio at a pressure blast nozzle. In any system where abrasive is recycled, it is the central quality indicator. Getting it right is not a one-time setup: it is an active, ongoing discipline that determines cleaning rates, surface profile consistency, and abrasive media costs for the life of the blasting campaign.

SECTION 01

Work Mix in Airless Wheel Blast Machines

A new charge of abrasive is a single nominal grade — not the ideal condition. The batch must first **season**: repeated impact cycles fracture larger particles progressively, creating a natural blend of coarse and fine fractions working in concert.

- **Larger particles** carry the kinetic energy to dislodge heavy scale, thick rust, and tenacious contamination from the substrate surface.
- **Smaller particles** reach pits, weld seams, and crevices that coarser media cannot access.
- Together they outperform either size fraction alone — this is the **seasoned working mix**.



Blast wheel anatomy —
feed spout, impellor, control cage & vanes



Ammeter monitoring — 2–3× daily: Drop below full-load = add fresh abrasive. Persistent low reading = inspect feed chutes, impellor, or control cage. Verify mix with a **sieve screening kit**.

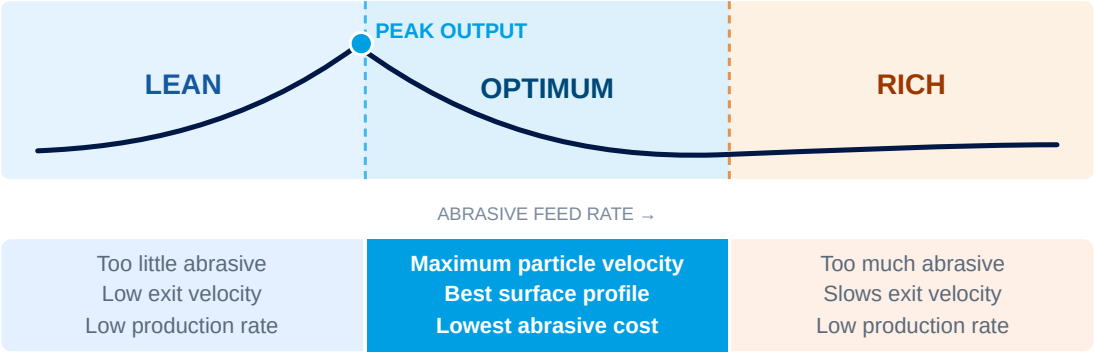


Pan Abrasives for airless wheel: PanaShot™ Steel Shot and PanaGrit™ Steel Grit (80–100 cycles, 1% breakdown/pass) are the industry-benchmark choices for building and sustaining a stable, long-life working mix in airless wheel machines.

SECTION 02

Work Mix in Pressure (Nozzle) Blast Systems

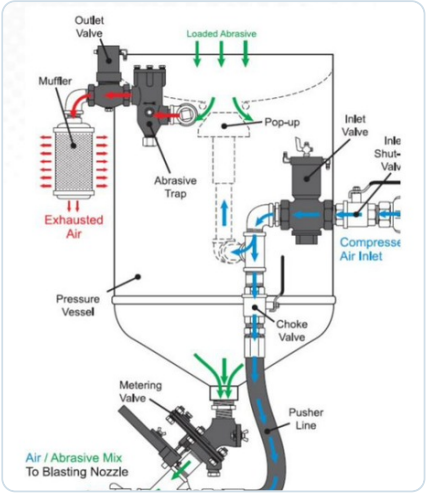
In compressed air blast pot systems, work mix means the **abrasive-to-air ratio at the nozzle**, set via the metering valve. The ratio follows a non-linear performance curve with three zones:



Metering valve selection: Plunger-type (Fina/Corsa series) deliver the finest abrasive-to-air ratio adjustment. Disc-type (Plana series) prioritise speed of change. Ball-type valves provide economical entry-level control. In production environments, **precision metering is the recommended investment**.



Pan Abrasives for nozzle blasting: EnviroGrit™ Garnet — sub-angular shape, 2400 kg/m³ bulk density, and low breakdown rate deliver consistent work mix ratios and fast cutting rates throughout the blast pot cycle.



Pressure blast pot —
internal components & flow path

SECTION 03

Abrasive Recycling & Work Mix Quality

In any recycling system — blast room, airless wheel machine, or closed-circuit blaster — the work mix is **actively managed by the recycling equipment**. Spent abrasive returning from the blast zone contains three categories requiring separation before media is returned to service:



USABLE ABRASIVE

On-grade intact particles returned to the blast pot or wheel feed hopper for re-use



OVERSIZE DEBRIS

Paint chips, scale & weld spatter removed by rotary drum separator or coarse screen



FINES & DUST

Sub-grade fragments stripped by the adjustable air wash separator into dust collector

Air wash damper calibration is critical: Set too aggressively → removes usable fines, distribution shifts coarse, surface profile suffers. Set too loosely → fines accumulate, reducing blast intensity and impairing operator visibility. Calibrate to match the specific abrasive type in use.

PanBlast recycling systems — all include the fully adjustable air wash stage:
ProFlo — single pot, 3,000 kg/hr · **UltraFlo** — dual pot, 7,000 kg/hr · **PB1 Bulk System** — up to 20,000 kg/hr (steel abrasives)

SECTION 04

Abrasive Media & Work Mix Stability

The inherent durability of the abrasive determines how fast the work mix changes. High-breakdown media generate significant fines per pass, demanding frequent recycling system intervention. Low-breakdown metallic media maintain a near-constant particle size distribution across hundreds of cycles, producing a highly stable, low-maintenance work mix.

ABRASIVE MEDIA	LIFE CYCLES	BREAKDOWN/PASS	WORK MIX STABILITY
Silica Sand	1	100%	No mix — single pass expendable only
EnviroGrit™ Garnet PA	3–5	25%	Needs screening; significant fines generation
BrightBlast™ Glass Beads PA	9–12	10%	Moderate stability; gentle size reduction
QuickCut™ Aluminium Oxide PA	10–12	9%	Consistent angular mix; low dust output
CeraPeen™ Ceramic Shot PA	70–90	1.2%	Highly stable; mix changes very slowly
PanaShot™ Steel Shot PA	80–100	1%	★ Industry benchmark — ideal airless wheel mix
SatinBlast™ S.S. Shot PA	150–225	0.5%	Premium stability; minimal top-up required
WireBlast™ Cut Wire PA	300–400	0.24%	Highest stability; near-constant distribution

PA = Supplied by **Pan Abrasives** · Full abrasive range for all blast system types · panabrasives.com

KEY TAKEAWAY

Work mix is a **dynamic condition, not a fixed specification**. In wheel blasting: monitor the ammeter, run sieve analyses, and top up promptly with the correct grade. In nozzle blasting: dial the metering valve to the optimum abrasive-to-air ratio and hold it. In recycling systems: calibrate the air wash damper to match your abrasive type. **Pair PanBlast equipment with Pan Abrasives media — manage the mix — for peak production rates, consistent surface profile, and the lowest abrasive cost per m².**

