TERRAZZO TILE MACHINE • ILLUSTRATED GUIDE

How a Terrazzo Tile Is Made

33 diagrams: raw material, machines, a finished tile and a complete line.
No long text to read — the pictures carry it.

8	12	7	0.3–0.4
product lines	process steps	auxiliary machines	water/cement ratio

Scroll down · 33 panels · print-ready

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What this guide covers

33 panels in five parts. Open a part to jump straight to the panel you need.

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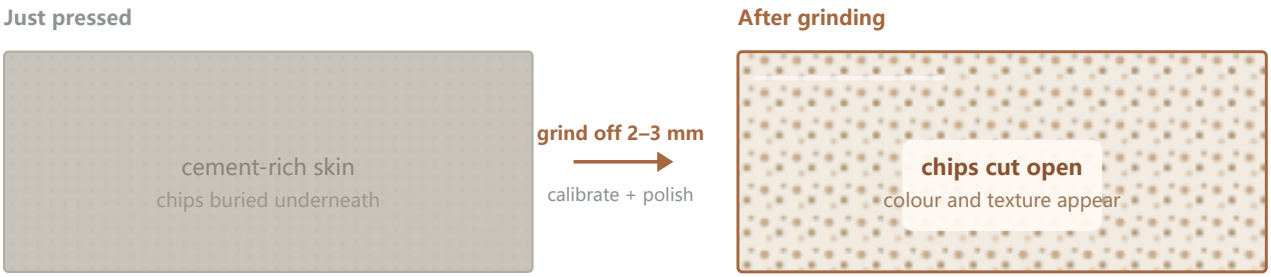
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01 • Where a tile comes from

Pressed it is a blank. Ground it is terrazzo.

Straight from the mould the tile is grey and the pattern invisible. The chips are cut open, and the colour appears, only after grinding and polishing.



As-pressed thickness = finished thickness + grinding allowance (2–3 mm)

So quote on the finished size and buy material on the pressed size — the gap is 2–3 mm.

KEY

Grinding sets the look

ALLOWANCE

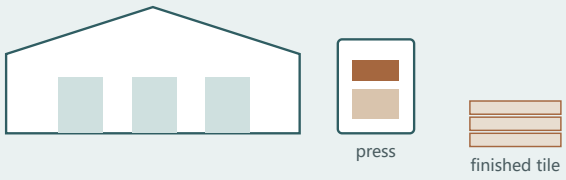
Press 2–3 mm thicker than finished

02 • Two ways to make it

Casting and pressing are two different trades

Terrazzo literature uses two vocabularies: one for **casting in place**, one for **factory-pressed tiles**. Mix, process and acceptance differ — know which you are reading before comparing numbers.

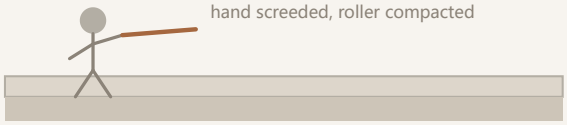
Factory-pressed tile — this guide



· High-pressure filter pressing squeezes the water out
· Low w/c (0.3–0.4) → high strength, low absorption
· Cured under controlled temperature and humidity
· Fixed grinding settings, consistent gloss

→ What this guide is about

Cast-in-place floor — the other way



· Mixed and placed on site, no dewatering
· High w/c (0.4–0.5) → strength scatters
· Depends on weather and the crew
· "Two-slurry three-grind", "divider strip" belong here

→ Two trades, numbers do not transfer

How to tell at a glance: See "1:1.5–1:2.5 by volume", "two-slurry three-grind", "set divider strips" — that is site work.
See "w/c 0.35", "filter pressing", "demoulding strength", "abrasive grit" — that is press work.

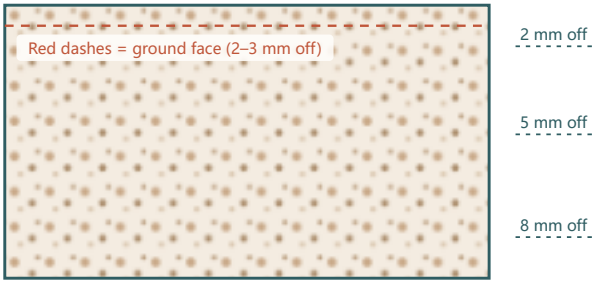
03 • How the tile is built

This machine makes single-layer, through-body tile

The JS series is **single-layer filter pressing**: one metered fill, one mix through the body, chips from face to back. Two-colour double-layer needs a separate double-layer terrazzo tile machine and a second feeder.

This machine: single layer, through-body

One fill, one press, one mix throughout

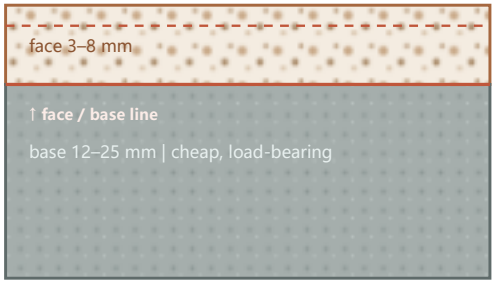


Chips all the way down, uniform section

20–30 mm thick, one mix throughout

Double layer: a different machine

Second feeder: costly face mix + semi-dry base



The 3–8 mm face is a separate decorative layer

Less material, but a second feeder

This machine is single layer

JS-600 / JS-600s / JS-1000 are all single-layer: one fill, one press, one mix

Double layer needs another machine

The two-colour machine adds a second feeder — a model of its own, not an option

Single layer costs more in material

Coloured chips and white cement run through the whole body, so material costs more than double layer — the return is a section that looks the same at any depth

04 • One press, eight products

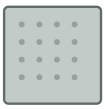
One press, eight products

Change the mould to change the shape, change the finishing line to change the surface. Kept apart, these two explain how one line covers so many products.



Terrazzo tile
Grind → polish

600×600 / 500×500
Floors, platforms, plazas
Main product



PC paver
Blasted, not ground

300–600 mm squares
Landscaping, walkways
Stone-like look



Kerb stone
Static pressing

Made to drawing
Road edging
Slow cycle, 40–90 s



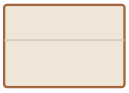
Roof tile
Spray painted

1230×640×15
Pitched roofs
Flexural strength, not gloss



Formwork
Anti-corrosion mesh

460×1010
Wall formwork, ring beams
Insulation after curing



Large slab
Up to 1500×1000

Pressed on JS-1000
Cladding, large spaces
Needs bottom vibration + vacuum



Tactile paving
Dome or bar moulds

300×300, 400×400
Accessibility
Often mandatory in public work



Other specials
Swap the mould

Cast stone · rustic · ribbed
Wall block · cladding · tree grate
Steps · skirting
Mould lead time 3–4 weeks

Three questions first: One machine covers many products. Settle these three first: ① **Flat or profiled** (sets the mould) ② **Exposed chips or not** (sets grinding, blasting or washing) ③ **Facing or structural** (sets the mix and the acceptance criteria)

05 • Surface finishes

One tile, eight possible surfaces

The press only makes a blank; the look and the slip rating come from finishing. Decide the application first, then the surface.



Mirror polish
1500–3000 grit + polish
R9 | lobbies, showrooms



Matt / satin
Stop at 400–800 grit
Medium | most indoor, retail



Matt anti-slip
Stop at 200–400 grit
Med-high | hospitals, schools



Bush hammered
Mechanical pick or wire brush
R11+ | plazas, ramps



Shot blasting
Steel shot, chips left uncut
High | outdoor, car parks



Water washing
Retarder, then wash, chips exposed
High | gardens, landscape



Antique finish
Brushed and stained
Medium | heritage, retrofits



Impregnation
Penetrating sealer
Standard outdoors | no colour shift

Gloss and grip trade off
Brighter means slicker, grippier means duller. No tile is both R11 and 80 gloss.

Application first, finish second
Lobbies want gloss, ramps want bite, gardens want exposed chips.

Three of them skip the grinding line
Bush hammering, blasting and washing run on other equipment — pick the route before you buy

06 • Compared with other tiles

Five materials compete for the same floor

Before buying a machine, the customer picks a material. This table answers who you compete with, and why you win.

Item	Terrazzo (this press)	Ceramic tile	Natural stone	Pervious concrete	Epoxy terrazzo
Section look	**Chips throughout** Cut, ground, chamfered alike	Printed surface Print, not through-body	Natural veining Cannot be repeated	Coarse grain Little decoration	Takes patterns Looks plastic
Water absorption	**3–8%** Seal outdoor tiles	≤ 0.5% Lowest of all	0.2–1% Stains, needs care	≥ 10% Built to drain	Non-absorbent but substrate must be dry
Slabs and impact	**20–30 mm, solid** Load-bearing, fewer joints	Thin and brittle Big slabs need backing	Comes thick Hidden cracks possible	Average Edges chip under load	3–5 mm topping Dents under impact
Outdoor weathering	**Suitable** to EN 13748-2	Suitable Pick an anti-slip face	Suitable Seal all six faces	Suitable Frost resistance varies	Not advised UV yellowing
Can you make it	**One press line** A local plant works	Needs a kiln Different scale of capex	Depends on a quarry Buy blocks and cut	Low barrier Crowded, price-driven	Site-applied A trade, not a product

Ex-works price, same size, no tax or freight: pervious concrete < ceramic < terrazzo < epoxy < natural stone.

In municipal, landscape and school work terrazzo bids against stone and pervious pavers — the whole package wins, not the square-metre price.

The solid body is the strong card

Cut it, grind it deep, chamfer it — the chips are still there, not a printed layer. Thick slabs, specials and steps come off the same line.

Absorption draws the line

At 3–8% it sits a class away from porcelain; for outdoor work design to EN 13748-2 and seal the face.

The whole order competes

Tile plus skirting, steps and corners from one supplier — exactly where stone and ceramic struggle to follow.

07 • Sizes and tolerances

How big, how thick, how tight

The three specification questions buyers ask most. Once settled, mould, tonnage and cost can be worked out.

Common sizes

Nominal size	Typical thickness	Typical use
300 × 300	20–25 mm	Indoor floors, bathrooms
400 × 400	20–25 mm	Indoor, corridors
500 × 500	25–30 mm	Lobbies, public areas
600 × 600	25–30 mm	Main project size, most exported
800 × 800	30 mm	Large spaces, retail
600 × 1200	25–30 mm	Slabs, fewer joints
Made to drawing	Per drawing	Steps, skirting, corners, patterns

Above 800 mm derive tonnage from face pressure — a bigger press does not by itself make bigger tiles.

Specials and trims (skirting, steps, corners) usually earn a better margin than the main tile.

Setting the thickness

① Strength scales with thickness

A tile bends; capacity rises with the cube of thickness

② Grinding allowance 2–3 mm

20 mm finished = 22–23 mm pressed; buy on the pressed size

Factory dimensional tolerance

Length / width	**±1 to ±2 mm**
Thickness	**±1 to ±2 mm**
Diagonal	**≤ 1.5 mm**
Squareness	**≤ 0.3 mm**
Flatness (incl. warp)	**≤ 1.0 mm**

Factory control values; the contract governs.

Size first, tonnage second

At one tonnage a 600 and an 800 tile differ twofold in face pressure — size on the largest

Two constraints on thickness

Flexural demand and grinding allowance — take the thicker

Tolerance is ex-works

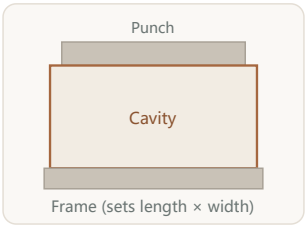
Flatness after laying depends on substrate and crew; specify the two separately

08 • Moulds and changeover

Change the size, change the mould set

One machine makes eight products because frame and punch swap out. Change size or thickness and the mould set changes — budget for it up front.

A mould set = frame + punch



The punch shapes the face;
the frame sets the outline;
both fix the thickness; new size, new set.

Three changeover numbers

60 min
Per change (skilled fitter)
Incl. setting, trial press, first-off check
100 changes a year ≈ 100 hours

1–2 sets
Kept for standard sizes
One set per main size
Worn sets can be rebuilt

3–4 weeks
Lead time for a special
Made to drawing, sample approval
Check stock before quoting

Cutting changeover cost

① Batch one size at a time — one changeover running a full lot saves far more than splitting

② Quick-change: dowel location plus hydraulic clamping gets it under 30 min

③ Buy moulds for the top sizes first — 80% of orders land on two or three sizes

The mould follows the size
Any change of length, width or thickness means a new set, not a parameter tweak

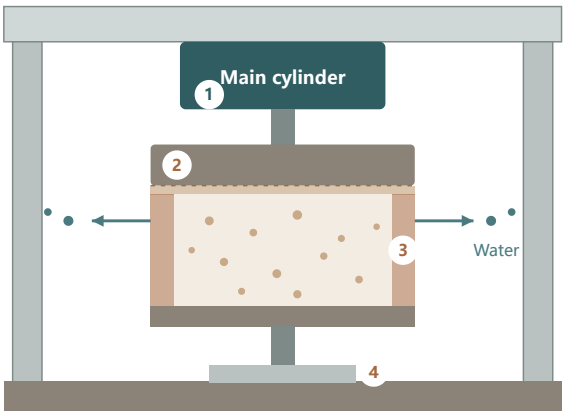
Changeover is a cost
100 changes a year is 100 hours down; scheduling drives output

Specials: ask the lead time first
Custom moulds take 3–4 weeks — check stock before taking a rush order

09 • How the press applies force

Only four parts of a press do the work

Four parts: main cylinder, punch, frame, ejection. The cylinder supplies tonnage; punch area sets the pressure the tile actually sees.



1. **Main cylinder**
   Supplies the force. Tonnage on the spec sheet is its rated thrust
2. **Upper punch + filter mesh**
   Presses down; water leaves through the mesh, so the face densifies
3. **Mould frame**
   Sets the tile size — new frame, new size
4. **Base plate + ejector**
   Demoulding. Even ejection keeps the body intact

The same 350 t on a 600×600 tile gives only about **9.5 MPa** — below the working range. Tonnage alone does not compact (see 12).

The punch decides density
The cylinder only supplies force; punch area and mesh drainage decide the pressure at the face

The frame is the "size switch"
Swap frame and punch and the same machine runs 300–600 mm tiles — the physical basis of "one press, many products"

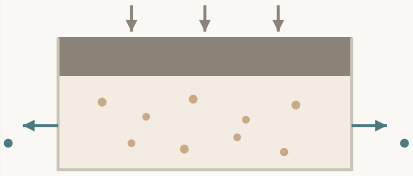
Ejection keeps the body whole
Ejection must be even and synchronised; uneven force breaks the body

10 • Three things happen at once

Compaction: squeeze the water out, drive the air out

One stroke does three jobs: squeeze water, release bubbles, draw vacuum. Miss any one and the face will not look dense.

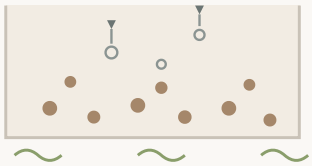
① Dewatering



Pressure drives water out through the mesh

Finished w/c 0.3–0.4, reached by pressing

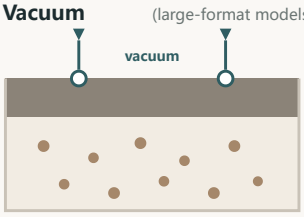
② De-airing



Vibration packs the chips into a skeleton

Bubbles break; stop when it sinks no more

③ Vacuum (large-format models)



Pulls residual air and water out fast

Lowest porosity, highest density

①②③ are the three capabilities — filter pressing, vibration, vacuum. Models differ in how they combine them.

Pressing sets the w/c ratio

Mix at 0.45, press to 0.35 — that 0.1 is what tonnage buys

Vibration is not pressure

Vibration re-arranges the chips, pressure only packs them tighter. With large chips, pressure alone will not expel the air

Filter pressing is internal dewatering

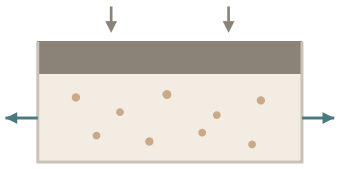
One fill, water pushed out through top and bottom mesh — no split-layer feeding

11 • Three press types

Three machine types for three kinds of tile

Each type suits a different aggregate and format. Start from the tile you want to make, not from tonnage.

① Enclosed press — Type W

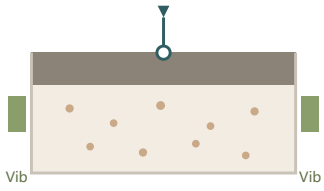


Chips	fine – medium
Cycle	4–8 / min
Capex	medium

Best for

Many sizes, small batches, standard pavers

② Vibro-vacuum — Type WV

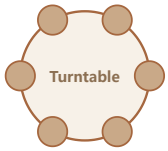


Chips	medium – extra large
Cycle	1–2 / min
Capex	high

Best for

Large chips, thick tiles, 1500×1000 slabs

③ Rotary — Type WC



six stations, jobs in parallel

Chips	fine – medium
Cycle	3–8 / min
Capex	high

Best for

One size, long runs, output

Also keep apart: the vibrating casting table (high w/c, demoulded overnight) and dry-press firing at 1000 °C — ceramic, not terrazzo.

WV for large chips and thick tile

Large chips, thick tile and big formats need vibration with vacuum; an enclosed press cannot do it

Cycle time and density pull opposite ways

WV is the densest and the slowest at 1–2 strokes a minute. Size the line on its bottleneck, not its fastest unit

Rotary buys output with stations

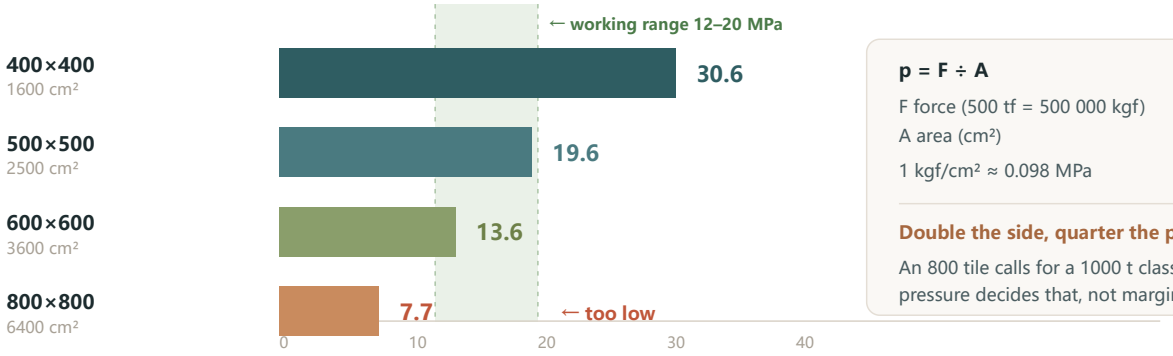
Output comes from station count, not pressure. Few sizes at high volume is where rotary wins

12 • Face pressure

A 500 t press leaves 7.7 MPa on an 800 tile

Tonnage on a spec sheet is total output force, not the pressure the tile sees. Density follows face pressure — and that falls with the **square** of the tile side.

One 500 tf press, four tile sizes



p = F ÷ A

F force (500 tf = 500 000 kgf)
A area (cm²)
1 kgf/cm² ≈ 0.098 MPa

Double the side, quarter the pressure

An 800 tile calls for a 1000 t class press; pressure decides that, not margin.

Backwards: for 15 MPa on a 600 tile, 15 × 3600 ÷ 1000 ÷ 0.098 ≈ 550 tf

Same 500 t: the bigger the tile, the lower the pressure. Size tonnage on the largest finished size.

Normal face pressure
12–20 MPa is the range

Below 10 MPa
Not dense enough, gloss will not come up

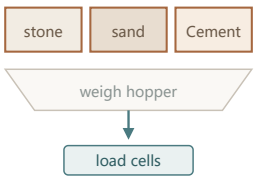
Above 25 MPa
Wears the mould, rarely needed

13 • The three front-end machines

Batcher, mixer, doser: how accurate the mix is

The press decides how dense; these three decide how accurate. Batching, mixing and dosing are the input end of the line.

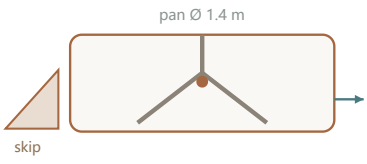
① Auto batcher



14.5 kW 2.9 t
5.6 × 1.65 × 2.75 m

It decides: is the batch mix right

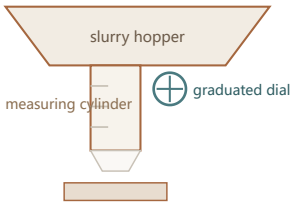
② Skip mixer



Mix 7.5 kW + hoist 4.5 kW
2.25 × 1.55 × 2.72 m 1.5 t

It decides: is the slurry even

③ Dosing unit



Volumetric dosing, stepless handwheel
Feed accuracy ≤ ±2%

It decides: same weight every tile

These three set batch consistency
A 1% batching error can move strength by 5% or more — most batch-to-batch drift starts here

Weigh pigment on its own
At 2–5% of cement it will not disperse if tipped in with the bulk

Dosing is by volume, not weight
The cylinder measures volume, so a thicker or thinner slurry changes the dose — hold the w/c ratio first

14 • One batch

Charging order: pigment dry-blends with cement first

On one recipe, shade depends on two things: charging order and weighing accuracy. Fix those two and batches stay steady.

Charging order

1. **Pigment + cement, dry first**
   60–90 s | cement coats the pigment
2. **Add aggregate (stone, sand)**
   30 s more to even out the dry mix
3. **Water, in two steps**
   80% first, top up on how it looks
4. **Discharge to the doser**
   Holds a ball, breaks when dropped

Weighing accuracy

Pigment	± 0.5%	Smallest share, biggest effect
Cement	± 1%	Source of strength and heat
Aggregate	± 2%	Bad grading shows on the face
Water	± 2%	The one people judge by feel

Working out one batch

Water = cement × w/c (0.3–0.4)

Pigment = cement × dosage (usually 2–5%)

Rest = batch volume × component share

Dose pigment on cement weight
On total weight the shade drifts

Dry-blend pigment with cement
Coated in cement powder it will not clump; tipped into wet mix it never disperses

Add water in two steps
All at once it runs wet, presses soft and loses strength — read the slurry, then add the last 20%

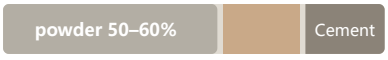
Judge the mix by a test
"Holds a ball, breaks when dropped" is a test anyone can repeat — better than feel

15 • Mix design

More stone powder, or more chips?

One variable shapes the recipe: what shows on the polished face. Powder-heavy reads fine and quiet, chip-heavy reads bold and granular. That is positioning, not skill.

① Powder-based — cost driven



chips 10–20%



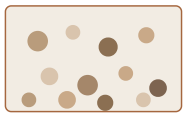
Fine and even
No visible grain
Municipal • volume

Powder is cheap, fills voids, densifies the body
Cost: no stone look

② Chip-based — look driven



powder 12%



Bold grain
Clear depth
Premium • lobbies

Chips cost more, wear faster, shade harder to hold
Cost: price and process control

③ Recycled fillers — policy driven

Recycled aggregate / fly ash / slag / cullet



Cheaper, greener
Batch variation must be held

Three tests:
radioactivity · leaching · strength

Decide what you sell, then write the recipe — the mix is part of the product, not an accessory to the machine.

Within a route, chip size sets the stone look



Fine 1–2 mm
Even speck, no grain
Indoor fine • cheapest



Medium 3–5 mm
Clear chips, steadiest look
Mainstream • sells best



Coarse 5–8 mm
Big chips, strongest depth
Outdoor thick tile • higher value

8–12 mm chips appear only in art tiles and slabs and need a vibrating vacuum press (see 11); the coarser the chip, the more abrasive you burn.

16 • Buying the raw materials

Four materials set colour and strength

The machine is chosen, the materials are still yours to buy. Change supplier on one recipe and the shade moves a step — the buying list is what people skip.

Binder

White cement + P.O 42.5

What to buy

White Portland cement for the face, ordinary Portland 42.5 behind

What to check

- Steady whiteness (shade starts here)
- Soundness passes (no efflorescence)
- Low alkali (pigment blotching)
- Fresh bags, no lumps

18–25% of face mix | dearest part

Aggregate

Marble / quartz / glass

What to buy

Marble, granite, quartz sand, glass, shell, crushed ceramic

What to check

- Clay content ≤ 1.0%
- Three-step grading (coarse, mid, fine)
- One quarry (steady shade)
- Pick out off-colour pieces

60–75% of dry mix | sets the look

Pigment

Iron-oxide pigments

What to buy

Iron oxide red / yellow / black, titania; no organic pigments in cement

What to check

- Alkali and light fast (no fading)
- Buy a whole shade in one lot
- Weigh it, never guess
- Above 3% strength drops

0.5–3% of cement | small but critical

Admixtures

PCE superplasticiser

What to buy

Mainly superplasticiser, plus defoamer; accelerator or water repellent as needed

What to check

- Trial-mix for cement fit
- Dose-sensitive: less, not more
- No chloride antifreeze
- Trial it with the pigment

0.3–1.0% of binder

Three buying rules: ① one white-cement supplier, a retained sample per lot; ② one colour lot at a time, mixer cleaned on every change; ③ screen aggregate on arrival — fix grading with filler, not with more cement.

Superplasticiser is what makes pressing work: it buys low w/c, while adding water for workability costs strength.

Source the material first

White cement and coloured chips usually come from away; where only grey cement and river sand are local, the recipe must follow

90% starts in purchasing

Across lots or quarries the shade shifts; fixing the supplier beats adjusting the machine

Aggregate is the bulk

Sixty to seventy percent of the dry mix is stone; its price and freight set the material cost per square metre

17 • The process

Twelve steps; the first nine are shared

Terrazzo tile, PC pavers, kerb stone, roof tile, permanent formwork — the first nine steps are much the same. The line splits after curing.**This machine is single layer, so it skips step ⑥, the base mix.**

Shared trunk (all product lines)

① **Material** inspect, store → ② **Batching** weigh each part → ③ **Mixing** wet / semi-dry → ④ **Face mix** fill the cavity → ⑤ **Vibration** de-air, settle → ⑥ **Base mix** skipped here → ⑦ **Pressing** filter, dewater → ⑧ **Demoulding** onto racks → ⑨ **Curing** strength builds

Splits after curing

⑩A Grinding
calibrate → coarse → fine → polish
Terrazzo · through-body · cast stone

⑩B Blasting
Shot roughens, chips stay whole
PC pavers · stone-look

⑩C Coating
colour + cure
Roof tile

⑩D None
Pressed is finished
Formwork · kerb stone

Order of selection

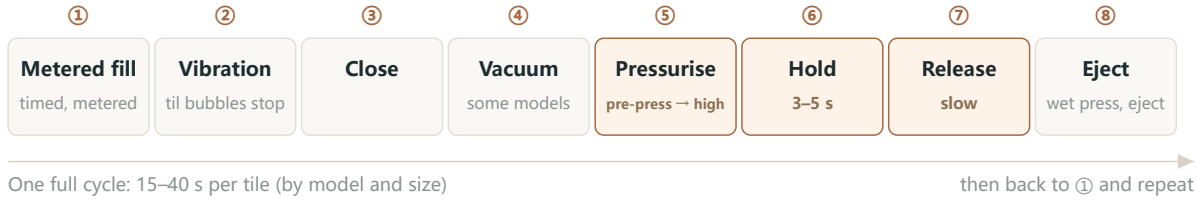
Finishing line first, press second. Finishing sets the surface; the press sets shape and density.

Terrazzo takes a grinding line, PC pavers a shot blaster, roof tiles a spray line — the three are not interchangeable.

18 • How the machine moves

Eight actions per tile

A single-layer press repeats eight actions in a fixed order; the length of one cycle is the ceiling on output.



The three orange cells are the **settings**: their values decide density, and whether the body survives.

Release speed matters most: open the mould with pressure still inside and the layers pull apart.

Hold 3–5 seconds
Under 3 s it is not dense; past 5 s nothing improves but output drops. This is the quality/output balance point

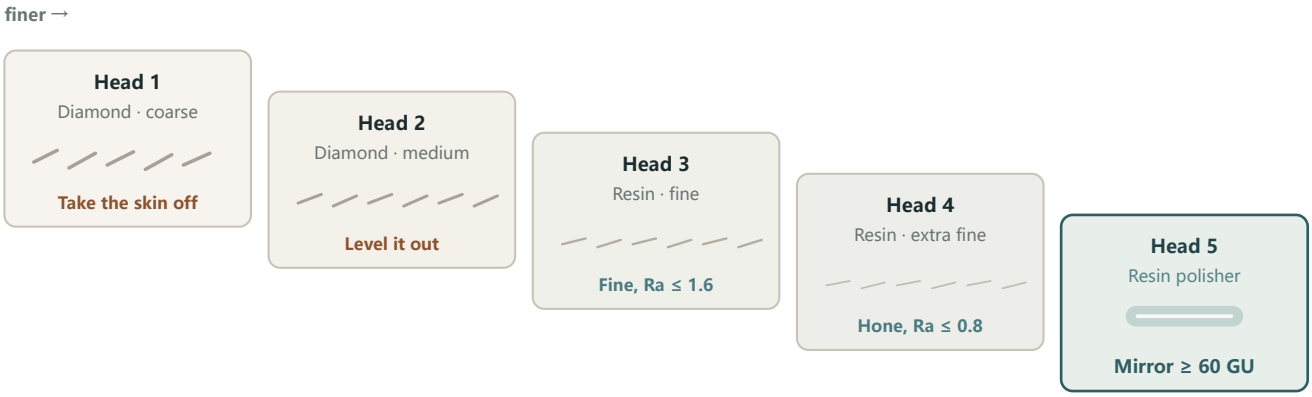
Release slowly
Open with pressure still inside and the layers separate — fix this value and leave it

Keep the pre-press stage
It pushes the bulk air out before full pressure, so the mould closes faster and the air leaves more completely

19 • How grinding works

Five heads, coarse to fine

Grinding steps up through the grits and never skips one. The scratches a pass leaves are removed by the next, finer block.



Heads 1–2 are metal-bonded and cut hard; 3–5 are resin-bonded and bring up gloss.

Wet grinding: blocks last 2–3× longer and there is no silica dust

Gloss rests on strength
If the body is weak, no block is fine enough to bring out a shine

Rinse between steps
Coarse grit carried over scratches the face at the next step

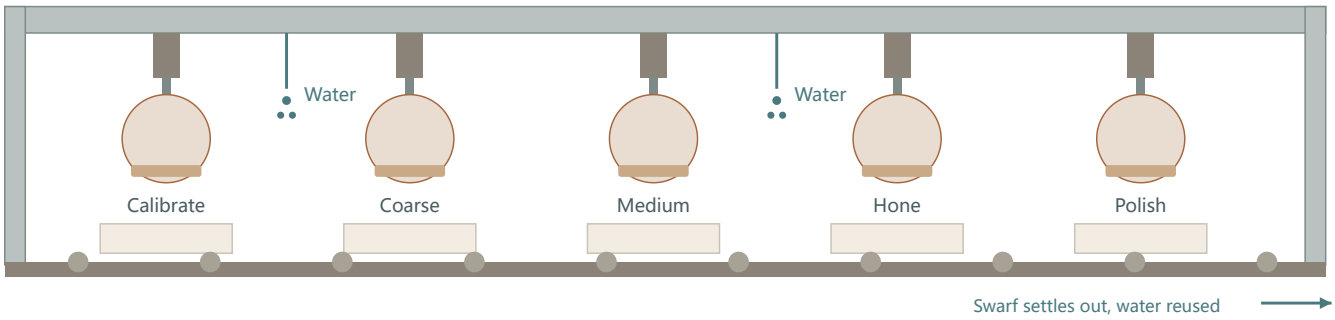
Gloss against grip
Pushing past 60 GU costs slip resistance — outdoors, keep margin

20 • Inside the grinding machine

A grinding machine is a row of heads over a water channel

The previous panel covered grits; this one covers how blocks are loaded onto the tile and how the swarf is carried away — the two things that set gloss and abrasive cost.

Heads 3 / 5 / 8 / 12 — the count sets how many grit stages you can run



Pneumatic loading: too little and it will not cut, too much and it marks the tile and eats blocks — the usual adjustment on a grinding line

Head speed, grit (previous panel), conveyor speed, water flow — together they set gloss and throughput

The calibrator is its own machine

It brings every tile to one thickness (±1 mm) so the later passes cut evenly

Head count sets the stages

Five heads give five stages; to reach 3000 grit you compress the middle — work back from the target grit to the head count

Wet grinding is the norm

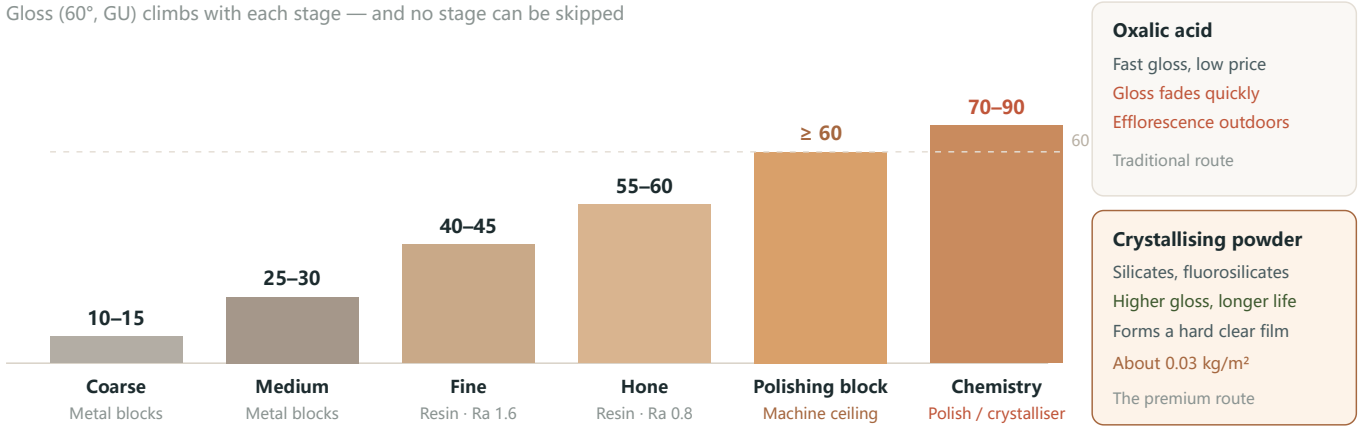
Blocks last 2–3× longer, it cuts faster, and there is no dust

21 • Where gloss comes from

The machine gives 60. The chemistry gives 80.

On one polisher, changing blocks and adding or skipping a polish can move gloss by more than 25 GU. It comes in two stages: blocks set the base, chemistry sets the ceiling.

Gloss (60°, GU) climbs with each stage — and no stage can be skipped



Oxalic acid

Fast gloss, low price

Gloss fades quickly

Efflorescence outdoors

Traditional route

Crystallising powder

Silicates, fluorosilicates

Higher gloss, longer life

Forms a hard clear film

About 0.03 kg/m²

The premium route

Head 5 is the machine limit

The resin block reaches 60 GU and that is the machine's edge; beyond it you need chemistry

Beyond that, chemistry

More pressure adds no gloss — it shifts the colour and burns blocks

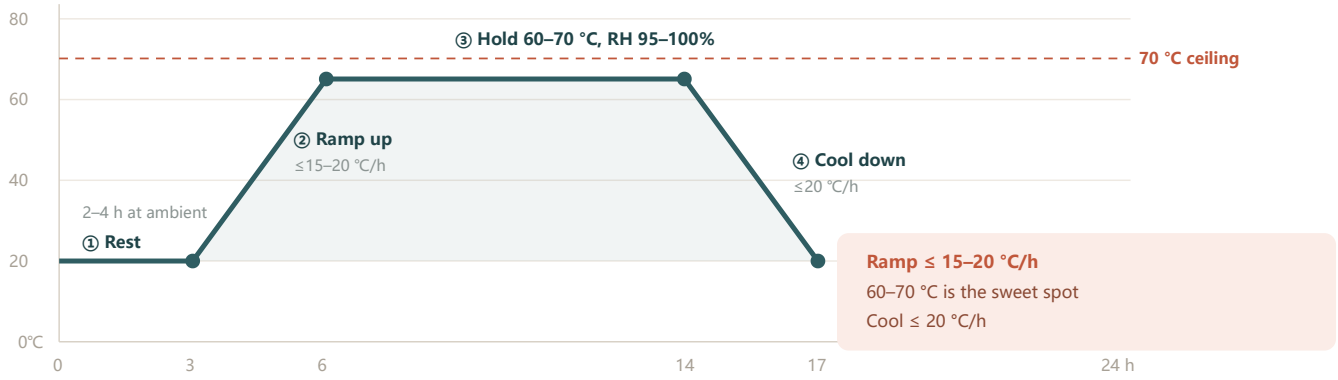
Acid versus crystalliser

Acid is fast and cheap but fades; powder goes higher and lasts two to three times as long

22 • Curing

Curing sets strength, and shine

Cement needs **time, water and warmth**. Miss one and strength stalls — and the tile will not polish bright.



No steam? Cure naturally: Cover to hold moisture, spray 2–3 times a day

70% strength at 7 days, 90% at 14, full strength at 28.**The first three days are critical — never let it dry out.**

Check strength before grinding

Grind only at strength, or the chips tear instead of cut

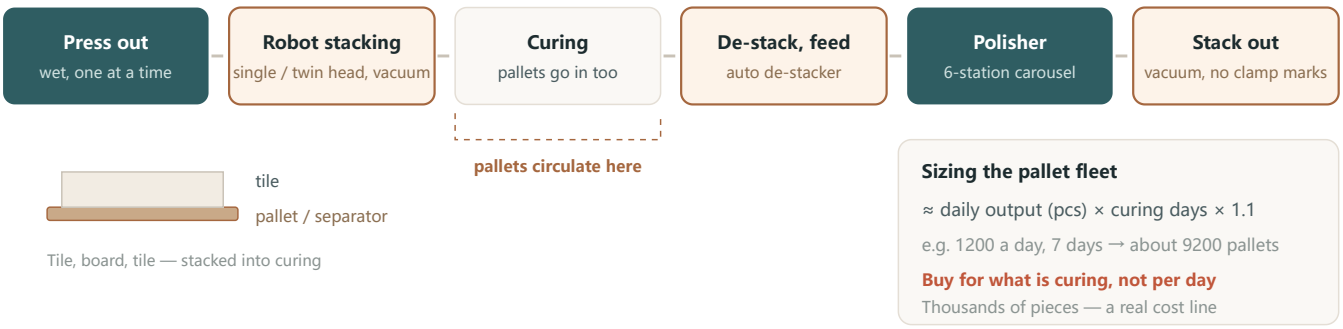
Curing days cannot be compressed

Grind early and every later pass has to be redone

23 • Handling after the press

After the press, four more steps

Beyond the press, handling, stacking and pallets decide whether the rhythm of the line holds together.



Twin head follows the press count, not output: one stacker serving two presses needs twin heads, if they sit together and the cycles match.

Vacuum at the polisher

Clamps mark a polished face, so this stretch uses vacuum cups

Pallet count follows curing

Seven days of curing needs seven days of pallets; buying per day leaves nothing to turn over

Stacking saves labour

One machine replaces two or three people, so payback tracks local wages — where labour is cheap, semi-automatic wins

24 • Power and the whole line

What transformer the line needs

Add up installed power and the transformer follows. The table estimates a typical JS-600 single-layer set.

Typical JS-600 single-layer set (one 8-hour shift)

Equipment	Power	Stage
Auto batcher	14.5 kW	Front end
Skip mixer (mix + hoist)	12 kW	Front end
JS-600 press	11 kW	Forming
MJS-5060 polisher (heads + pump)	45 kW	Finishing
Stacker + de-stacker	≈ 8 kW	Finishing
Dust collector + water pump	≈ 10 kW	Auxiliary
Line total	**≈ 97 kW**	

With a JS-1000 (33 kW press) or two presses the line passes 150 kW and the transformer must be recalculated.

Sizing the transformer

Installed load	**97 kW**
× demand factor 0.8	**78 kW**
÷ power factor 0.85	**≈ 91 kVA**
Transformer	**125 kVA**

3-phase 380 V / 50 Hz, 30% spare

The main hydraulic pump draws 3–5× rating on start

Leave starting headroom in the rating
125 kVA is the recommendation

Check the transformer first

If the existing supply is short, upgrading costs money and time — put both in the budget

Count the auxiliaries

Dust collection, pumps, compressor and lighting all count; totalling only the press is the usual mistake

Size cable on current

Long runs and heavy current need a derated check — settle the cable size at installation

25 • Building and services

How much floor, and three things to measure first

A standard JS-600 line takes about 200 m² over four zones: raw material, production, curing, finished goods. Curing is usually the largest and the most often underestimated.

Laying out the four zones

Raw material
Silos, batcher, mixer
about 40 m² | keep dry

Production
Press, doser, outfeed
about 60 m² | own plinth

Curing
Racks, pallet circulation
about 70 m² | 7–14 days of stock

Finished goods
Buffer, packing, loading
about 30 m² | forklift aisle

Indicative proportions — scale to your machine count and output.
Double the output and curing must double with it.

Three conditions before you start

① Headroom
Crane handling of moulds and silo filling both need clear height
With silos and a hoist, allow the real machine height

② Floor
Level ≤ 2 mm/m, concrete ≥ C20
Cast the press plinth separately from the slab

③ Power
About 97 kW installed, 125 kVA transformer
380 V 3-phase / 50 Hz; allow 3–5× for pump starting

Running noise ≤ 70 dB(A); give the grinding line its own drainage and slurry settling.

Curing takes the floor

Budget 7–14 days of stock; it grows with output, so do not size it on one day

The floor is not negotiable

Miss the level or the concrete grade and the press loses its accuracy once installed

Existing capacity comes first

If the supply is short it must be upgraded — cost and lead time go in up front

26 • Choosing the machine

Four questions, one configuration

Four questions set the configuration: product type, largest size, daily output, surface. Answer them and both the layout and the price band fall into place.

Q1 Flat or profiled?
Flat tile: change the mould, change the size
Profiled: own moulds, maybe another model

→ **Decides: number of mould sets**
1–2 sets for standard sizes
Specials take 3–4 weeks

Q2 Largest size?
600×600 → 360–400 t is enough
800×800 or slabs → 1000 t, vib + vacuum

→ **Decides: press tonnage**
Work back from p = F/A for 12–20 MPa
Size on the largest format, keep margin

Q3 Daily output?
200–500 m² → one machine
800 m² and up → carousel or several lines

→ **Decides: model and count**
Work back from the grinder, not the press
The grinding line is usually the bottleneck

Q4 What surface?
Gloss → grinding line
Stone-like texture → shot blaster

→ **Decides: the finishing set**
Finishing is 40–60% of the line cost
Buy for the target surface in one go

Three more to confirm

① Building
Area (curing takes most)
Headroom, floor strength
Power (a dedicated transformer)

② Budget shape
Budget the line, not just the press
Ask for a turnkey-line quotation

③ Scope of service
Is installation included? How many days?
How many people trained, for how long?
Is mix design support included?

Right configuration, output on day one

27 • Output and staffing

How many tiles a day, and how many people

The press does not set output on its own. Build the line around it and blanks pile up that the grinder cannot clear — derive real capacity from the grinding line.

Theoretical output

$$Q = n \times z \times A \times 60$$

n strokes per minute | z cavities | A tile area (m²)

e.g. 600×600, one cavity, 6 strokes a minute
6 × 1 × 0.36 × 60 = 129.6 m²/h
About 1000 m² in 8 hours — theoretical, not output

Three discounts to reality

① Uptime 75–85%
Mould changes, cleaning, handover, waiting for mix

② Changeover 1–2 h each
The more size changes, the more it costs

③ Grinding match the real bottleneck
A 5-head line runs 200–350 m² a shift, about a third of the press

Target output (finished)	Press	Grinding line	Crew
100–200 m²/shift	Single-station enclosed 200–250 tf	3–5 head machine	2–3 people
300–500 m²/shift	Single station 320–500 tf or small rotary	5 heads + calibrator	3–5 people
800–1500 m²/shift	Rotary multi-station + vibrating vacuum	Multi-head continuous line	6–10 people
Over 1500 m²/shift	Two lines in parallel	Two grinding lines	10+ people

Ranges are industry practice — check against the actual machine data and product size.

Keep 1.5–2× on the press
The press normally outruns the grinder; the margin covers changeovers and peaks — 3× is waste

Spend on grinding first
Money goes where the bottleneck is: extra heads raise output faster than extra tonnage

Staff the line, not the machine
Two or three people run a small line; at scale the extra hands go to handling and inspection

28 • The numbers

Where the money goes, per square metre

This is cost structure, not a quotation. Material, power and labour vary widely — put your own prices in.



Three levers

① Material
More powder saves money and flattens the look
A recipe decision, not a buying one

② First-pass yield
85–92% on a new line, 95%+ once experienced
Every five points goes straight to profit

③ Grinding allowance
20 mm finished needs 22–23 mm pressed
The extra material goes up as slurry

Work payback on real output, never on theoretical capacity.
Real output = daily capacity × working days × uptime (50–70% on a new line) × yield. Run the conservative case and the payback figure holds up.

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29 • Performance and standards

What tenders and exports actually ask for

For a tender or an export order the first question is which standard the report follows. This panel sets out the standards and the usual performance bands.

Export: EN 13748

EN 13748-1 terrazzo, internal use
EN 13748-2 terrazzo, external use
Covers size, appearance, strength, abrasion, slip, absorption, fire, CE marking
The external part adds freeze-thaw, thermal shock, chemicals, wet slip

Absorption: both criteria together

Total every specimen ≤ 8% by mass
Face every specimen ≤ 0.4 g/cm²

Fire

A1fl — cement-based products are classified without testing
Under EN 13501-1 and EC Decision 96/603/EEC

Usual performance bands

Property	Typical
Compressive strength	**40–70 MPa**
Flexural strength	**5–9 MPa**
Water absorption	**3–8%**
Surface gloss	**45–90 GU**
Abrasion (groove length)	**≤ 30 mm**
Slip rating	**R9–R11**

These are industry levels, not the threshold in the standard
Quote third-party tested values and state the batch

Domestic sales reference JC/T 507. The ceramic standards (EN 14411 / ISO 13006) cover a different product family and cannot replace type testing for terrazzo.
Tenders often also ask for radioactivity (GB 6566: IRa ≤ 1.0, Iγ ≤ 1.3), ramp slip (DIN 51130) and abrasion (ASTM C501).

Ask where it is sold
JC/T 507 at home, EN 13748 into the EU. The wrong standard makes a paid report useless

Absorption is pass or fail
8% and 0.4 g/cm² both apply; one alone fails type testing

The fire rating comes free
A1fl needs no test, so it can go straight into the technical bid

30 • Packing and shipping

Tiles are heavy freight — you pay by the tonne

Sixty kilos a square metre, and a container is full at twenty-something tonnes. Packing and freight decide how far you can sell.

The weight chain

21.6 kg
one 600×600×25
at 2400 kg/m³
17 kg at 20 mm thick

60 kg
one square metre
2.8 tiles per m²
at 25 mm thick

≈ 25 t
one 20GP container
≈ 420 m² per container
40HQ: same payload

Quote by weight — tonnes first, cubic metres second.
Freight goes by tonne, so distance eats margin — produce nearby.
Export is declared gross, so pallets, packing and corners all count.
Loose or full container shifts landed cost — fix the delivery term first.

The four-piece export pack

Corner protectors
Guard corners and edges; a chipped corner is the first reject

Carton / shrink film
One or a few per pack, to stop rub and shift

Wooden pallet
Forklift handling, stack under 1.1 m

Strapping
Two vertical straps, stood on edge, board at the corners

Wood packaging needs the IPPC mark — without it the port can hold the container.

Stand it on edge
Flat-stacked tiles take pressure marks; stood on edge with paper between, the face survives

Allow 1–3% breakage
The industry band — state it in the quote and contract; better packing pushes it down

Most damage is in handling
Forks, hoists and re-handling hurt more than road vibration; pallets and corners are what protect

Export documents: Commercial invoice, packing list, bill of lading, certificate of origin, wood-packaging fumigation certificate (or exemption), CE marking and Declaration of Performance. Project orders add a third-party test report — agree before signing who supplies each.

31 • Model reference

JS series at a glance

Figures from published manufacturer data. Match on largest size, target output and surface.

Model	Pressing force	Max product	Speed	Power / weight	Role
JS-600	360 T	600×600	3–6 tiles/min	11 kW / 7 t	The standard workhorse, 400–500 m² a day
JS-600s	400 T	600×600	3–6 tiles/min	11 kW / 10 t	+40 t, heavier frame, more tolerant of feed
JS-1000	1000 T	1500×1000	2–3 tiles/min	33 kW / 28 t	Bottom vibration, top vacuum, for slabs
MJS-5060	(polisher)	500×500 / 600×600	350–500 m²/shift	5 heads / 5.5 t	6-station carousel, one operator
Roof tile machine	1000 T	1230×640×15	3–4 tiles/min	11 kW / 15 t	Sprayed colour, pitched roofs
Kerb machine	Static	Made to drawing	Single 40–90 s Twin 40–60 s	—	Twin: 1500 m a day

Note: the MJS-5060 is a 5-head carousel; head motors total 37.5 kW, plus a 7.5 kW hydraulic power pack.

32 • If you read one panel

If you read only one panel, read this

Product

· Single layer, through-body: chips at any depth
· Max chip size ≈ 1/3–1/2 of tile thickness
· Absorption EN 13748-1: total ≤8%, face ≤0.4 g/cm²
· Cement-based terrazzo meets A1fl by nature

Grinding sets the look

Equipment

· Face pressure = force ÷ area
· Double the side, quarter the pressure
· 12–20 MPa in normal work
· The bottleneck is usually the grinder

Size tonnage on the largest format, keep margin

Process

· One fill; the press dewaters internally
· Dry-blend pigment with cement first
· Vibrate until it creams over and stops sinking
· Release slowly; open only at zero pressure

The slow steps decide quality

Selection and support

· Four questions: type, size, output, surface
· Finishing sets the look, the press the shape
· Auxiliaries run 40–60% of the press
· 125 kVA transformer; pallets by curing stock

Finishing first, press second

Order of selection
Finishing line first, press second — tonnage follows once finishing is fixed

Length
These 33 panels print to 17 A4 pages and bind into a booklet

Printing
9 sheets A4, double-sided, bound

Reading order
01–08 product, 09–25 machines and process, 26–33 selection and investment

Look-ups
Models on 31, cost structure on 28

33 • Before you ask for a quote

Six answers and the proposal lands first time

A line is not chosen from a model number. Settle these six and price, lead time and layout come back together.

1. **Product and size**
   Which tile, what size, what thickness
   Skirting, steps and corners as well?
2. **Daily output**
   In m² per shift, or a target annual volume
   So cycle, stations and line count can be worked back
3. **Surface level**
   Mirror, matt or anti-slip; polish or not
   Decides how far the finishing set goes
4. **Building and power**
   Shed dimensions, floor level, existing transformer
   Decides the layout and whether supply must grow
5. **Raw material source**
   Is white cement, coloured chip or pigment available locally
   Decides whether the recipe transfers and what freight adds
6. **Where it is sold**
   Domestic or export; export needs EN 13748
   Tenders also want test items, CE and DoP

Answer these six and the proposal, price and lead time come back right first time. Miss one and the work comes back — output and floor space above all, because they set the layout of the whole line, not the choice of a single machine.