

YOUR FREE READER'S COMPANION

The Backyard Oven Build Pack

A companion to The Wood-Fired Pizza Oven Building Bible · by Gus Romano

Thanks for picking up the book. This is the companion you tack to the inside of the shed door before you mix a single bag of mortar, and the one you carry to the masonry yard when you go shopping: the oven-style chooser that matches your budget and your cooking to the right build, the foundation and insulation quick reference so the heat stays where the pizza is, the dome dimensions that make an oven actually draw, the curing and firing temperatures that decide whether it lasts thirty years or two fires, and a material takeoff for a starter oven so you buy the right stuff once. Print it, fold it, keep it in the truck.

Ovens almost never fail from a bad pizza recipe. They cracked from below — set on a base that moved, or fired too fast before the construction water was out. Get the base right and cure it slow, and the cooking is the easy part. — Gus

1. The Oven-Style Chooser

A backyard wood-fired oven is really two choices made separately: the shape (dome or barrel) and the material (firebrick, cob, or castable refractory). Some pairings are more natural than others, but the rule that keeps any of them standing never changes with the material. Match it to your budget, your skill, and how you'll actually cook most weekends — not your once-a-year party.

Build	Material cost (2026)	Build time (first-timer)	Lifespan	Pick it when
Cob dome (clay, sand, straw over a sand form)	\$250–\$600	2–4 weekends + drying	5–15 yrs	Tight budget, first build, you have clay soil, want the experience with the kids
Firebrick dome (laid by hand over a sand form)	\$1,100–\$2,200	4–6 weekends	30+ yrs	The real, permanent thing; pizza is the priority; you'll cut and lay brick
Castable refractory barrel (cast over a form)	\$900–\$1,600	2–4 weekends	20–30 yrs	You want brick-like durability without bricklaying; roomy floor for bread
Firebrick dome + masonry enclosure	\$1,800–\$3,000+	6–8 weekends	40+ yrs	A showpiece that outlives you, and the budget is there

Read your use first

- Mostly pizza for two to four, fired on weekends? Build small and fast-heating. A big oven wastes fuel and an hour of your evening.
- Family of six, you bake bread and host? You want more floor area and thermal mass, and you'll accept a longer fire to charge it.
- Want it cooking the day after on retained heat? You want serious mass — thick brick or castable, not thin cob.
- Whatever the chamber, the cooking floor is always real dense firebrick. It takes the most abuse and it's the cheapest part to get right, the most miserable to fix later.
- The biggest mistake I see is building too big. A bigger oven costs more, takes longer, eats more wood, and is slower to pizza temperature. Size to your everyday cooking.

The honest trade-off: cob costs you labor and almost no money but won't outlive you. Brick costs both but lasts a generation. Castable sits in the middle — long life without the bricklaying. There's no wrong answer, only a wrong match between the oven and your real life.

2. Foundation, Stand & Insulation Quick Reference

Under the whole oven goes a reinforced concrete slab, and in freeze country that slab needs footings below the frost line. A finished brick dome weighs 1,500 to 3,000 lbs (680–1,360 kg), so this is not the place to guess. Build the base right, cure it slow.

Slab & footing by climate

Condition	Slab thickness	Footing
Firm soil, no hard freeze (warm South)	4 in (100 mm)	Thickened edge, 8–12 in (200–300 mm) deep
Average soil, light freeze	5–6 in (125–150 mm)	Perimeter footing below frost line
Soft soil or hard freeze (NE, Midwest)	6 in (150 mm)	Footings to frost depth, often 36–48 in (910–1220 mm)

For a 32 in (810 mm) dome the stand runs about 48×48 in (1220 mm), so a slab around 54×54 in (1370 mm) covers it with 2–3 in (50–75 mm) overhang all around. Compact a 3–4 in (75–100 mm) gravel drainage bed under it, set a #4 rebar grid on chairs, pour a 3000–4000 psi mix, and cure it damp 5–7 days before you build.

Working height — get this right or hate it every cook

Land the cooking floor at 36–40 in (910–1015 mm) off the ground (push to 40–42 in / 1015–1070 mm if you're tall). Work backwards through the stack:

Layer (top to bottom)	Material	Thickness
Cooking floor	Dense firebrick laid flat	2.5 in (64 mm)
Insulating layer	Perlite-cement	4 in (100 mm)
Stand top slab	Reinforced concrete	3 in (75 mm)
Block stand	8×8×16 in CMU, ~4 courses	~28–32 in (710–810 mm)

Insulation — the part that makes it a heat battery

Two places it goes: under the floor and over the dome. Skip it under the floor and the heat drains into your slab (one reader's bare slab read 280 °F / 138 °C after an hour — that's heat not cooking your pizza, and it cracks slabs).

Where	Use	Spec
Under the floor	Perlite-cement (5–6 perlite : 1 cement by volume)	3–4 in (75–100 mm)
Under the floor (alt)	Calcium silicate board	2–3 in (50–75 mm), dead flat, no cure wait

Over the dome	Ceramic fiber blanket (rated 2300 °F / 1260 °C)	2 in (50 mm) total, in two layers
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[Note: The under-floor insulation only ever carries the firebrick that spreads the load. Perlite-cement and cal-sil both crush under a peel — never let an insulating layer be your cooking surface.]

Refractory only where the fire touches: firebrick and refractory mortar in the floor and dome. Everything else — slab, stand, outer shell — is ordinary masonry. People mix these up constantly and spend money on a fancy stand while cheaping out on the floor, which is exactly backwards.

3. Dome Dimensions & the 63% Door Rule

Here's the number that separates an oven that roars to temperature and clears its smoke from one that smolders: the door opening height should be about 63% of the internal dome height. Too tall and you bleed heat out the front; too short and the smoke backs up and the fire starves. The old Italian builders landed on it long before the fluid-dynamics folks confirmed it.

A good starting rule: internal dome height $\approx$ half the floor diameter, door width $\approx$ half the floor diameter, door height $\approx$ 63% of dome height.

Oven size	Internal floor diameter	Internal dome height	Door height ($\approx$ 63%)	Door width
Personal (1–2 pizzas)	28–32 in (700–810 mm)	13–15 in (330–380 mm)	8–9.5 in (210–240 mm)	14–16 in (350–405 mm)
Family (standard)	36–42 in (915–1065 mm)	16–19 in (405–480 mm)	10–12 in (255–305 mm)	16–18 in (405–460 mm)
Large (entertainer)	48 in (1220 mm)	22 in (560 mm)	14 in (350 mm)	19–20 in (480–510 mm)

Worked example — the 32 in (810 mm) starter dome: dome height 16 in (405 mm); door height $16 \times 0.63 \approx 10$ in (255 mm); door width ≈ 16 in (405 mm). Round to the nearest half-brick joint and you're fine.

Flue & draft

Spec	Recommendation
Flue placement	At the front, just outside the door opening — never inside the dome
Flue inner diameter	6 in (150 mm) personal/family; 8 in (200 mm) large
Chimney height above outlet	36–48 in (900–1200 mm) minimum for steady draft

[Note: The 63% applies to the working door opening into the cooking chamber, not the taller outer entry arch. Don't confuse the two or the geometry will fight you. And keep your brick joints thin, 1/8–1/4 in (3–6 mm) — mortar is the weak link, the less of it the longer the dome lives.]

4. Firing & Temperature Guide

The curing schedule — the step everyone skips and regrets

A new oven holds gallons of construction water you can't see. Heat it fast and that water flashes to steam (1,600× the volume) and blows the face off your brick — that's spalling, and there's no fixing it after. Read the floor with a \$20–\$40 infrared thermometer. Let the oven cool fully between days. Build each fire small at the door and let it grow inward.

Day	Fire size	Target max floor temp	Burn time
1	A few kindling sticks	150 °F (65 °C)	2 hr
2	Small	250 °F (120 °C)	2–3 hr
3	Small–medium	350 °F (175 °C)	3 hr
4	Medium	450 °F (230 °C)	3–4 hr
5	Medium	600 °F (315 °C)	4 hr
6	Medium–full	750 °F (400 °C)	4 hr
7	Full firing	850–900 °F (455–480 °C)	until dome clears

Cob ovens hold far more water — stretch this to 10–14 days and keep the early targets lower. If you hear sharp pops, see new cracks, or spot steam, hold or drop back a day. Stretching the cure never hurt an oven; rushing it has wrecked plenty.

Launch temperatures by food (read the floor)

Food	Floor temp	Air/dome temp	Cook time
Neapolitan pizza	750–850 °F (400–455 °C)	850–950 °F (455–510 °C)	60–90 sec
New York / American pizza	600–700 °F (315–370 °C)	650–750 °F (345–400 °C)	4–6 min
Flatbread / focaccia	550–650 °F (290–345 °C)	600–700 °F (315–370 °C)	5–10 min
Artisan bread (loaf)	450–500 °F (230–260 °C)	450–500 °F (230–260 °C)	30–45 min
Roast meat / poultry	400–450 °F (205–230 °C)	400–450 °F (205–230 °C)	by weight
Slow roast / braise	250–350 °F (120–175 °C)	250–350 °F (120–175 °C)	2–8 hr

[Note: The dome going from black with soot to clear white IS your readiness signal — trust it over any thermometer. Clearing starts at the crown and works down; fully white means you're at pizza temperature.]

Burn seasoned hardwood only — oak, ash, maple, hickory, split and stacked under cover 6 to 18 months, under 20% moisture on a pin meter. Never softwood for the main fire (it sparks and tars the flue), and never painted, stained, treated, or pressure-treated wood. If you wouldn't burn it near food in your kitchen, don't burn it in your oven.

5. Material Takeoff — One Starter Oven

This is the Plan A small brick dome: 32 in (810 mm) interior floor, on a block stand — the oven I steer most homeowners toward. It cooks two pizzas at a time and outlasts the house if you build it right. Adjust quantities for your footprint and buy 15% extra firebrick — you'll break some cutting tapers, and you'll want spares two years from now for a patch.

Item	Qty	Use
Concrete (slab + stand fill)	10–15 bags (80 lb)	Footing + reinforced top slab
#4 rebar / welded wire mesh	as needed	Slab + corner reinforcement
Crushed gravel	~0.5 cu yd	Drainage bed under slab
Breeze/cinder block (CMU 8×8×16)	30–40	Stand, ~4 courses to working height
Calcium silicate board (2 in / 50 mm)	2 sheets	Under-floor insulation
Dense firebrick — floor	~38–40	Cooking floor, laid flat & dry
Dense firebrick — dome	~110–130	9×4.5×2.5 in, cut to taper
Refractory mortar (premixed tubs)	3–4 tubs (50 lb)	Dome joints only — never bag concrete
Masonry sand (sand form)	~0.25 cu yd	Temporary dome mold
Ceramic fiber blanket (1 in / 25 mm)	1–2 rolls	Dome insulation, 2 layers
Perlite	1–2 bags (4 cu ft)	Under-floor mix + outer shell
Stainless flue + rain cap	6 in (150 mm), ~3 ft	Set in front of the opening
Lath + stucco/render	as needed	Weatherproof outer skin
Fasteners / steel angle	—	Door arch lintel if not bricked

Budget, 2026 dollars: roughly \$900–\$1,400 for this dome — less if you scavenge block and brick, more for a cast door or a stone finish. Most readers land around \$700–\$850 in materials for a brick dome they'll cook on for twenty years.

Three takeoff rules that save real money

1. Refractory only at the fire face. Firebrick and refractory mortar in the floor and dome; ordinary CMU, portland, and mortar everywhere else. Don't pay refractory prices for the stand, and never put bag concrete in the dome.
2. Buy firebrick at a masonry or refractory yard, not the home center. Cheaper per brick and they actually stock medium-duty dense firebrick (~2700 °F / 1480 °C), not the soft red pavers that spall.
3. Don't cheap out on two things: the firebrick floor and the insulation. That's what makes the oven hold heat. Skimping there is a false economy you'll regret every single firing.

6. Build & First-Fire Checklist

Before you pour

- [] Check clearances: 10 ft (3 m) from the house, fence, or any wood structure, and 10 ft of clear air above the chimney top — sparks land on dry roofs.
- [] Call the building department for your local frost depth, and ask whether a permanent oven needs a permit (some towns treat it like an outdoor fireplace).
- [] Pick firm, drained ground. Skip the low spot that holds water — frost under one corner is what tilts a stand and cracks a dome.
- [] Call 811 before you dig. Free, and it's the law.

Base & hearth

- [] Slab poured to climate thickness, rebar in the middle, cured 5–7 days.
- [] Stand square, corners filled with rebar and grout, top slab dead level.
- [] Working height sized so the floor lands at 36–40 in (910–1015 mm).
- [] Under-floor insulation down (4 in perlite-cement or 2–3 in cal-sil).
- [] Firebrick floor laid dry, no mortar, butted under 1/16 in (1.5 mm), no lips, with a 1/4–1/2 in (6–12 mm) perimeter expansion gap left open.

Dome

- [] Door opening sized to ≈63% of dome height.
- [] Brick rings laid against the sand form, joints staggered, thin (1/8–1/4 in / 3–6 mm), opposite sides risen evenly.
- [] Keystone wedged and set — then wait 24 hr minimum before pulling the sand.
- [] Dome wrapped in 2 in (50 mm) ceramic fiber blanket, then shell and weatherproof render.
- [] Flue set in front of the opening, never in the dome.

First fire

- [] Run the full 7-day curing schedule — small fires, stepping the floor temp up each day, cooling fully overnight.
- [] Stop and back off a day if you hear sharp pops or see new cracks or steam.
- [] On firing day, sweep the floor clean, build a top-down fire of seasoned hardwood, push coals to one side once the dome clears white.
- [] Hold a small live flame (fiamma viva) above the coals; launch pizza when the floor reads 750–850 °F (400–455 °C) and the whole dome has burned clear.
- [] Never splash water to cool a hot oven — thermal shock cracks domes in one shot.

That's the pack. The one line that runs through the whole book and earns its keep more than any tool in the truck: build the base right, cure it slow. Get firm drained ground under a level stand, insulate so the

heat stays where the pizza is, size that door to 63% so it draws, and give the oven its slow week before the first real fire. Build the small 32-inch brick dome first to learn the moves — it's drawn up complete with a cut list in the back of the book. When you pull that first 90-second Neapolitan off your own floor, I'd love to hear about it, and in a couple of emails I'll tell you how a quick word from you helps this book reach the next person standing in their backyard with a pile of firebrick and an idea.

Build the base right, cure it slow,
Gus Romano