What preparation is needed before laying a concrete slab?

A concrete slab is only as good as what sits underneath it. Many garden projects fail not because the concrete mix was wrong, but because the ground beneath it shifted, cracked or softened. Before you pour, the site must be excavated, levelled, compacted and given a stable sub-base. The surface must be properly formed with formwork, and the concrete must be reinforced where it will carry loads. Each of these steps matters, and skipping any one usually means a slab that cracks, sinks or becomes uneven within a year or two.

Why ground preparation matters

Concrete is strong in compression but weak in tension. If the ground underneath is soft or uneven, the slab will bend and crack. The soil also moves with the seasons: clay expands when wet and shrinks in dry weather, while sandy soils can wash away over time. A properly prepared sub-base spreads the load evenly across the ground and prevents differential movement that would otherwise snap the slab.

The first step is to strip away topsoil, grass and any organic material. Topsoil contains roots, worms and decaying matter that will rot and leave voids. You need to dig down to a firm, mineral subsoil or to a depth that allows for the sub-base and the slab thickness. Typically, a garden slab is 100-150 mm thick, and the sub-base is another 100-150 mm, so you excavate to a total depth of around 200-300 mm below your final finished level.

Sub-base: the foundation of the slab

Once the excavation is done, the bottom must be compacted. A vibrating plate compactor is the usual tool for this, running over the soil until it stops moving under the machine. The goal is a dense, uniform surface that will not settle later. On very soft ground, a geotextile membrane can be laid first to stop the sub-base material from mixing into the soil.

The sub-base itself is a layer of crushed hardcore or Type 1 aggregate. This is a graded stone that locks together under compaction, creating a rigid platform. Spread it in layers no thicker than 100 mm, compacting each layer before adding the next. The final surface should be level and firm enough that you can walk on it without your boots sinking in.



For a shed base or a small patio, you might be tempted to skip the sub-base and pour directly onto compacted soil. That works only if the soil is naturally well-drained and stable, such as a gravelly sand. On clay or silt, it is a risk that usually ends in cracks. For heavier structures like a garage floor or a concrete for driveways, a proper sub-base is non-negotiable.

Formwork: holding the concrete in shape

Formwork is the temporary frame that contains the wet concrete and defines the slab's edges. Timber boards, usually 25 mm thick and as wide as the slab depth, are staked into the ground around the perimeter. The top edge of the formwork sets the finished level of the slab, so it must be set accurately with a spirit level.

The formwork must be braced firmly. A concrete slab weighs a lot: a cubic metre of concrete is roughly 2.4 tonnes. The wet mix pushes sideways against the boards, and if they bow or shift, the slab ends up crooked. Pegs driven into the ground at 600 mm intervals, with diagonal braces at corners, are enough for most domestic slabs. If the slab is large or thick, you may need stronger engineered formwork.

Before pouring, oil the inside faces of the formwork with a release agent. This stops the concrete sticking to the wood and makes stripping easier. If you reuse the timber later, the oil also protects the wood.

Reinforcement: stopping cracks from spreading

Concrete shrinks as it dries and moves slightly with temperature changes. These movements create internal stresses that can cause cracking. Reinforcement does not prevent cracks, but it holds them tight so the slab stays structurally sound.

Steel mesh is the most common reinforcement for garden slabs. It comes in sheets of welded wire, typically 6 mm diameter at 200 mm centres. The mesh must sit in the middle of the slab depth, not on the bottom. Support it on plastic chairs or small stones so that when the concrete is poured, the mesh stays roughly 50 mm from the bottom and 50 mm from the top. If it lies on the ground, it does nothing.

For larger areas or where the slab will carry a vehicle, you may need a thicker slab and a heavier mesh, or even steel reinforcing bars tied into a grid. The same principle applies: the steel must be positioned correctly within the concrete. For a simple garden path or a small shed base, a single layer of mesh is usually sufficient.

Drainage and falls

Water pooling on a concrete slab is a nuisance and can lead to algae growth, ice in winter and deterioration of the surface. The slab should have a slight fall, typically 1:80 (about 12 mm per metre), to shed water towards a drain or an adjacent planted area.



This fall is set during the formwork stage. The top edge of the formwork is sloped or stepped, and the concrete is screeded to follow that slope. If the slab sits against a house wall, the fall must direct water away from the building, not towards it. Building regulations usually require a minimum 150 mm gap between the slab and the damp-proof course of the house, with the slab surface at least 150 mm below that course.

Concrete mix and delivery

The mix design matters for the slab's strength and durability. For garden projects, a standard C25/30 mix (roughly 25 MPa compressive strength) is typical. This is strong enough for a patio, pathway, shed base or garage floor. If the slab will be exposed to frost, a mix with air entrainment is better because the tiny air bubbles allow water to expand without cracking the concrete.

Ready-mix concrete is delivered in a truck and poured directly into the formwork. This is convenient for larger slabs, but you must have access for the truck. For smaller jobs, you can mix your own on site, but the key is consistency: each batch must have the same proportions

of cement, aggregate and water. Too much water weakens the concrete and causes more shrinkage cracking.

For a project like concrete for driveways, where the slab sees vehicle loads, you should consider a higher-strength mix of around 30 MPa and ensure the sub-base is at least 150 mm of compacted Type 1 aggregate. The reinforcement should be a heavy-duty mesh or a grid of 10 mm bars at 200 mm centres, and the slab thickness should be at least 150 mm.

Pouring and finishing

The concrete should be poured as soon as possible after it arrives. Work it into the corners and around the reinforcement with a shovel or a vibrating poker to remove air pockets. Then screed the surface by running a straight board across the formwork to level the concrete. After screeding, wait until the surface water has evaporated (this is called the bleed water) before floating and trowelling.

A float brings the fines to the surface and closes any small voids. A steel trowel gives a smooth finish, while a broom finish provides a non-slip surface. For a shed base, a rough finish is fine. For a patio or pathway, you might want a smoother appearance, but be careful not to overwork the surface because that can bring too much water and cement paste to the top, creating a weak, dusty layer.

Curing: the forgotten step

Concrete gains strength through a chemical reaction called hydration, which requires water. If the surface dries out too quickly, the hydration stops and the concrete remains weak and prone to dusting. Curing means keeping the concrete moist for at least seven days after pouring.



The simplest method is to cover the slab with wet hessian or polythene sheeting, weighed down at the edges. On a warm, windy day, you might also spray the surface with water periodically. There are also liquid curing compounds that form a membrane to trap moisture. The longer you cure, the stronger and more durable the slab becomes. A well-cured slab can be twice as hard-wearing as one left to dry out in the sun.

When to call a professional

Laying a concrete slab is physically demanding and requires careful timing. If the site has poor drainage, a high water table or very soft ground, you may need a geotechnical assessment. If the slab is large or complex, or if it must meet building regulations, a professional contractor can ensure the preparation, mix and finishing meet the required standards. The same goes for any slab that will support a structure: a professional will know how to detail the reinforcement and manage the concrete pour to avoid cold joints and other defects.

Good preparation is not glamorous, but it determines whether your slab lasts a decade or a lifetime. Excavate properly, compact the sub-base, set the formwork accurately, reinforce the

concrete, and cure it thoroughly. Each step is simple on its own, but together they make the difference between a slab that works and one that has to be broken up and replaced.