Selecting the Right Concrete Mix for a Driveway

Choosing concrete for a driveway is not a one-size-fits-all decision. The mix you need depends on the weight the surface will carry, the ground conditions, and the local climate. For a standard domestic driveway, a C30 or C40 mix is the common recommendation, but the details matter more than the label. Get the mix wrong, and you may end up with cracking, surface scaling, or a driveway that sinks under a car or van after a few seasons.

Understanding Concrete Grades

Concrete is graded by its compressive strength, measured in megapascals (MPa) after 28 days of curing. A C10 mix, for example, has a compressive strength of 10 MPa. It is a light mix suitable for pathways and shed bases where the load is minimal. A C30 mix reaches 30 MPa and is the standard for most domestic driveways. C40, with 40 MPa, is stronger and more durable, often specified for driveways that see heavy vehicles or in regions with freeze-thaw cycles.

Stacey Concrete Ltd is also on Facebook.

The grade is not the only factor. The water-to-cement ratio, the type and size of aggregate, and the use of admixtures all affect the concrete's workability, finish, and long-term performance. A mix that is too wet may be easier to pour but will be weaker and more prone to cracking. A mix that is too dry may be hard to level and finish.

Why Driveways Need a Stronger Mix

A driveway is a horizontal surface that must support the weight of parked vehicles, sometimes repeatedly over the same spots. Unlike a patio or a pathway, it experiences concentrated loads from tyre contact points. A car may weigh around 1.5 tonnes, but that weight is distributed over four small patches of tyre footprint. The concrete underneath must handle that localised pressure without cracking or rutting. A C10 or C20 mix would likely fail under these conditions, especially if the subbase is not perfectly compacted.

View the location on Google Maps

Beyond load, driveways are exposed to weather. Rain, snow, and freeze-thaw cycles cause water to enter pores in the concrete, expand when frozen, and create internal cracks. A denser, stronger mix like C30 or C40 has lower permeability, which helps resist this damage. Admixtures that entrain air can further improve freeze-thaw resistance without sacrificing strength.



Choosing Between C30 and C40

For a typical domestic driveway that will see cars, small vans, and occasional delivery trucks, C30 is a reliable choice. It offers a good balance of strength, workability, and cost. Most ready-mix suppliers can deliver a C30 mix with the right slump (a measure of wetness) for your pour. If your driveway is on a slope, you may need a stiffer mix to prevent the concrete from slumping downhill before it sets.

C40 is the better option if you expect heavier vehicles - for example, if you park a large 4x4, a motorhome, or a commercial van on the driveway regularly. It is also worth considering if the ground conditions are poor: if the subbase is clay or poorly draining soil, the extra strength

helps bridge small movements. In regions with harsh winters and many freeze-thaw cycles, C40 with air-entrainment will outlast C30 by several years before showing surface wear.

A common mistake is to think that a higher grade is always better. C50 or C60 mixes exist, but they are overkill for a driveway. They are harder to work with, set very quickly, and can be more brittle. They also cost more. The goal is to match the mix to the actual load and exposure, not to pick the highest number.

The Role of the Subbase and Reinforcement

No concrete mix can compensate for a poor subbase. The subbase - a layer of compacted hardcore or crushed stone beneath the concrete - distributes the load and prevents the slab from sinking. For a driveway, the subbase should be at least 100mm to 150mm thick, well-compacted, and topped with a layer of sharp sand or fine gravel. The concrete sits on top of this. If the subbase is too thin or poorly compacted, even a C40 slab will crack.

Reinforcement, usually steel mesh or fibres, adds tensile strength to the concrete. Concrete is strong in compression but weak in tension. When a vehicle drives over the slab, the underside of the concrete is in tension. Reinforcement helps carry that load and controls cracking from shrinkage as the concrete cures. For a driveway, a single layer of steel mesh (A142 or A193) laid in the middle of the slab is standard. Fibre reinforcement is an alternative that can reduce the need for mesh, but it requires careful mixing to distribute the fibres evenly.

Expansion joints are equally important. These are gaps cut or formed into the concrete to allow for thermal expansion and contraction. Without them, the concrete will crack at random. Joints should be placed every 2.5 to 3 metres along the driveway, and where the driveway meets the house or a garage floor. The joints can be filled with a flexible sealant to keep water out.



Ordering Ready-Mix Concrete

For most homeowners, ordering ready-mix concrete is the most practical way to get the right mix. A supplier like Stacey Concrete Ltd can deliver a C30 or C40 mix to your site. You need to specify the grade, the slump (typically 75mm to 100mm for a driveway), and whether you want air-entrainment. The supplier will ask for the total volume in cubic metres. To calculate this, multiply the driveway's length, width, and depth in metres. A standard driveway 5 metres long, 3 metres wide, and 100mm deep needs exactly 1.5 cubic metres. It is wise to order a little extra - around 10% - to allow for spillage and uneven ground.

Timing matters. Ready-mix concrete has a working life of about two hours from mixing. You need the site prepared, the subbase compacted, the shuttering (formwork) in place, and a team ready to pour, level, and finish the concrete in that window. On a hot day, the concrete will set faster; on a cold day, slower. Plan accordingly.

Finishing and Curing

The finish you choose affects both appearance and durability. A brushed finish, created by drawing a stiff broom across the surface, provides texture that improves traction when wet. A

smooth trowel finish is easier to clean but can be slippery. For a driveway, a textured finish is generally safer. The concrete should be finished as soon as it is firm enough to walk on without marking, but not so hard that the broom tears the surface.

Curing is the step most often neglected. Concrete needs to stay moist for several days to reach its full strength. If the surface dries out too quickly, it will crack and dust. Cover the slab with wet hessian or polythene sheeting, or spray it with a curing compound. Keep it damp for at least seven days. The longer you cure, the stronger the concrete becomes.

Common Mistakes to Avoid

- Using a mix that is too wet. A wet mix is easier to pour but weaker and more likely to crack. Trust the slump measurement, not the appearance.
- Skipping the subbase. Pouring concrete directly onto soil guarantees movement and cracking. Always compact a proper subbase first.
- Ignoring expansion joints. Without them, the concrete will crack where you do not want it to. Place joints at regular intervals and along any change in the slab shape.
- Pouring in very hot or freezing weather without adjustments. Concrete sets too fast in heat and may freeze before curing in cold. Use cold water or hot water as needed, and protect the fresh concrete.
- Ordering too little concrete. Running out mid-pour is messy and weakens the slab. Measure carefully and order a surplus of about 10%.

Final Considerations

A concrete driveway is a long-term investment. The cost of the concrete itself is only part of the overall expense; the preparation, labour, and finishing add up. Paying a bit more for a C40 mix with air-entrainment can save you from repairs down the line. On the other hand, if your driveway is small and will only ever see a car, C30 is perfectly adequate. Talk to your ready-mix supplier about the specific conditions of your site. They can advise on the best grade and any admixtures that suit your local weather and soil type.



For those in the Derbyshire and East Midlands area, **Stacey Concrete Ltd** supplies ready-mix concrete grades from C10 to C40 and beyond, with delivery across the region. Their team can help you choose the right mix for your driveway project. The key is to plan ahead, prepare the ground properly, and give the concrete the time it needs to cure. With the right mix and careful installation, your driveway will stay solid and level for decades.

Stacey Concrete Ltd is based at Ryder Point Works, Wirksworth, Matlock DE4 4HE, UK. You can reach them at +44 1629 825188. They are a Derbyshire-based supplier of ready-mix concrete grades C10, C30, C40 and more, with delivery across the East Midlands.