Concrete strength grades: what they mean for your domestic build

Why strength grades matter when ordering concrete

If you are planning a concrete slab for a garage base, a new patio, footings for an extension or a driveway, one of the first questions is what strength of concrete to order. Strength grades - often labelled C10, C20, C25, C30 or higher - can seem like a code that only engineers understand. In practice, the grade tells you how much load the concrete can carry once it has cured, and choosing the right one saves you money and prevents cracking or failure.

Every domestic project has a different set of demands. A garden path sees foot traffic only, while a garage base has to support a vehicle. A foundation for a two-storey extension must hold the weight of walls and roof. The grade you pick directly affects the mix of cement, aggregate and water that goes into the ready mix, so it pays to understand what the numbers mean before you arrange concrete mix delivery for your job.

How concrete strength is measured

Concrete strength is expressed as a grade such as C25 or C30. The number refers to the compressive strength of a cured concrete cube measured in newtons per square millimetre (N/mm²) after 28 days. A C25 mix, for example, has a compressive strength of 25 N/mm². That figure comes from crushing a standard cube in a laboratory, and it is the industry benchmark for specifying concrete.

The grade is determined by the proportions of cement, coarse and fine aggregate, and water in the mix. More cement generally means higher strength, but water content is equally important. Too much water weakens the concrete because it creates more voids as the water evaporates. A well-designed mix balances workability - how easily the concrete flows into formwork and around reinforcement - with the strength needed for the structure.

Common domestic grades and what they are used for

For most home building projects, the grades you will encounter fall between C10 and C35. Here is a practical breakdown of where each one is typically specified.



C10 and C15 - low-strength mixes

C10 concrete is a lean mix used for non-structural applications such as a clean concrete blinding layer at the bottom of a trench before reinforcement is placed. It is also used for drainage bedding and general fill where no load-bearing capacity is required. C15 is slightly stronger and can be used for simple kerbing, pathways and light-duty floor slabs that will not carry vehicles or heavy furniture. For any project that will support a load, you would normally step up to a higher grade.

C20 - general-purpose domestic concrete

C20 is probably the most common grade for domestic work. It is suitable for garage bases, shed floors, garden paths, patios and most external paving that sees foot traffic and occasional light vehicle loads. It offers a good balance of strength and cost, and it is often the default mix that suppliers recommend for standard home improvements. If you are unsure, C20 is a safe starting point for many non-structural and lightly loaded slabs.

C25 - reinforced slabs and foundations

C25 concrete is specified when the slab or foundation will carry moderate loads or include steel reinforcement. It is a typical choice for garage floors that will support a family car, for workshop bases and for house extensions where the slab forms part of the structure. The

higher strength gives better bond with reinforcement and reduces the risk of cracking under load. Many building control officers specify C25 for foundation trenches and ground beams in domestic projects.

C30 and above - heavy-duty applications

C30 concrete is used for driveways that take regular vehicle traffic, for heavy-load garage floors, and for any slab that will support machinery, caravans or multiple vehicles. It is also common for foundations in areas with poor ground conditions, where extra strength compensates for uncertain soil. Grades above C30 - C35, C40 and higher - are rarely needed for standard domestic work. They are more often used in commercial or industrial floors, multi-storey car parks or bridge decks. Ordering a higher grade than necessary adds cost without benefit, because the concrete's surface finish and durability may not be any better for your purpose.

Factors that affect the strength you need

Choosing a grade is not simply a matter of picking a number. Several factors influence the specification for a particular job.

Load type and magnitude. A pedestrian path experiences very different forces from a driveway that a delivery van drives over daily. Consider the heaviest load that will ever be on the slab - not just what you plan today but what might change in future. A garage you intend to use only for storage could become a workshop with heavy machinery later.

Ground conditions. Clay soils that shrink and swell with moisture, or made ground that has not been properly compacted, can cause differential movement. A stronger slab or deeper reinforcement may be needed to span soft spots. If the ground is unstable, a structural engineer should advise on the grade and reinforcement design.

Reinforcement. Steel mesh or rebar takes the tensile forces that concrete alone cannot handle. Where reinforcement is used, the concrete grade must be compatible with the steel to ensure proper bonding and to protect the steel from corrosion. A C25 or C30 mix is typical for reinforced slabs.



Exposure and durability. Concrete exposed to weather, de-icing salts or frequent wetting needs a higher strength and a lower water-cement ratio to resist frost damage and chemical attack. External slabs and driveways in a UK climate benefit from a C25 or C30 mix with air-entrainment - tiny bubbles that help the concrete survive freeze-thaw cycles.

Finish and appearance. A high-strength mix can be harder to finish smoothly because it stiffens quickly. For exposed aggregate or a polished surface, the contractor may prefer a grade that allows enough working time. Discuss the finish you want with the concrete supplier so the mix can be adjusted accordingly.

How to specify the right grade for concrete mix delivery

When you contact a supplier to arrange concrete mix delivery, you will be asked for the grade and the quantity. It helps to have the following ready: the type of project (patio, driveway, foundation, slab), the approximate dimensions, whether reinforcement will be used, and any special requirements such as a smooth trowelled finish or resistance to frost. A reputable supplier will ask these questions to confirm the mix is correct for your job.

If your project requires building control approval - such as a new extension or a structural slab - the building inspector may specify a minimum grade. Follow that specification exactly. For smaller DIY projects where no engineer is involved, a general rule is to use C20 for paths and patios, C25 for garage bases and light foundations, and C30 for driveways and heavy-duty slabs. If in doubt, it is always worth paying for a slightly higher grade than guessing too low. The extra cost of moving from C25 to C30 is small compared with the expense of replacing a failed slab.

One point often overlooked is the delivery access. A concrete mix delivery truck needs to get close to the pour area. If your driveway is narrow or the site is behind a house, you may need a smaller vehicle or a pump. Mention access constraints when you order so the supplier can advise on the right vehicle and any additional equipment needed. A local supplier familiar with domestic sites will be able to suggest practical solutions.

Practical tips for ordering and pouring

Order a little more concrete than your calculated volume to allow for uneven ground, spillage and the concrete left in the truck's chute. A typical allowance is 5-10% extra. For a small slab, that might mean ordering 0.5 cubic metres more than the plan suggests.

Make sure the sub-base is properly compacted and the formwork is level before the truck arrives. Concrete mix delivery is timed, and the concrete starts to set within a couple of hours. Once it arrives, you need to be ready to place, spread and finish it without delay. Have enough labour on site - at least two or three people for a medium-sized pour - and all tools handy: shovels, rakes, a straightedge, a float and an edger.

If the weather is hot, the concrete may stiffen faster. If it is very cold, the curing process slows down. In either case, protect the fresh concrete with polythene sheeting or damp hessian to keep it from drying out too quickly or freezing. Curing for at least seven days is recommended for most domestic slabs, and longer in cold weather.



When you order from a supplier such as Stacey Concrete, you are buying a mix that has been batched to a specific grade. The supplier's role is to deliver a consistent product that meets the strength you have chosen. They do not design the slab or decide the grade for you, but they can explain the characteristics of each mix and help you match the grade to your intended use. That is a valuable conversation, especially if you are new to concrete work.

Finally, do not underestimate the importance of good site preparation. The best concrete mix delivery will still produce a poor result if the ground is soft, the formwork is weak, or the pour is rushed. Take time to prepare, ask questions if you are unsure, and treat the grade as one part of a well-planned job. With the right strength and proper placement, your concrete will perform for decades.

For local domestic projects, a supplier like Stacey Concrete can provide guidance on grades and quantities, but the responsibility for choosing the correct specification rests with you or your structural engineer. Understanding what the numbers mean puts you in control of that decision and helps you avoid the two most common mistakes: ordering too weak a mix and having the slab crack, or ordering too strong a mix and paying for more than you need.