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Mortar

What Type Do You Need?
Understanding the types of mortar will help you choose the one with the right properties for your project.

Mortars are often ordered based on compressive strength; but even more important properties are bond strength and flexibility. Bond strength and flexibility work together, holding masonry units in place yet flexing in response to lateral loads or expanding and contracting in response to temperature swings. Mortar is one of the most basic elements of masonry construction. Yes, you can build without it these days as dry-stack blocks are becoming more popular but when nature becomes pushy, you want that tall wall to withstand gale force winds and even earthquakes. That usually means mortar joints.

What is mortar? "Any of various bonding materials used in masonry, especially a plastic mixture of cement or lime, sand, and water that hardens in place and is used to bind together bricks or stones. "Mortar is the bonding agent that integrates brick into a masonry wall. Mortar must be strong, durable, and capable of keeping a wall intact; it must help to create a water resistant barrier; and it must accommodate dimensional variations and physical properties of the brick when laid.

Pre-mix or self-mix? Mixing Portland cement and lime on-site provides flexibility to a skilled mason but requires careful measuring. Pre-mixed masonry cement ensures consistency but rules out on-site fine-tuning of the recipe.

What is mortar made of? To achieve the balance of properties for a particular application, you mix different proportions of Portland cement, hydrated lime, sand and water. Portland cement yields greater compressive strength but lower water retention during the cure, thus risking shrinkage cracks. Lime yields lower compressive strength but greater bond strength and flexibility. Sand, the aggregate, adds volume and minimizes shrinkage as the cement dries. Water makes the mix workable and activates hydration, the chemical reaction that hardens the cement.

Type M—high compression strength: Type M has the highest proportion of Portland cement, with 3 parts Portland cement, 1 part lime and 12 parts sand. Type M has a high compressive strength (at least 2500 psi) and is recommended primarily for walls bearing heavy loads, but also, due to its durability, for masonry below grade or in contact with the earth: foundations, ret. walls, sidewalks and driveways. Type M and S are usually interchangeable.

***Type S—compression and tensile strength:** Type S is sometimes specified for masonry at or below grade, but offers another quality. S has high compressive strength (1800 p.si) but adds high tensile bond strength. S contains 2 parts Portland cement, 1 part hydrated lime and 9 parts sand, and yields maximum flexural strength.

***Type N—for exterior, above-grade walls:** Type N is a medium compressive-strength (750 psi) mortar made of 1 part Portland cement, 1 part lime and 6 parts sand. Type N is recommended for most exterior, above-grade walls exposed to severe weather, including chimneys. Is widely used in for exterior applications such as with veneers.

Type O—for interior or non-load-bearing use: Type O has a low compressive strength (about 350 psi), containing 1 part Portland cement, 2 parts lime and 9 parts sand. O is recommended for interior and limited exterior use in non-load-bearing walls.

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***Thinset 907—for supporting heavy tile/ stone:** Reduces lippage problems and the need for leveling rough surfaces. Full-contact 907 can be built up to ¾" without shrinkage. Supports large, heavy units and can hold stone in demanding vertical positions. Good impact resistance. Uses could include thin veneer both over existing concrete and vertically.

***Thinset 918—for setting absorptive tiles/ stones:** Is polymer modified to provide a stronger bond than 907, but can only be built up to 3/16". Good impact resistance. Uses could include thin veneer both over existing concrete and vertically when weight of the stone or tile is not of issue. Appropriate to use with very porous stone/ tile or when build-up is not a concern.

***available at Lurvey Supply**