

Mortar Types

&

MaSoN wOrK

Who would have thought that every other letter in the words "mason work" were the origin for the letter designations assigned to the different types of mortar. In the 1950s', these "new" letter designations replaced the original mortar types of **A-1**, **A-2**, **B**, **C**, and **D**. It seemed that **A-1** carried a connotation of "best", **A-2** being 2nd best, and so on down to **D**. Naturally, this is not the case, as each type of mortar is intended for a specific use and no single type of mortar should be perceived as "best" for all purposes.

With that, our **MaSoN wOrK** designations were created.

ASTM C270, *Standard Specification for Unit Masonry*, now includes only four types of mortar: **M**, **S**, **N**, and **O**. Type **K** is no longer specified..

Choosing the mortar type: No single type of mortar is suited for all applications. The architect or engineer should specify the mortar that best meets project requirements. A good rule of thumb is to use the mortar with the lowest compressive strength required for the masonry feature.

Type M mortar is a high strength mix of at least 2500 psi that offers greater durability than other mortars. Use it for both reinforced and unreinforced masonry that may be subject to high compressive loads, severe frost action, or high lateral loads from earth pressures, hurricane winds, or earthquakes. **Type M** may be used in structures below grade and in contact with soil, such as in foundations, retaining walls, walks, sewers, and manholes. To produce **Type M** mortar, combine one bag of **Coosa Portland Cement** and one bag of **Coosa Light Type N Masonry Cement** (see Type N description below) along with 4 ½ to 6 cubic feet of damp, loose, masonry sand. *



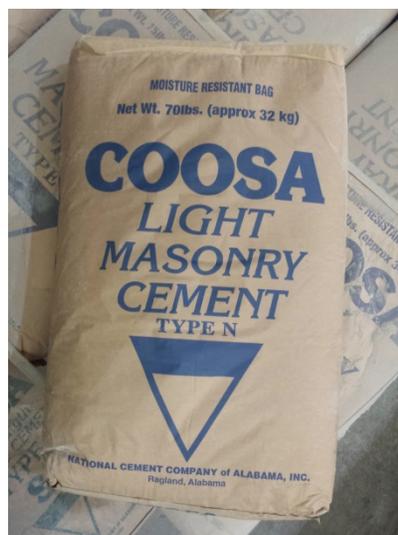
To produce Type M mortar:
mix 1 bag of Portland cement
and 1 bag of type N masonry
cement w/ masonry sand as
detailed above.

Type S mortar achieves high tensile bond strength and compressive strength of at least 1800 psi. Use **Coosa High Strength Type S Masonry Cement** for structures subject to normal compressive loads, but that require high flexural bond strength. Also, use Type S where mortar is the sole bonding agent between facing and backing, such as adhesion-type, terra-cotta/stone veneers. To make Type S mortar, use one bag of **Coosa High Strength Type S Masonry Cement** with 2 ¼ to 3 cubic feet of damp, loose, masonry sand.*



To produce Type S mortar: use 1 bag of Coosa Type S masonry Cement w/2 ¼ to 3 cu. ft. of damp loose masonry sand.

Type N mortar is a general purpose mortar for use in above-grade masonry structures. It is well suited for masonry veneers and interior walls and partitions. **Type N** mortars accept a wide range of pigments for custom color applications. This medium strength mortar, which achieves a minimum of 750 psi provides excellent workability and board life. Use one bag of **Coosa Light Masonry Cement** with 2 ¼ to 3 cubic feet of damp, loose, masonry sand.*



To produce Type N mortar: use one bag of Coosa Light Masonry Cement or Coosa Custom Color Masonry Cement with Masonry sand as detailed above.

Type O mortar is a high lime, low strength mortar, achieving 350 psi minimum. It is primarily recommended for tuck-pointing and similar repair work. Its' exterior use is limited because of its' low structural limitations. It is not recommended for areas of high winds.

When preparing Type O mortar, combine 1 bag of **Coosa Portland Cement** and 1 ¼ to 2 ½ cubic feet of Type S hydrated lime along with 2 ¼ to 3 times the sum of the separate volumes of cementitious materials of damp, loose, masonry sand.* Mix all of the solid materials and then add sufficient water to produce a damp mix that will retain its shape when pressed into a ball by hand. Mix time is 3 to 7 minutes, preferably with a mechanical mixer. Let the mortar stand for 1 to 1 ½ hours for pre-hydration. Add sufficient water to bring the mortar to the proper consistency for tuck-pointing, which is somewhat drier than for laying the units.

Type K mortar has not been a part of ASTM C270 for many years. Sometimes it may be specified for restoration of historic or “ancient” buildings or structures that require a mix that is not significantly stronger than the surrounding masonry work. **Type K** mortar compressive strength is about 75 psi.

*Use masonry sand conforming to ASTM C144, Aggregates for Masonry Mortar. Add sufficient water to obtain desired mortar consistency. Mix 3-5 minutes after all of the ingredients are in the mixer. Workmanship, unit suction, mixing, curing and other variables affect the overall masonry quality.

Finally, and perhaps needless to say, this article merely touches on the highlights of mortar type selection, proportioning, and mixing. For additional information, and to name only a few, I'll offer additional reference sources:

- Portland Cement Association (PCA)
- American Society of Testing and Materials (ASTM)
- National Concrete Masonry Association (NCMA)

End.