



MASONRY MORTAR SPECIFICATIONS

PART 1: GENERAL

1.01 WORK INCLUDED

This specification pertains to mortar for unit masonry. It does not include mortar for tuck pointing, chemically resistant mortar, grout for masonry or restoration work.

1.02 REFERENCES

- A. ASTM C207—Hydrated Lime for Masonry Purposes
- B. ASTM C150—Portland Cement
- C. ASTM C144—Aggregate for Masonry Mortar
- D. ASTM C780—Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
- E. International Masonry All-Weather Council (IMAC)—Recommended Practice and Guide Specifications for Cold Weather Masonry Construction, Section 04200, Article 3
- F. ASTM C270—Mortar for Unit Masonry
- G. UBC 21-15 and Appendices—Mortar for Unit Masonry and Reinforced Masonry Other than Gypsum
- H. FED-SS-11-L-351—Mortar for Unit Masonry

1.03 DELIVERY AND STORAGE OF MATERIALS

All materials shall be delivered in their original packages or containers and stored in a manner to prevent

deterioration or contamination.

Broken packages of materials shall be discarded.

Delivery of materials shall be verified by signed tickets. When mortars are delivered in dry pre-blended form in silos, the delivery ticket shall indicate the quantity, mortar type and date of manufacture.

1.04 ENVIRONMENTAL REQUIREMENTS

Masonry construction shall conform to the requirements of IMAC.

PART 2: MATERIALS AND MORTAR PREPARATION

2.01 MATERIALS

- A. Hydrated lime—CHEMSTAR Type S conforming to ASTM C207 and UBC 21-13—Hydrated Lime for Masonry Purposes
- B. Portland Cement—Conforming to ASTM C150 and UBC 19-1—Portland Cement and Blended Hydraulic Cement
- C. Aggregate—Conforming to ASTM C144
- D. Water—Clean and free of oils, acids, alkalis, organic materials and other substances in amounts deleterious to mortar or metal in masonry.
- E. Colorants—Mineral oxides known to have no effect on mortar strength and durability.
- F. Admixtures—Admixtures such

as accelerators, retarders, water-repellent agents and anti-freeze compounds shall not be added to mortar unless approved in advance of use. Air entraining agents shall not be added.

G. Masonry Cement—Masonry cement shall not be used in seismic zones 2, 3 and 4. Addition of masonry cement to mortar for use in zones 0 and 1 must be approved in writing in advance of use.

2.02 PROPORTIONING

A. Mortar compressive strength shall be approximately equal to the strength of the masonry units to be used.

B. Mortars shall be proportioned by volume as follows for the indicated mortar types:

- Type O—1 bag of portland cement and 1 1/4 – 2 bags of lime

- Type N—1 bag of portland cement and 1 bag of lime

- Type S—1 bag of portland cement and 1/2 bag of lime

- Type M—1 bag of portland cement and 1/4 bag of lime

C. The volumetric ratio of damp, loose aggregate shall be not less than 2 1/4 nor more than 3 times the sum of the portland cement and lime. Refer to ASTM C270 for weights per cubic foot of mortar materials.

D. Colorant shall not exceed 9 lbs. per bag of portland cement except



that carbon black shall not exceed 1 3/4 lbs. per bag.

E. Water shall be adjusted to provide optimum workability.

F. Dry preblended mortars delivered in silos shall be proportioned in the batching plant in accordance with sections B through D.

2.03 PREPARATION

A. Masonry Unit Preparation: Highly absorbent units shall be wetted before laying. Do not soak units.

B. Mortar:

■ **Jobsite Proportioning**—Mix approximately three quarters of the required water, all cement and lime, and half of the aggregate for two minutes. Add the remainder of sand and water, mixing for an additional three minutes. Use a mechanical batch mixer. Hand mixing is not permitted.

■ **Dry Blended in Silos**—Mixing shall be done using a continuous, self-cleaning mixer mounted at the apex of the silo cone. The water flow valve shall be set to provide desired workability.

PART 3: EXECUTION

3.01 RECOMMENDED PROCEDURE

Lay mortar in a uniform bed. Completely fill all joints. Special care shall be exercised to promote mortar-unit bonding by avoiding

realignment of units already in contact with mortar.

3.02 TEMPERING MORTAR

Mortar may be retempered by adding water as required. Mortar shall be used within 2 1/2 hours of mixing.

For additional information, contact:
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Please refer to Material Safety Data Sheet for safety information. © Chemical Lime Company. All rights reserved. Information subject to change. Replaces in part Specification Bulletin A-88. TS-102-2.5M-8-97.

**ASTM C270 SPECIFICATIONS
 MORTAR FOR UNIT MASONRY**

PROPERTY SPECIFICATIONS				PROPORTION BY VOLUME		
MORTAR TYPE	AVG. COMPRESSIVE STRENGTH @ 28 DAYS, MIN. PSI	WATER RETENTION MIN. %	AIR CONTENT MAX %	PORTLAND CEMENT	HYDRATED LIME	SAND
M	2500	75	12	1	1/4	2 3/4 - 3 3/4
S	1800	75	12	1	1/4 - 1/2	2 3/4 - 4 1/2
N	750	75	14*	1	1/2 - 1 1/4	3 1/2 - 6 3/4
O	350	75	14*	1	1 1/4 - 2 1/2	5 - 10 1/2

AVERAGE TEST RESULTS*

PERFORMANCE PROPERTIES				PROPORTIONS TESTED		
MORTAR TYPE	AVG. COMPRESSIVE STRENGTH @ 28 DAYS PSI	WATER RETENTION %	AIR CONTENT %	PORTLAND CEMENT	HYDRATED LIME	SAND
M	2885	86	3.0	1	1/4	3 3/4
S	2190	89	3.2	1	1/2	4 1/2
N	1595	86	3.4	1	1	6
O	625	90	4.4	1	1 1/2	7 1/2