ST MARYS

Masonry Cement

St Marys Masonry Cement is a hydraulic cement produced specifically for use in mortar for unit masonry construction.

Intergrinding of Portland cement clinker with plasticizers in the production of St Marys Masonry Cement provides excellent plasticity, water retentivity and air entrainment. An adequate amount of air entrainment enhances the important hardened property of mortar for durability, which is very important in the freeze-thaw climate of the Great Lakes region.

Specifications

Masonry Cement mortars may be specified by either the proportion specifications (Table 4) or the property specifications (Table 6) as stated in CSA A179 "Mortar and Grout for Unit Masonry".

Please note that as per CSA A179, proportion specifications provide the normal acceptance criteria for mortar. Unless otherwise specified by the designer, the basis for acceptance shall be the proportion specifications.

CSA A179 Annex A Table A.1 provides a non-mandatory guide for the selection of masonry mortars for various locations and building segments. Selection of mortar type should also be based on the type of masonry units used as well as the applicable building code and engineering practice standard requirements, such as allowable design stresses and lateral support.

St Marys Masonry Cement meets the manufacturing requirements of CSA A3000 "Cementitious Materials Compendium".

CSA A179 – TABLE 4
Proportion specifications: Mortar proportions by volume: Mortar cement and masonry cement mortars*

Mortar Type	Parts by volume: Portland Cement	Mortar cement or masonry cement: Type N	Mortar cement or masonry cement: Type S	Aggregate measured in damp, loose state
N	0	1	–	2 1/4 to 3
S	1/2	1	–	3 1/2 to 4 1/2
S	0	–	1	2 1/4 to 3
M	1	1	–	4 1/2 to 6

* *Masonry cement satisfying the requirements of CSA A3002 or mortar cement satisfying the requirements of ASTM C1329 or CSA A3002*

Notes:
(1) See Table A.1 for guidelines on mortar selection.
(2) In accordance with CSA A179 Clause 6.1.3, as the basis for proportioning, 1 m3 of damp, loose sand contains 1280 kg of dry loose sand.

CSA A179 – TABLE 6
Property specifications: Compressive strength of mortar cubes

Preparation	Mortar type	Minimum compressive strength, MPa / psi: 7 d test	28 d test
Job prepared or manufactured off-site in a batching plant, mixed to a flow suitable for use in laying masonry units	N	2 / 290	3.5 / 510
	S	5 / 725	8.5 / 1235
Laboratory prepared, mixed to a flow of 100% to 115%	N	3 / 435	5 / 725
	S	7.5 / 1090	12.5 / 1815

Notes:
(1) The age at test, i.e. 7 or 28 d, is the length of time since the fresh mortar was sampled.
(2) Laboratory-prepared mortars are mixed with a quantity of water to produce a flow of 100% to 115%. This quantity of water generally is not sufficient to produce a mortar with a workable consistence suitable for laying masonry units in the field. Flow values of 130% to 150% are common for mortar in construction. To provide sufficient water to satisfy the suction of masonry units, mortar for use in the field is mixed with a maximum amount of water consistent with workability. Because construction mortar contains more water, compressive strength values for job-prepared mortars or mortars manufactured off-site in a batching plant can therefore normally be expected to be less than those for laboratory-prepared mortar. The strength of laboratory-prepared mortar is intended to appoximate that of field-prpared mortar after it has been placed and unit suction has been satisfied.

CSA A179 – Annex A – TABLE A.1
Guide for the selection of mortars for modern unit masonry

Location	Building Segment	Mortar Type: Recommended	Mortar Type: Alternative*
Exterior above grade†	Loadbearing walls requiring high compressive strength	S	N
	Loadbearing walls requiring low compressive strength	N	S
	Non-loadbearing walls	N	S
	Parapet Walls	N	S
Exterior at or below grade†	Foundation walls, retaining walls, manholes, sewers, pavements, walks and patios	S	M
Interior	Loadbearing walls	N	N
	Non-loadbearing partions	N	N

* *These alternatives are suitable for abnormal design conditions or exposures.*
† Masonry exposed to weather in a nominal horizontal surface is extremely vulnerable to weathering. Mortar for such masonry should be selected with care.

Note: This table does not cover specialized mortars such as high-bond and acid-resistant mortars.

Grout Specifications

Masonry grout, which can be made by incorporating St Marys Portland cement, water, and aggregates, is most often used in conjunction with steel reinforcement in masonry walls.

Grouts may be specified by either the proportion specifications (Table 5) or the property specifications (Table 7) as stated in CSA A179 "Mortar and Grout for Unit Masonry".

Please note that as per CSA A179, proportion specifications provide the normal acceptance criteria for grouts. Unless otherwise specified by the designer, the basis for acceptance shall be the proportion specifications.

Courtesy Portland Cement Association

Parging

The consistency and enhanced workability of St Marys Type S Masonry Cement and Portland Lime make them the ideal choices for parging. Parging can be used as a basecoat for damp proofing concrete block and poured concrete walls, or can even be used to provide a more aesthetically pleasing and smooth appearance.

Parging, which consists of a cementitious material, sand, and water, can be applied as a 1, 2, or 3 coat system. A common parging mix would consist of 1 part St Marys Type S Masonry Cement and 3 parts damp loose sand by volume, and enough water for the desired workability. For example, 1 St Marys Type S bag and 3 parts damp loose sand by volume, would give enough mortar to cover approximately 7.67 square metres @ 6 mm thick (78 square feet @ ¼" thick).

Courtesy Portland Cement Association

CSA A179 – TABLE 5
Proportion specifications: Grout proportions by volume

Parts by volume (aggregate measured in damp, loose state)

Grout type	Portland cement	Hydrated Lime or lime putty	Fine aggregate	Coarse aggregate
Fine	1	0 to 1/10	2 1/4 to 3 times the sum of the cementitious materials	0
Coarse	1	0 to 1/10	2 1/4 to 3 times the sum of the cementitious materials	1 to 2 times the sum of the cementitious materials

Note: *In accordance with CSA A179, Clause 6.1.3, as the basis for proportioning, 1 m3 of damp, loose sand contains 1280 kg of dry loose sand and 1 m3 of damp, loose coarse aggregate contains 1400 kg of dry loose coarse aggregate.*

CSA A179 – TABLE 7
Property specifications: Grout compressive strength

Grout type	*Minimum compressive strength, MPa / psi* 7 d test	28 d test	Consistency when sampled
Fine	6.0 / 870	10.0 / 1450	Suitable for use in grouting masonry
Coarse	7.5 / 1090	12.5 / 1815	

Note: *A fluid grout shall be required for placement, with excess water to ensure that a sufficient amount of moisture is present to replace moisture lost through absorption into the surrounding masonry and to ensure complete hydration. These requirements generally necessitate a high slump grout, on the order of 200 to 250 mm, with a high water/cement ratio. Because of moisture absorption into the surrounding masonry, the in-wall compressive strength for grout is generally about 50% higher than the compressive strength indicated for grout of the same type that experiences no moisture loss when cast in non-absorbent cylinder moulds. For tests of the compressive strength of grout cast in non-absorbent cylinder moulds, the minimum average 28 d compressive strengths required by this table are recognized by CSA S304.1 and lead to satisfactory structural performance.*

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