

## ***WRITERS' PROFESSIONAL LIABILITY***

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As such, this document was diligently drafted by experienced professionals and therefore must not be copied integrally; rather you must adapt or even modify it according to your project, which our technical representatives and engineering service would be more than happy to help you with.

Additional information available:

Although this document covers a wide variety of applications, we also invite you to refer to our electronic catalog of recommendations. Thus, following a proposal for use specific to your project, we will recommend one or more products. The electronic catalog and all of the technical sheets for our products can be found on our website at the following link: [www.king-masonry.com](http://www.king-masonry.com)

## **PART 1 – GENERAL**

### **1.1 REFERENCES**

- .1 CSA Standards
  - .1 CSA A-179 Mortar and grout for unit masonry
  - .2 CSA A-371 Masonry for buildings
  
- .2 ASTM Standards
  - .1 ASTM C 207 Standard Specification for Hydrated Lime for Masonry Purposes
  - .2 ASTM C 270 Standard Specification for Mortar for Unit Masonry
  - .3 ASTM C 979 Standard Specification for Pigments for Integrally Colored Concrete
  
- .3 National Building Code (Quebec)
  - .1 Section 9.20 (Load-bearing and non-load-bearing masonry)
  - .2 Sections 9.20 and 9.22 (chimney and fireplace)

### **1.2 DOCUMENTS/SAMPLES/INFORMATION TO SUBMIT FOR APPROVAL**

- .1 Submit the required technical data sheets and the samples conforming to section 01 33 00 –Documents and samples to submit.
  
- .2 Submit 3 samples of each mortar used by presenting them in the U-shaped plastic extrusions measuring 10 mm X 10 mm X 100 mm in length. The samples must be correctly identified.
  
- .3 Submit the technical data sheet of each mortar or grout used. The technical data sheet must include the product's characteristics, performance criteria and limits.
  
- .4 Submit two copies of the material safety data sheet of each mortar or grout used.
  
- .5 No requests for equivalency will be accepted after the bid closing date.

### **1.3 HANDLING AND STORAGE**

- .1 The bags of mortar and grout must be delivered in their original packaging with the legible identification of the manufacture
  
- .2 The mortar and grout product bags must be stored on wooden pallets and protected against inclement weather.

#### 1.4 WALL Mock-up

- .1 Erect a wall mock-up with a minimum height and length of 1000 mm X 1000 mm.
- .2 Erect a wall mock-up for each mortar and grout specified.
- .3 The wall mock-up should display what the final colour and texture of the joint will look like.
- .4 The wall mock-up must form an integral part of the works.
- .5 Do not start work until the wall mock-up has been approved by the professional in charge of the project.

#### 1.5 PLACEMENT CONDITIONS

##### .1 Cold weather placement during construction:

- .1 -4°C to 4°C: The mortar shall have a minimum temperature of 4°C and a maximum, temperature of 50°C.
- .2 -7°C to -4°C:
  - 1.5.2.1 The mortar shall have a minimum temperature of 4°C and a maximum, temperature of 50°C.
  - 1.5.2.2 Source heat shall be provided on both sides of the walls
  - 1.5.2.3 Windbreaks shall be employed when the wind speed exceeds 25 km/h
- .3 -7°C and below:
  - 1.5.3.1 The mortar shall have a minimum temperature of 4°C and a maximum, temperature of 50°C.
  - 1.5.3.2 Enclosures and supplementary heat shall be provided to maintain an air temperature above 0°C

##### .2 Cold weather protection for completed masonry or section not in progress

- .1 0°C to 4°C: Masonry shall be protected from rain or snow for 48 hours
- .2 -4°C to 0°C: Masonry should be completely covered for 48 hours
- .3 -7°C to -4°C: Masonry shall be completely covered with insulating blankets for 48 hours

- .4 -7°C and below: The masonry temperature shall be maintained above 0°C for 48 hours by enclosure and supplementary heat.

.3 Hot weather placement:

- .1 Cover the works with a waterproof tarpaulin to prevent them from drying too quickly. Make sure to use a tarpaulin that does not stain.
- .2 Never wet the masonry units, unless otherwise indicated by the professional in charge of the project.

**1.6 PROTECTIVE MEASURES**

- .1 Unfinished masonry works must be wrapped with waterproof tarpaulins that do not stain. The tarpaulins must cover the walls and extend them by 600 mm on each side to protect the works against gusts of rain caused by wind.
- .2 Finished masonry works must be protected from mortar spatter by covering them with stain-free tarpaulins or polyethylene.
- .3 Protect the windows, frames, doors and sills from spatter or other damaging elements.

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- .1 Mortar and grout materials must be provided by the same supplier.
- .2 All mortar and grout must be manufactured in a plant where processes are certified ISO 9001:2008.
- .3 Portland Type GU Cement, conforming to standard CSA A-3000.
- .4 Hydrated lime Type “S”, conforming to standard ASTM C-207.
- .5 Sand: Fine-grain sand particle size conforming to table 1 of standard CSA A-179.
- .6 Water: Only use clean potable water free of harmful substances such as oils, acids, salts and organic matter.
- .7 Pigments: The percentage of pigments should not exceed 10% of the binder density.

- .8 It is strictly prohibited to use any type of additive to alter the setting time, workability or any other property of the plastic or cured mortar.

## 2.2 MORTARS

- .1 All mortars described hereafter are manufactured by the company «KING – A SIKA Co.».
- .2 Each type of mortar must be factory pre-blended with Portland cement, lime, sand and colouring agents, and then mixed with water at the construction site according to the manufacturer's instructions.

If pigments needs to be add on site, use only the **Colour Plus System** exclusive to « KING – A SIKA Co.»

- .3 Mortar for exterior masonry work, above ground level.
  - .1 Mortar for load-bearing walls: As a minimum, use a Type "S" mortar such as KING 2-1-9, prepared according to the batching specifications
  - .2 Mortar for non-load-bearing walls: As a minimum, use a Type "N" mortar like KING 1-1-6, prepared according to the batching specifications
  - .3 Mortar used in the case of parapets and masonry exposed to a high level of saturation such as chimneys and self-supporting exterior walls: Use a Type "S" mortar, prepared according to dosage specifications such as KING 2-1 -9 mortar.
  - .4 Mortar used for laying bricks and glass blocks: Use a Type "S" mortar with waterproofing agent, such as MasonGlass mortar.
- .4 Mortar for exterior masonry work at ground level or below.
  - .1 Mortar used for foundation walls, retaining walls, manholes, sewers, pavements, aisles and patios: Minimally use a Type "S" mortar such as the KING BLOCK or a mortar prepared according to the specifications relating to the dosage, such as KING 2-1-9 mortar.
- .5 Mortar for interior masonry works
  - .1 Mortar for load-bearing walls: As a minimum, use a Type "S" mortar like KING Block or KING 2-1-9.
  - .2 Mortars for non-load-bearing walls requiring low compressive strength resistances or non-load-bearing walls: Minimally use a Type "N" mortar prepared according to the dosage specifications such as KING 1-1-6.

- .3 Mortar used when laying glass blocks: Use a Type "S" mortar with waterproofing agent, such as MasonGlass mortar or a Type "N" mortar, prepared according to dosage specifications such as KING 1-1-6 mortar.

### 2.3 GROUTS

- .1 All grouts described hereafter are manufactured by the company «KING – A SIKA Co.».
- .2 It is strictly prohibited to use mortar as grout.
- .3 Each type of grout must be factory pre-blended with the raw materials, and then mixed with water on the construction site according to the manufacturer's instructions.
- .4 The grouts must conform to table 7 of standard CSA A179.
- .5 Grout should be an expansive type. Expansion shall be less than 2%.
- .6 Unless otherwise indicated, to fill the cells of the block, use a grout with 15 MPa at 28 days, such as KING CellFiller E-15.

## PART 3 – EXECUTION

### 3.1 MIXING

***Important: In order to avoid segregation issues, always mix the total content of one bag. If less than 30 kg is required, dry mix - without water – the total contents of the bag in a clean container, take the required amount, and then add water to the amount withdrawn from the mixture.***

- .1 Always use a clean mixer for each type of mortar and colour.
- .2 Conformity: Comply with the requirements, recommendations and specifications on the manufacturer's technical data sheet.

### **3.2 PLACEMENT**

- .1 Unless otherwise indicated by the architect, place the masonry mortar and grout in compliance with standards CSA A-179 and CSA A-371.

### **3.3 JOINTS**

- .1 Unless otherwise indicated by the architect, the joints must be 10-mm thick.
- .2 The joints must be smoothed so that they have a concave profile.

### **3.4 PLACEMENT TIMEFRAME FOR MORTAR AND GROUT**

- .1 Mortar
  - .1 If room temperature is equal to or greater than 25°C, mortar must be placed in under 1.5 hours after mixing. If room temperature is less than 25°C, mortar must be placed in under 2.5 hours after mixing.
- .2 Grout
  - .1 Expansive grout must be placed at the latest 20 minutes after mixing. Regular grout must be placed in under 1.5 hours after mixing.

### **3.5 REMIXING**

- .1 Remixing is a criteria of placing mortar and grout. It is done to ensure the necessary workability.
- .2 Once the desired consistency is obtained, it is not recommended to add water to the coloured mortars in order to compensate for the loss of water caused by evaporation. Adding water could affect the final colour of the product.

### **3.6 COLOUR UNIFORMITY**

- .1 In order to ensure colour uniformity of the mortar, the contractor must:
  - .1 Use the same supplier for all mortar and grout.
  - .2 Once the desired consistency is obtained, it is not recommended to add water to the coloured mortars in order to compensate for the loss of water caused by evaporation. Adding water could affect the final colour of the product.
  - .3 Process of tooling joints when the mortar has hardened sufficiently such that a fingerprint mark remains

- .4 Ensure that the quantity of water in the mortar joints remains the same while smoothing them.
- .5 Always use a clean water container
- .6 Always use a clean mixer.

### **3.7 CLEANING**

- .1 Once finished the work, remove the excess mortar using a wooden blade. Once the mortar has sufficiently cured, the contractor must:
  - .1 Moisten the wall surface with clean water, starting from the bottom.
  - .2 Scour the wall surface using water and a brush with nylon bristles.
  - .3 Do NOT use any form of acid, unless otherwise indicated by the professional in charge of the project.
  - .4 If the use of cleaning product is necessary, contact the product manufacturer to validate the compatibility of the product and the procedure to follow. If the colour ONYX is used, be sure to mention to the cleaning product manufacturer that the mortar contains Carbon Oxides pigments. Generally used cleaning agents are not compatible with Carbon Oxides. Apart from colour Onyx, all KING – A SIKA Co. coloured mortars contain iron or titanium oxides.
  - .5 Regardless of the technique or product selected, it is essential to preserve the integrity of the mortar.
  - .6 Proceed with a witness section of 2000 mm high X 2000 mm long minimum.
  - .7 Wait for approval of the cleaning control zone by the professional in charge of the project before proceeding with the entire building.

**END OF SECTION**