



**Ranhill
SAJ**

SPECIFICATION FOR PRE CAST MARKER POSTS

MATERIAL REQUIREMENTS

**SPECIFICATION SAJ OT/ MP/ 001
(REV 1.0/01.2018)**

QUALITY ASSURANCE DEPARTMENT
SAJ RANHILL SDN BHD

Approved by :


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Head Quality Assurance

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SAJ SPECIFICATION FOR PRE CAST MARKER POSTS

1.0 General

- 1.1 This specification is applicable to precast concrete for marker post for water work accordingly to Malaysian Standard, MS EN 206:2016, Concrete – Specification, Performance, Production and Conformity.

2.0 Material

- 2.1 All marker posts shall meet all requirements specified and have no significant change in color, flexibility or integrity after coating.
- 2.2 The cement use shall be Type I of Portland Cement as defined in EN 197-1, classified as general purpose and high content of Tricalcium Silicate, C₃S. Table 1 shows the oxide and mineral compositions of typical Type I Portland cement.

Table 1 – Oxide Composition of a Portland cement.

Oxide	Range (wt%)
	(OPC Type I-V)
Ca O	60.2 – 66.3
Si O ₂	18.6 – 23.4
Al ₂ O ₃	2.4 – 6.3
Fe ₂ O ₃	1.3 – 6.1
Mg O	0.6 – 4.8
P ₂ O ₅	-
Ti O ₂	-
Na ₂ O	0.05 – 1.20 (Na ₂ O equiv)
K ₂ O	
SO ₃	
Loss on Ignition	-
Insoluble Residue	-
Free Ca O	-

The loss on ignition is the weight lost when the cement was heated to 1000°C.

The insoluble residue is the mass of material that is not dissolved by acid.

The free CaO (often called the “free lime”) is the amount of calcium oxide present as CaO that is, not bound into the cement minerals.

- 2.3 Aggregates for concrete shall be obtained from an approved source and shall conform to the requirements of BS EN 12620. Type and categories for aggregates such as grading, flakiness, freeze/thaw resistance, abrasion resistance, fines shall be declared for marker post purpose.
- 2.4 Mixing Water for concrete shall be conforming to EN 1008. Combination with potable water or ground water should be use as mixing water for concrete.

3.0 Concrete

3.1 Grade of concrete for use in the work shall be as shown in the table below;

Table 2 – Grade of Concrete

Concrete Grade	Maximum Aggregates Size, mm	Characteristic Strength at 7 days, min, N/mm ²	Characteristic Strength at 28 days, min, N/mm ²	Minimum Cement Content, kg/m ³	Maximum Free Water/Cement Ratio
30	20	20	30	400	0.51

3.2 In design and establishing approved mixes of concrete for any parts shall be keep strictly within the limitation on free water/cement ratios which may be shown on the drawing or expressly stated elsewhere as applying to concrete for particular part of the works.

4.0 Color and Coating

4.1 All marker posts shall be painted with two coats of cement based paint.

4.2 Marker posts shall be painted in white color. Lettering shall be painted in black color and symbols shall be counter sunk by 6mm deep and painted in black.

5.0 Design and Dimension

5.1 Refer to SAJ standard drawing no SAJ/STD/MPs/01.

6.0 Mandatory Marking

6.1 Manufacturer name or marks are required on all marker posts. The marks shall be printed at the rear of marker posts with lettering size 10mm, same level with ground surface.

6.2 All SAJ lettering and symbols shall comply with SAJ standard drawing no SAJ/STD/MPs/01.

7.0 Pre-Delivery Inspection

- a) It is the responsibility of the tenderer to inform SAJ for inspection purposes during manufacturing and before delivery.
- b) SAJ reserved the right to inspect and witness the testing of product offered without notice.
- c) At anytime, when requested, the supplier is to provide SAJ a sample of the product offered for evaluation purposes. All costs shall be borne by the supplier.
- d) If at any time the supplier fails to deliver the required sample, the products is deemed fail to meet the specification.

8.0 Certification

- 8.1 Manufacturer and/or supplier of the product are required to provide the copy of the test report from concrete laboratory for new/renewal application of certification.
- 8.2 Tests report required should be those tests conducted within a year period. Suppliers are advised to submit Concrete Mix Design Proposal including Summary of Batch Weight per cubic meter of concrete.
- 8.3 SAJ has the right to refuse offer or reject supply if those documents required are not enclosed or results provided are not complied with SAJ requirement.
- 8.4 SAJ has the right to evaluate the product and performance for every application.