CONCRETE ADMIXTURE

SILICA CEMENT

TEST REPORT
ON
WATER PERMEABILITY AND MORTAR STRENGTH TEST

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SILICA

SILICA JAPAN INC.

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Registered Concrete Consultant
PRODUCT GIKEN INC.

（1） Test overview

Client: SILICA JAPAN INC.
Test purpose: to confirm the change in water permeability and strength of concrete mixed with SILICA CEMENT.
Testing location : PRODUCT GIKEN INC.
Tester : Mr.Masami Nakamaru

Concrete Specimen was made: October 1. 2007
Permeability test was performed: November 1. 2007
Strength test was performed: 7 days and 28 days after October 1.2007

(2) Test results in accordance with JIS A 1404 “ Test method of water proof agent for cement ”.

1. Tests on water permeability and strength (bending and compression) have been performed in conformity with JIS A 1404.
2. Materials.
   SILICA CEMENT :
   Category: Water proof agent.
   Appearance: White powder.
   Main substance: Silica
   Specific Gravity: 2.2
   Cement : Ordinary Portland Cement
   Aggregates: Silica Sand and local standard sand in conformity with JIS A 1404.
3. Concrete Specimens :

SPECIMEN	Combination (gram)				Flow RATE	Mass PerUnitVolume Kg / Litter
	SILICA CEMENT	CEMENT	AGGREGATES	WATER		
ORDINARY	0	500	1,500	274	161	2.16
SILICA CEMENT 5%	25	500	1,450	276	161	2.17
SILICA CEMENT 10%	50	500	1,450	276	161	2.17
SILICA CEMENT 20%	100	500	1,400	276	160	2.18

Method of concrete mixing:

Cement mixer : 5 liter cement mixer

Order of input :

Aggregates → SILICA CEMENT → Cement → Water

Mixing : One minute without water and then 3 minutes with water

Measurements of the specimens, number of pieces and curing

Curing : at 20℃ 80%

Specimens for the water permeability test : Φ15 x 4 3 pieces
Specimens for the strength test : 4 x 4 x 16 3 pieces each x 2 tests

4. Test method :

Tests on water permeability and strength (bending and compression) have been performed in conformity with JIS A 1404.

· Water permeability test : By water pressure test 3kg/cm3 for one hour

· Strength test : Bending and compression were tested at 7days' and 28 days' material age.

5 Test results

Water Permeability Test Report

Unit : N/mm2

SPECIMEN	NO.	WEIGHT BEFORE TEST (gms)	WEIGHT WATER PENETRATION AFTER 1 HOUR (gms)	WATER PENETATION
ORDINARY CEMENT	1	1,424	7	1.00
	2	1,435	7	
	3	1,437	8	
	AVERAGE	—	7.3	
SILICA CEMNT 5%	1	1,438	6	0.86
	2	1,423	6	
	3	1,419	7	
	AVERAGE	—	6.3	
SILICA CEMNT 10%	1	1,423	6	0.78
	2	1,457	6	
	3	1,433	5	
	AVERAGE	—	5.7	
SILICA CEMNT 20%	1	1,442	5	0.73
	2	1,435	5	
	3	1,431	6	
	AVERAGE	—	5.3	

6 Test results

Concrete Strength Report

Unit : Gram

SPECIMEN	NO.	7 days' material age		28 days' material age	
		BENDING STRENGTH	COMPRESSION STRENGTH	BENDING STRENGTH	COMPRESSION STRENGTH
ORDINARY CEMENT	1	6.6	42.8	7.1	48.2
	2	6.8	41.1	7.0	48.4
	3	6.6	41.7	6.7	48.2
	AVERAGE	6.6	41.9	6.9	48.3
SILICA CEMENT 5%	1	7.3	43.5	7.2	53.3
	2	6.9	42.9	7.9	50.9
	3	7.1	45.0	7.0	51.8
	AVERAGE	7.0	43.8	7.4	52.0
SILICA CEMENT 10%	1	6.4	41.2	7.7	53.1
	2	7.1	42.3	7.2	51.9
	3	6.3	43.3	7.5	54.4
	AVERAGE	6.5	42.3	7.5	53.1
SILICA CEMENT 20%	1	6.9	44.1	6.9	56.6
	2	7.4	44.4	7.1	56.6
	3	6.9	44.7	8.1	56.9
	AVERAGE	7.1	44.4	7.4	58.5