LAMPIRAN A

HASIL PEMERIKSAAN AGREGAT HALUS

Lampiran A.1 Pemeriksaan Kadar Bahan Organik

Warna sampel	Dibandingkan dengan warna larutan standar	Kesimpulan
1	Lebih muda	Kadar organik rendah
2	Lebih muda	Kadar organik rendah

Lampiran A.2 Pemeriksaan Kadar Air Agregat Halus

Nomor Sampel Pasir	I Sampel A	II Sampel B	III Sampel C	IV Sampel D
Berat container (gr)	24,4	25	24,6	24,5
Sampel + cont. (gr)	124,4	125	124,6	124,5
Berat sampel (X gr)	100	100	100	100
Berat sampel kering + container (gr)	114,2	115	114,8	114
Sampel kering (Y gr)	89,8	90	90,2	11,73
Kadar Air = (X-Y)/Y x100 %	11,36%	11,11 %	10,87 %	11,73 %
Kadar Air Rata-Rata (%)	11,268 %			

Lampiran A.3 Pemeriksaan Kadar *Silt* dan *Clay* Agregat Halus

Nomor Sampel Pasir	I Sampel A	II Sampel B	III Sampel C	IV Sampel D
Berat container (gr)	24,4	24,9	24,7	24,6
Berat awal sampel Kering + cont. (gr)	124,4	124,9	124,7	124,6
Berat awal sampel kering (X gr)	100	100	100	100
Berat akhir sampel kering + container (gr)	120,5	119,7	121,4	121,9
Berat akhir sampel kering (Y gr)	96,1	94,8	96,7	97,3
Kadar Silt and Clay = (X-Y)/Y x100 %	4,06 %	5,49 %	3,41 %	2,78%
Kadar Silt and Clay Rata-Rata (%)	3,935 %			

Lampiran A.4 Pemeriksaan Berat Jenis Agregat Halus

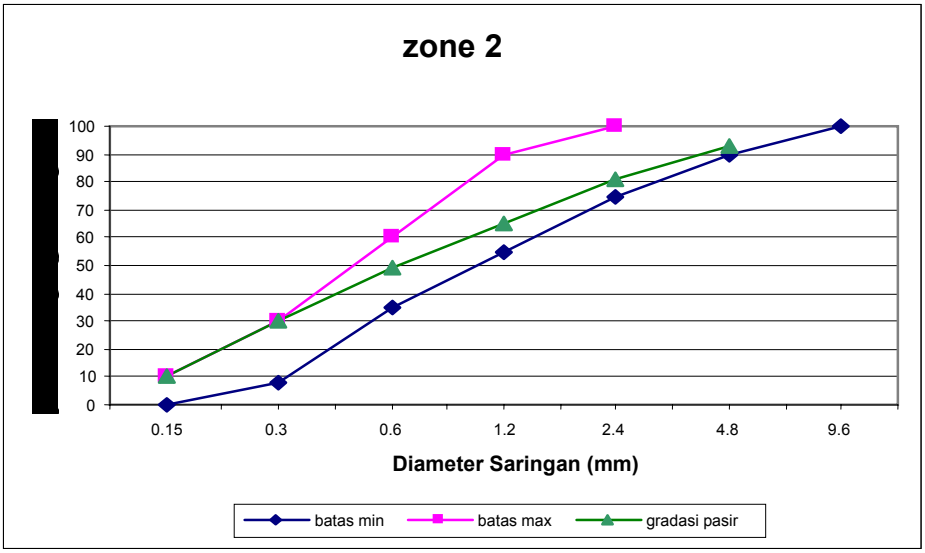
No. sampel koral / kerikil	I Sampel A	II Sampel B	III Sampel C
Berat sample SSD (X gr)	100	100	100
Berat gelas + air + sampel (Y gr)	828,4	846,4	840,4
Berat gelas + air (Z gr)	781	781	781
Berat jenis X / (X + Z - Y)	1,901	2,890	2,463
Berat jenis rata-rata	2,418 %		

Lampiran A.5 Pemeriksaan Penyerapan Agregat Halus

Nomor Sampel Pasir	I Sampel A	II Sampel B	III Sampel C	IV Sampel D
Berat Sampel SSD (X gr)	100	100	100	100
Berat Container(gr)	25,9	24,9	24,8	118,7
Berat Sampel Kering+ cont. (gr)	117,8	115,9	116,7	210
Sampel kering (Y gr)	91,9	90,8	91,9	91,3
Absorbsi = (X-Y)/Y x 100 %	8,81 %	10,13 %	8,82 %	9,53 %
Absorpsi Rata-rata (%)	9,323%			

Lampiran A.6 Pemeriksaan Gradasi dan Modulus Kehalusan Butir Agregat Halus

Nomor ayakan dan ukuran ayakan	Berat tertahan (gr)	Berat tertahan (%)	Berat tertahan kumulatif (%)	Berat lolos kumulatif (%)
No. 4 4.76 mm	37,1	7,42	7,42	92,58
No. 8 2.40 mm	57,7	11,54	18,96	81,04
No. 16 1.20 mm	80	16	34,94	65,06
No. 30 0.60 mm	81,15	16,23	51,19	48,81
No. 50 0.30 mm	95,15	19,03	70,22	29,78
No. 100 0.15 mm	97,9	19,58	89,80	10,20
Pan < 0.15 mm	51	10,2	100	0
Total	500	100	372,53	



Gambar A. 1 Batas Zone 2 Agregat Halus

Lampiran A.7 Pemeriksaan Berat Isi Lepas Agregat Halus

Berat Isi Lepas (Gembur)

Nomor Sampel Pasir	I Sampel A	II Sampel B
Berat Silinder + Sampel (X gr)	1553,9	1537,2
Berat Silinder + Air (Y gr)	1249,8	1294,8
Berat Silinder (Z gr)	321	326,3
Berat Isi Lepas = (X-Z)/(Y-Z) gr/cm^3	1,33	1,25
Berat Isi Lepas Rata-rata (gr/cm3)	1,29 gr/cm^3	

Lampiran A.8 Pemeriksaan Berat Isi Padat Agregat Halus

Berat Isi Padat (Ditusuk-tusuk)

Nomor Sampel Pasir	I Sampel A	II Sampel B
Berat Silinder + Sampel (X gr)	1719,6	1830,6
Berat Silinder +Air (Y gr)	1255	1273,9
Berat Silinder (Z gr)	318,7	326,5
Berat Isi Lepas = (X-Z)/(Y-Z) gr/cm3	1,49	1,58
Berat Isi Padat Rata-rata (gr/cm3)	1,535 gr / cm^3	

LAMPIRAN B

HASIL PEMERIKSAAN AGREGAT KASAR

Lampiran B.1 Pemeriksaan Kadar Air Agregat Kasar

Nomor Sampel Kerikil / Koral	I Sampel A	II Sampel B	III Sampel C	IV Sampel D
Berat Container (gr)	25,6	23,7	25,5	25,1
Sampel + Contanier (gr)	225,6	223,7	225, 5	225,1
Berat Sampel (X gr)	200,0	200,0	200,0	200,0
Berat Sampel Kering+Container (gr)	218,8	218	219,9	218,8
Sampel Kering (Y gr)	193,7	194,3	194,4	193,7
Kadar Air =(X-Y)/Y x 100 %	3,51%	2,93%	2,88%	3,25%
Kadar Air Rata-rata (%)	3,143%			

Lampiran B.2 Pemeriksaan Kadar *Silt* dan *Clay* Agregat Kasar

Nomor Sampel Kerikil / Koral	I Sampel A	II Sampel B	III Sampel C	IV Sampel D
Berat Container (gr)	35,6	23,7	25,5	25,1
Berat Awal Sampel Kering+Cont. (gr)	235,6	223,7	225, 5	225,1
Berat Awal Sampel Kering (X gr)	200,0	200,0	200,0	200,0
Berat Akhir Sampel Kering+Cont. (gr)	232,9	220,3	222,4	225,1
Berat Akhir Sampel Kering (Y gr)	197,3	196,6	196,9	196,1
Kadar Silt dan Clay =(X-Y)/Y x 100 %	1,37%	1,73%	1,57%	1,49%
Kadar Rata-rata Silt dan Clay (%)	1,67%			

Lampiran B.3 Pemeriksaan Berat Jenis Agregat Kasar

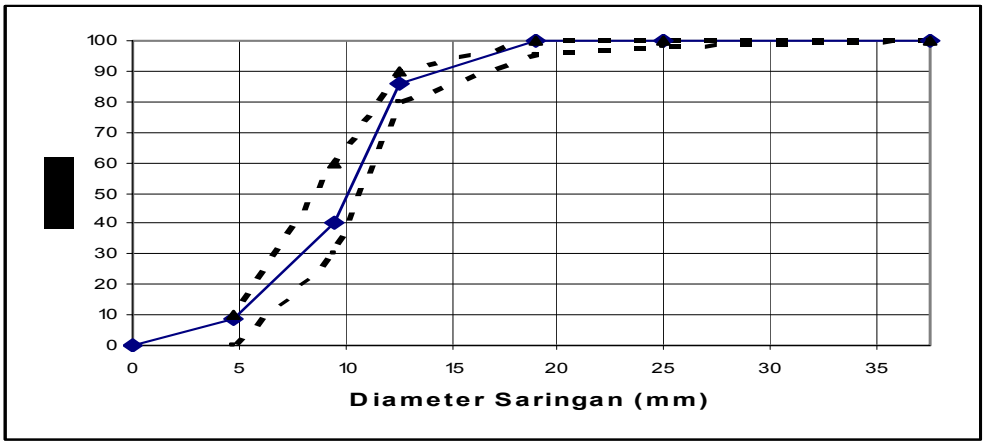
No. sampel koral / kerikil	I Sampel A	II Sampel B	III Sampel C	IV Sampel D
Berat sampel SSD (X gr)	200	200	200	200
Berat gelas + air + sampel (Y gr)	1417	1452	1450	1455
Berat gelas + air (Z gr)	1300	1328	1330	1332
Berat jenis X / (X + Z - Y)	2,4096	2,6316	2,5	2,5974
Berat jenis rata-rata	2,535			

Lampiran B.4 Pemeriksaan Penyerapan Agregat Kasar

NomorSampel Kerikil / Koral	I Sampel A	II Sampel B	III Sampel C	IV Sampel D
Berat Sampel SSD (X gr)	200,00	200,00	200,00	200,00
Berat Container (gr)	171	152	187,5	199,2
Berat Sampel Kering+ cont. (Z gr)	365,4	380,3	380,3	392,4
Sampel kering (Y gr)	194,4	194,5	192,8	193,2
Absorbsi = (X-Y)/Y x 100 %	2,88%	2,83%	3,73%	3,52%
Absorpsi Rata-rata (%)	3,24%			

Lampiran B. 5
Pemeriksaan Gradasi dan Modulus Kehalusan Butir Agregat Kasar

Nomor ayakan dan ukuran ayakan	Berat tertahan (gr)	Berat tertahan (%)	Berat tertahan kumulatif (%)	Berat lolos kumulatif (%)
3/2 in 37,5 mm	0	0	0	100
1 in 25,0 mm	0	0	0	100
¾ in 19,0 mm	0	0	0	100
½ in 12,5 mm	702	14,2	14,2	85,8
3/8 in 9,52 mm	2245	45,427	59,627	40,373
No. 4 4,76 mm	1560	31,566	91,193	8,807
Pan (Agregat halus)	435	8,8	99,993	0,007
Total	4942	100	265,013	



Gambar B. 1 Batas Gradasi Agregat Kasar Ukuran Butir Maksimum 20 mm

Lampiran B. 6 Pemeriksaan Berat Isi Lepas Agregat Kasar

Berai Isi Lepas (Gembur)

Nomor Sampel Kerikil / koral	I Sampel A	II Sampel B
Berat Silinder +Sampel (X gr)	1551,5	1581,6
Berat Silinder +Air (Y gr)	1249,9	1267,1
Berat Silinder(Z gr)	331	331,4
Berat Isi Lepas =(X-Z)/(Y-Z) gr/cm^3	1,33	1,34
Berat Isi Lepas Rata-rata(gr/cm^3)	**1,335**	

Lampiran B. 7 Pemeriksaan Berat Isi Padat Agregat Kasar

Berat Isi Padat (Ditusuk-tusuk)

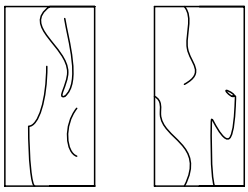
Nomor Sampel Kerikil/Koral	I Sampel A	II Sampel B
Berat Silinder +Sampel (X gr)	1594,8	1586,5
Berat Silinder +Air(Y gr)	1283,3	1267,1
Berat Silinder(Z gr)	327,4	335,1
Berat Isi Lepas =(X-Z)/(Y-Z) gr/cm^3	1,33	1,34
Berat Isi Padat Rata-rata(gr/cm^3)	**1,335**	

LAMPIRAN C

SKETSA POLA RETAK

Pola Retak Akibat Uji Tekan dengan Semen Portland Komposit

Umur Perawatan Beton 3 hari



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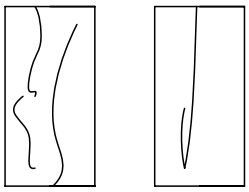

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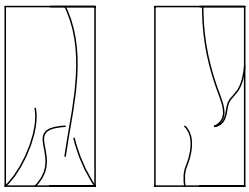

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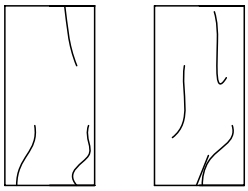
Umur Perawatan Beton 7 hari



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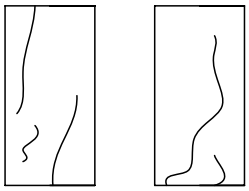

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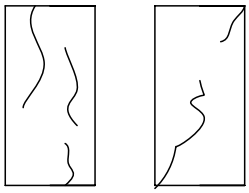
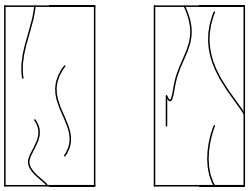


T. Depan T. Belakang

Umur Perawatan Beton 14 hari



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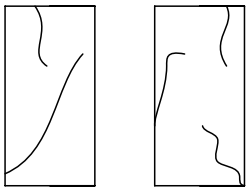

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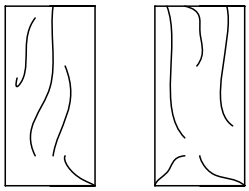

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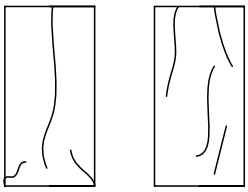
Umur Perawatan Beton 28 hari



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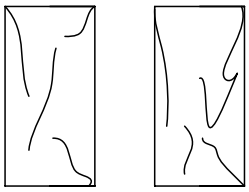

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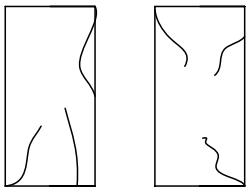
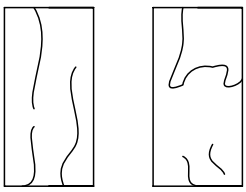


T. Depan T. Belakang

Pola Retak Akibat Uji Tekan Semen PC type 1 dengan
Sikament-NN

Umur Perawatan Beton 3 hari



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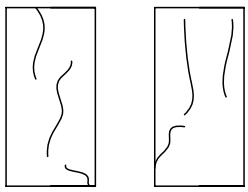

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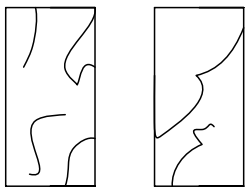
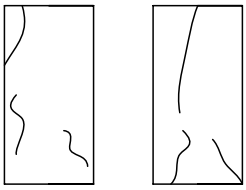


T. Depan T. Belakang

Umur Perawatan Beton 7 hari



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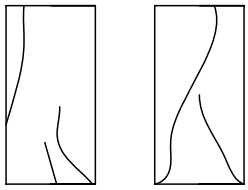

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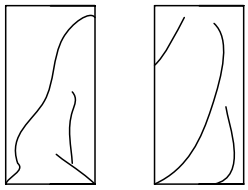

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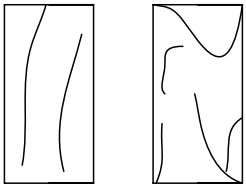
Umur Perawatan Beton 14 hari



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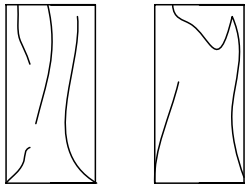

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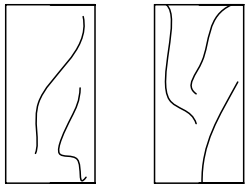

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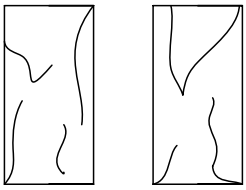
Umur Perawatan Beton 28 hari



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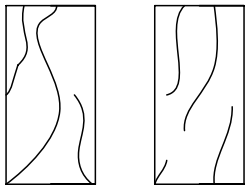

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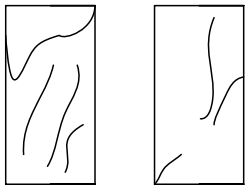

T. Depan T. Belakang

PCC (Portland Composite Cement)

SPESIFIKASI TEKNIS PCC
(PCC TECHNICAL SPECIFICATION)

ITEMS		UNIT	SNI 15-7064-2004			QUALITY	
			Standard			Typical	Range
PHYSICAL PROPERTIES :							
1. Air content of mortar, volume		%		12	max.	4.60	4.5 - 5.7
2. Fineness, specific surface		m^2 / kg		280	min.	418	391 - 427
3. Autoclave expansion		%		0.8	max.	0.05	0.03 - 0.07
4. Compressive strength							
	3 days	kg / cm^2		125	min.	236	213 - 249
	7 days	kg / cm^2		200	min.	303	284 - 322
	28 days	kg / cm^2		250	min.	402	381 - 452
5. Time of setting, Vicat	Initial set	minute		45	min.	128	106 - 168
	Final set	minute		375	max.	339	315 - 365
6. False set		%		50	min.	73.4	75 - 87
7. Heat of hydration	7 days	kal / gr				66.4	65 - 67
8. Normal consistency		%				25.4	24.5 - 25.9
9. Specific Gravity						3.05	3.00 - 3.10
CHEMICAL PROPERTIES :							
1. Silicon dioxide	(SiO_2)	%		-		23.04	21.7 - 23.5
2. Aluminium oxide	(Al_2O_3)	%		-		7.40	6.1 - 7.6
3. Ferric oxide	(Fe_2O_3)	%		-		3.36	3.1 - 3.9
4. Calcium oxide	(CaO)	%		-		57.38	57.0 - 60.3
5. Magnesium oxide	(MgO)	%		-		1.91	1.0 - 2.9
6. Sulfur trioxide	(SO_3)	%		4.0	max.	2.00	1.6 - 2.1
7. Loss on ignition	(LOI)	%		-		3.94	3.5 - 8.0
8. Insoluble residue	(IR)	%		-		10.96	5.0 - 12.5
9. Free lime	(F-CaO)	%		-		0.56	0.5 - 1.5

PENGGUNAAN

1. Untuk pemakaian secara umum dan untuk semua mutu beton
2. Untuk struktur bangunan bertingkat sampai dengan gedung bertingkat tinggi
3. Untuk struktur jembatan dan jalan beton
4. Untuk paving block
5. Untuk pemasangan bata, plesteran dan acian.

SIFAT-SIFAT

1. Mudah pengerjaannya
2. Suhu adukan rendah, sehingga hasilnya tidak mudah retak
3. Menghasilkan permukaan plesteran dan beton yang halus
4. Kedap air
5. Tahan terhadap serangan sulfat
6. Mempunyai kuat tekan yang tinggi
7. Bangunan / konstruksi menjadi tahan lama.

PETUNJUK PRAKTIS PENGGUNAAN PCC

JENIS PENGGUNAAN, PASANGAN & PLESTERAN	PERBANDINGAN CAMPURAN	
	PCC	PASIR
Pasangan batu kali	1	7 - 8
Pasangan batu beton berlubang (batako)	1	7 - 8
Pasangan bata merah	1	7 - 8
Plesteran dinding	1	7 - 8
Plesteran dinding kamar mandi	1	3 - 5

JENIS PENGGUNAAN KOMPONEN BANGUNAN	PERBANDINGAN CAMPURAN	
	PCC	PASIR
Pasangan batu beton berlubang (batako)	1	5 - 7
Paving block	1	3 - 6
Genteng beton	1	2 - 5

MUTU BETON K-	AIR (Liter / m³)	PCC (Kg / m³)	PASIR (Kg / m³)	KERIKIL (Kg / m³)
175	195	271	938	936
250	195	320	876	949
300	205	366	800	978

Catatan :
- Slump 100 - 125 mm
- Agregat dalam kondisi SSD dengan ukuran maksimum 20 mm

Mutu hasil pengerjaan dengan campuran di atas dapat bervariasi tergantung pada mutu bahan yang digunakan seperti pasir, kerikil, air serta kondisi pengerjaan.

PCC (Portland Composite Cement) TIGA RODA

SEMEN TIGA RODA

KOKOH - TERPERCAYA

Tersedia kemasan 40 kg dan 50 kg

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Construction

Technical Data Sheet
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Sikament-NN

Sikament® - NN

High Range Water - Reducing

Description

A highly effective dual action liquid superplasticizer for the production of free flowing concrete or as a substantial water-reducing agent for promoting high early and ultimate strengths. Chloride free.
Complies with A.S.T.M. C 494-92 Type F

Uses

Sikament-NN is used as a super plasticizer in the production of free flowing concrete for use in :

- Slabs and foundations.
- Walls, columns and piers.
- Slender components with densely packed reinforcement.
- Textured surface finishes.

It is also used as a water-reducing agent leading to high early strength concrete for use in :

- Pre-cast concerete elements
- Pre stressed concrete
- Bridges and cantilever structures
- Areas of concrete where formwork must be removed quickly or early loading
- Applied.

Advantages

Sikament-NN provides the following properties :
As a Superplasticizer :
Workability is greatly improved. Increased placeability in slender components with packed reinforcement.
Decreases the amount of vibration required. Normal set without retardation.
Significantly reduces the risk of segregation.
As a Water reducer :
Up to 20% reduction of water will produce 40% increase in 28 days compressive strength.
High strength after 12 hours.

Dosage

0.6 % - 1.5 % by weight of cement.
It is advisable to carry at trial mixes to establish the exact dosage rate required. Sikament-NN is compatible with all type of Portland cement including S.R.C.

Dispensing

Sikament-NN can be added to the mixing water prior to its addition to the aggregates or as in most cases, it can be added directly to the freshly mixed concrete.
When added directly to the freshly mixed concrete, the plasticizing effect is more pronounced.
For Ready-mix concrete, Sikament-NN is added to the concrete immeadiately prior to discharge and after further mixing has taken place for the five minutes.

Sika®

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Construction

Technical Data

Type	Naphthalene Formaldehyde Suplhonate
Colour	Dark Brown
Specific Gravity	1.16 – 1.18 kg/l
Shelf Life	1 year when unopened
Packaging	250 kg drum
Handling Precautions	■ Avoid contact with skin and eyes ■ Wear protective gloves and eye protection during work ■ If skin contact occurs, wash skin thoroughly ■ If in eyes, hold eyes open, flood with warm water and seek medical attention without delay.

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Certified Management System
DIN EN ISO 9001:2000

Foto Alat Uji Kuat Tekan (*Compression Test Machine*)

Foto Benda Uji Silinder