

# SULLIVAN CONCRETE

## CONCRETE MIX PROPORTIONS

PROJECT : Orchards Water Tank  
CUSTOMER : Derstine Company LLC  
MIX DATA : 4000 Non-Air  
MIX ID: 9096-15

	Batch Weights	Volume
<u>CEMENT</u>		
Type I or II	611 Lbs	3.11 Cu Ft
<u>MINERAL ADMIX</u>		
Slag	Lbs	
Micro silica	Lbs	
<u>AGGREGATE</u>		
Sand	1458 Lbs	8.88 Cu Ft
NYS DOT #2	875 Lbs	5.23 Cu Ft
NYS DOT #1	875 Lbs	5.23
Lightweight	Lbs	
<u>WATER</u>	30 Gals	4.00 Cu Ft
<u>ADMIXTURES</u>		
AEA-92	Oz	
MR	30.6 Oz	
Plastol	Oz	
	Oz	
SLUMP	5"	
SLUMP AFTER SUPER P.	8"	
AIR CONTENT (+/- 1.5%)	2.0 %	0.54 Cu Ft
WATER/CEMENTIOUS RATIO	0.409 Lb/Lb	
UNIT WEIGHT, FRESH	150.7 PCF	
VOLUME		<u>27.00</u> Cu Ft

Notes:



# Cement Mill Test Report

Month of Issue: February-17

Plant: Ravenna, New York  
 Product: Portland Cement Type I/II  
 Manufactured: January-17

## ASTM C 150 and AASHTO M 85 Standard Requirements

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray (C 114)			Air content of mortar (%) (C 185)		
SiO <sub>2</sub> (%)	--	20.5		12 max	8.5
Al <sub>2</sub> O <sub>3</sub> (%)	6.0 max	4.9	Blaine Fineness (m <sup>2</sup> /kg) (C 204)		
Fe <sub>2</sub> O <sub>3</sub> (%)	6.0 max	3.5		260 min	388
CaO (%)	--	63.0	-325 (%) (C 430)		
MgO (%)	6.0 max	1.5		--	94.2
SO <sub>3</sub> (%)	3.0 max *	3.2	Autoclave expansion (%) (C 151)		
NaEq (%)	--	0.48		0.80 max	-0.01
Loss on ignition (%)	3.5 max	1.74	Compressive strength Mpa (PSI) (C 109)		
Insoluble residue (%)	1.5 max	0.33			
Cement CO <sub>2</sub> (%)		0.45	3 days	12.0 (1740) min	23.1 ( 3340 )
Limestone (%)	5.0 max		7 days	19.0 (2760) min	30.9 ( 4470 )
CaCO <sub>3</sub> in Limestone (%)			28 days (Previous Month)		41.6 ( 6030 )
Adjusted Potential Phase Composition (C 150)			Time of setting (minutes)		
C3S (%)	--	52.0	Vicat Initial (C 191)		
C2S (%)	--	19.4		45 - 375	161
C3A (%)	8 max	7.1	Mortar Bar Expansion (%) (C 1038)		
C4AF (%)	--	10.5		0.020 max**	0.004
Additional Data: Base Potential Phase Composition (C 150)					
C3S (%)	--	52.0			
C2S (%)	--	19.4			
C3A (%)	--	7.1			
C4AF (%)	--	10.5			

\* May exceed 3.0% SO<sub>3</sub> maximum based on our C1038 results of <0.02% expansion at 14 days.

\*\* Current Production run not available - most recent provided

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements for Type I-II portland cement as specified in the American Society of Testing and Materials (ASTM) Specification C 150 and the American Association of State Highway and Transportation Officials (AASHTO) Specification M 85.

US Stronghold - Ravenna Plant  
 P.O. Box 3 - Ravenna, NY 12143  
 CVC Phone: 1-800-263-3561

Scott Derhammer  
 Quality Manager

Date Report Created: 2/10/2017



Department of  
Transportation

ANDREW M. CUOMO  
Governor

MATTHEW J. DRISCOLL  
Commissioner

JACK WILLIAMS, P.E.  
Regional Director

December 16, 2016

JML Quarries, Inc.  
420 Bernas Road  
Cochecton, NY 12726

RE: Source 9-2F  
JML Gravel Pit  
Masten Lake, NY

To Whom It May Concern;  
Aggregate test results for the referenced material are attached with the assigned test number 16AF 99.

***The material meets specifications for Item 703-01.***

Any questions regarding this matter, please call Raymond Standish with Region 9 Materials, at (607) 772-2447.

Very truly yours,

Raymond J. Standish  
For: Christopher C. Bogart, Regional Materials Engineer, Region 9

CCB: RJS  
cc: File



# JML QUARRIES, INC

145 Dump Rd. Wurtsboro, NY 12790

## Gradation Sieve Analysis

Material: CONCRETE SAND Sample Location: STOCKPILE

Sampled By: J. Vogler Date: 11/08/17

COMMENTS: .

Sieve Size		Wt.	%	%	Spec %
mm	Inches	Retain	Retain	Passing	Pass
100	4"				
75	3"				
62.5	2-1/2"				
50	2"				
37.5	1-1/2"			100.00%	
25	1"		0.00%	100.00%	100
19	3/4"		0.00%	100.00%	100
12.5	1/2"	0	0.00%	100.00%	100
9.5	3/8"	0	0.00%	100.00%	100
4.75	#4	37.2	4.14%	95.86%	90 - 100
2.36	#8	180.2	20.05%	75.81%	75 - 100
1.18	#16	142.7	15.88%	59.93%	50 - 85
0.6	#30	128	14.24%	45.68%	25 - 60
0.3	# 50	163.5	18.19%	27.49%	10 - 30
0.15	# 100	200.8	22.35%	5.14%	1 - 10
0.075	# 200	34.6	3.85%	1.29%	0 - 3
Pan		11.6	1.29%		
TOTAL		898.6			



Department of  
Transportation

ANDREW M. CUOMO  
Governor

MATTHEW J. DRISCOLL  
Commissioner

JACK WILLIAMS, P.E.  
Regional Director

December 16, 2016

JML Quarries, Inc.  
420 Bernas Road  
Cochecton, NY 12726

**RE: Source 9-38RFM  
JML Quarry  
Masten Lake, NY**

To Whom It May Concern;  
Aggregate test results for the referenced material are attached with the assigned test number 16AF 100.

***The material meets specifications for Item 703-01.***

Any questions regarding this matter, please call Raymond Standish with Region 9 Materials, at (607) 772-2447.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Ray J. Standish".

Raymond J. Standish  
For: Christopher C. Bogart, Regional Materials Engineer, Region 9

CCB: RJS  
cc: File



JML QUARRIES, INC  
 145 Dump Rd. Wurtsboro, NY 12790

Gradation Sieve Analysis

Material: \_\_\_\_\_ #2 STONE \_\_\_\_\_ Sample Location: \_\_ stockpile

Sampled By: \_ J. Vogler \_\_\_\_\_ Date: \_ 11/03/17

Comments: 10:30am UNDER BELT R-3

Sieve Size		Wt.	%	%	Spec %
mm	Inches	Retain	Retain	Passing	Pass
100	4"				
75	3"				
62.5	2-1/2"				
50	2"				
37.5	1-1/2"	0	0.00%	100.00%	100
25	1"	108.3	0.91%	99.09%	90 - 100
19	3/4"	4150.6	34.97%	64.12%	
12.5	1/2"	6853.2	57.74%	6.38%	0 - 15
9.5	3/8"	535.7	4.51%	1.87%	
6.32	1/4"	60.1	0.51%	1.36%	
4.75	#4	0	0.00%	1.36%	
2.38	#8	0	0.00%	1.36%	
1.18	16	0.0	0.00%	1.36%	
0.6	30	0.0	0.00%	1.36%	
0.3	50	0.0	0.00%	1.36%	
0.15	# 100	0	0.00%	1.36%	
0.075	# 200	0	0.00%	1.36%	
Pan		161.6	1.36%		
TOTAL		11869.5			

0.38%  
 shale

JML QUARRIES, INC  
145 Dump Rd. Wurtsboro, NY 12790

Gradation Sieve Analysis

Material: \_\_\_\_\_ # 1 STONE \_\_\_\_\_ Sample Location: \_\_Stockpile

Sampled By: \_\_J. Vogler \_\_\_\_\_ Date: 11/8/17

COMMENTS: 9:30 A.M. 52 cone

Sieve Size		Wt.	%	%	Spec %	
mm	Inches	Retain	Retain	Passing	Pass	
100	4"					
75	3"					
62.5	2-1/2"					
50	2"					
37.5	1-1/2"			100.00%		
25	1"		0.00%	100.00%	100	
19	3/4"	0	0.00%	100.00%		
12.5	1/2"	379.4	8.13%	91.87%	90 - 100	92 - 97
9.5	3/8"	1840.8	39.45%	52.42%		58 - 64
6.32	1/4"	1977.7	42.39%	10.03%	0-15	
4.75	#4	314.2	6.73%	3.30%		2 - 6
3.2	1/8"	64.1	1.37%	1.92%		
2.36	8	26.7	0.57%	1.35%		0 - 4
1.18	16	0.0	0.00%	1.35%		
0.6	30	0.0	0.00%	1.35%		
0.3	50	0.0	0.00%	1.35%		
0.15	100	0.0	0.00%	1.35%		
0.075	# 200	0	0.00%	1.35%		
Pan		63.1	1.35%			
TOTAL		4666				

1.22% Shale



# EUCON MR

## MID-RANGE - WATER REDUCING ADMIXTURE

### DESCRIPTION

**EUCON MR** is a mid-range water-reducing and plasticizing admixture for concrete. EUCON MR shows improved finishing characteristics when compared to other commonly used Type A (typically 5 to 6% water reduction) or Type F (typically 12 to 15% water reduction) admixtures. This mid-range approach to water reducing admixtures allows for a wide range of usable dosage rates for a broad application spectrum. EUCON MR as produced, should be used as received and does not contain calcium chloride.

### PRIMARY APPLICATIONS

- Flatwork concrete
- Architectural concrete
- General purpose ready mixed concrete
- Concrete containing fly ash and other pozzolans

### FEATURES/BENEFITS

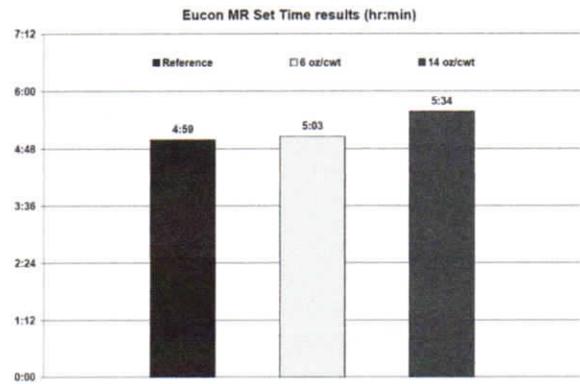
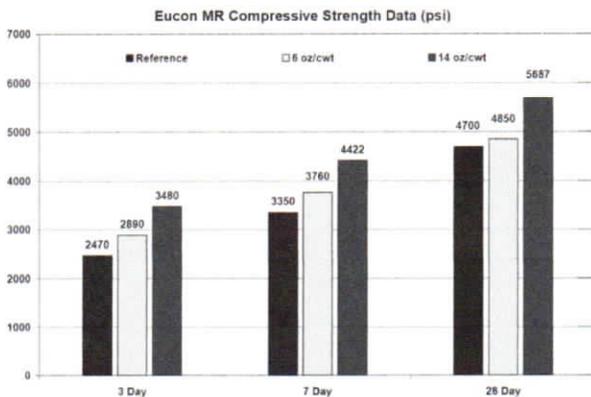
- Produces concrete with lower water:cement ratio allowing for increased strength
- Increased concrete strength lowers the potential for cracks
- Lower water:cement ratio allows for lower cement content, saving the producer money
- Increases concrete workability allowing for easier concrete placement
- Produces concrete that is easier to finish which lowers labor costs

### TECHNICAL INFORMATION

#### Performance Data

The following test results were achieved using typical ASTM C 494 mix design requirements, 517 lb/yd<sup>3</sup> (307 kg/m<sup>3</sup>) cement content and similar (± 0.5)% air content.

These results were obtained under laboratory conditions with materials and mix designs meeting the specifications of ASTM C 494. Changes in materials and mix designs can affect the dosage response of EUCON MR.



## PACKAGING

EUCON MR is packaged in bulk, 275 gal (1041 L) totes, 55 gal (208 L) drums, and 5 gal (18.9 L) pails.

## SHELF LIFE

1 year in original, unopened container.

## SPECIFICATIONS/COMPLIANCES

EUCON MR meets or exceeds the requirements of:

- ASTM C 494, Type A and Type F
- AASHTO M 194
- ANSI/NSF STD 61

## DIRECTIONS FOR USE

EUCON MR is typically used at dosages of 4 to 15 oz per 100 lbs (260 to 980 mL per 100 kg) of cementitious material. Dosage recommendations depend on the characteristics of the materials being used in the mix design. Higher dosages are acceptable with prior testing and confirmation of the desired performance with specific materials being used.

EUCON MR should be added to the initial batch water when possible. It should not come in contact with dry cement or other admixtures until they are mixed with the concrete batch.

Field testing is strongly recommended to optimize dose range and performance expectations with local materials. EUCON MR is compatible with Euclid Chemical admixtures.

## PRECAUTIONS / LIMITATIONS

- Care should be taken to maintain EUCON MR above freezing; however, freezing and subsequent thawing will not harm the material if thoroughly agitated. Never agitate with air or an air lance.
- Add to mix independent of other admixtures.
- In all cases, consult the Safety Data Sheet before use.

Rev. 11.14

**WARRANTY:** The Euclid Chemical Company ("Euclid") solely and expressly warrants that its products shall be free from defects in materials and workmanship for one (1) year from the date of purchase. Unless authorized in writing by an officer of Euclid, no other representations or statements made by Euclid or its representatives, in writing or orally, shall alter this warranty. EUCLID MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. If any Euclid product fails to conform with this warranty, Euclid will replace the product at no cost to Buyer. Replacement of any product shall be the sole and exclusive remedy available and buyer shall have no claim for incidental or consequential damages. Any warranty claim must be made within one (1) year from the date of the claimed breach. Euclid does not authorize anyone on its behalf to make any written or oral statements which in any way alter Euclid's installation information or instructions in its product literature or on its packaging labels. Any installation of Euclid products which fails to conform with such installation information or instructions shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of Euclid's products for the Buyer's intended purposes.



# ACCELGUARD® 80

NON-CHLORIDE, ACCELERATING & WATER REDUCING ADMIXTURE

EUCLID CHEMICAL

ACCELERATORS

## DESCRIPTION

**ACCELGUARD 80** is an accelerating and water reducing admixture for concrete that does not contain calcium chloride. It improves properties of plastic and hardened concrete, provides a significant improvement in early stiffening and setting characteristics, improved workability and decreased bleeding and segregation. This admixture is compatible with air-entraining admixtures, HRWR admixtures (super plasticizers), and conventional water reducing admixtures. ACCELGUARD 80 is effective at all temperatures but is particularly effective above 50°F (10°C).

## PRIMARY APPLICATIONS

- Cold weather concreting
- Structural and plain concrete
- Concrete block and mortar
- Precast and post tensioned concrete

## FEATURES/BENEFITS

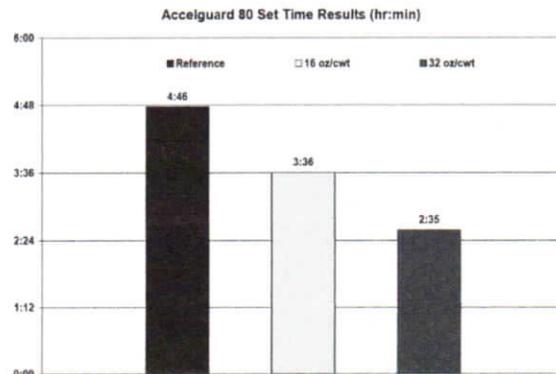
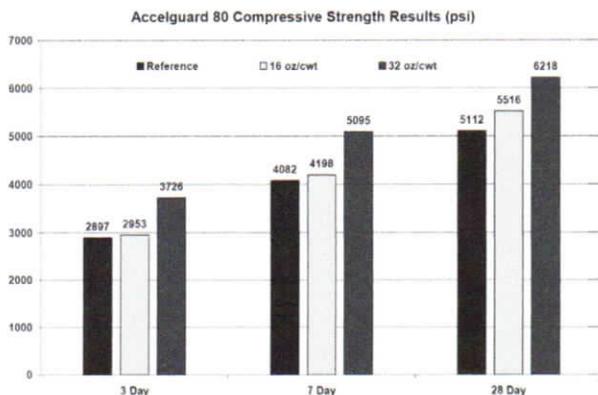
- Reduces initial set 1 to 4 hours depending on concrete temperatures
- Improves workability and provides denser concrete
- Minimizes bleeding and segregation
- Improves compressive strength development at early ages
- Decreases overtime allowing earlier finishing
- Increases protection for reinforcement in concrete

## TECHNICAL INFORMATION

### Performance Data

The following test results were achieved using typical ASTM C 494 mix design requirements, 517 lb/yd<sup>3</sup> (307 kg/m<sup>3</sup>) cement content and similar (± 0.5)% air content.

These results were obtained under laboratory conditions with materials and mix designs meeting the specifications of ASTM C 494. Changes in materials and mix designs can affect the dosage response of ACCELGUARD 80.



ACCELGUARD® 80

MASTER FORMAT #:  
03 30 00 03 40 00

## PACKAGING

ACCELGUARD 80 is packaged in bulk, 275 gal (1041 L) totes, 55 gal (208 L) drums and 5 gal (18.9 L) pails.

## SHELF LIFE

2 years in original, unopened package.

## SPECIFICATIONS/COMPLIANCES

- Fully complies with ASTM C 494, Type C and E admixture specifications
- Fully complies with AASHTO M 194
- ACI 201, Guide for Durable Concrete and ACI 302 Guide for Concrete Floor and Slab Construction prohibit the use of chlorides in many types of concrete. ACCELGUARD 80 may be used in these types of concrete such as, floors over prestressed concrete or galvanized decking, floors containing two kinds of embedded metal, reinforced concrete in moist environments and/or exposed to chloride deicing salts
- ANSI/NSF STD 61 registered

## DIRECTIONS FOR USE

The typical dosage range for ACCELGUARD 80 is 12- 90 oz per 100 lbs (780 - 5870 mL/100kg) of cementitious material. Higher dosages are acceptable with prior testing and confirmation of the desired performance with specific materials being used.

ACCELGUARD 80 should be added to the initial batch water of the concrete mixture. Do not dispense onto dry cement. For ambient temperatures below 50°F (10°C) follow ACI 306 Cold Weather Requirements.

## PRECAUTIONS/LIMITATIONS

- ACCELGUARD 80 will freeze at temperatures of approximately -15°F (-26°C). Freezing and thawing will not harm the material if thoroughly agitated.
- Do not use air for agitation.
- Do not dispense directly onto dry cement.
- Do not use ACCELGUARD 80 with Chemcomp Cement or other modified cements without consulting The Euclid Chemical Company.
- Keep concrete from freezing until a minimum of 500 psi (3.5 MPa) is achieved.
- In all cases, consult the Safety Data Sheet before use.

Rev. 11.14

**WARRANTY:** The Euclid Chemical Company ("Euclid") solely and expressly warrants that its products shall be free from defects in materials and workmanship for one (1) year from the date of purchase. Unless authorized in writing by an officer of Euclid, no other representations or statements made by Euclid or its representatives, in writing or orally, shall alter this warranty. EUCLID MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. If any Euclid product fails to conform with this warranty, Euclid will replace the product at no cost to Buyer. Replacement of any product shall be the sole and exclusive remedy available and buyer shall have no claim for incidental or consequential damages. Any warranty claim must be made within one (1) year from the date of the claimed breach. Euclid does not authorize anyone on its behalf to make any written or oral statements which in any way alter Euclid's installation information or instructions in its product literature or on its packaging labels. Any installation of Euclid products which fails to conform with such installation information or instructions shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of Euclid's products for the Buyer's intended purposes.



# PLASTOL 5000

## HIGH RANGE WATER REDUCING ADMIXTURE

### DESCRIPTION

**PLASTOL 5000** is a ready to use polycarboxylate based, high range water-reducing admixture for concrete. PLASTOL 5000 increases early concrete strength as well as ultimate strength. PLASTOL 5000 can be used to produce increased concrete slump or to significantly reduce water demand for a specific slump. PLASTOL 5000 can be added at the plant or jobsite and is compatible with other admixtures. PLASTOL 5000 contains no added chlorides.

### PRIMARY APPLICATIONS

- High performance concrete
- Self-compacting concrete
- Precast concrete
- Low water/cement ratio concrete
- High early strength applications

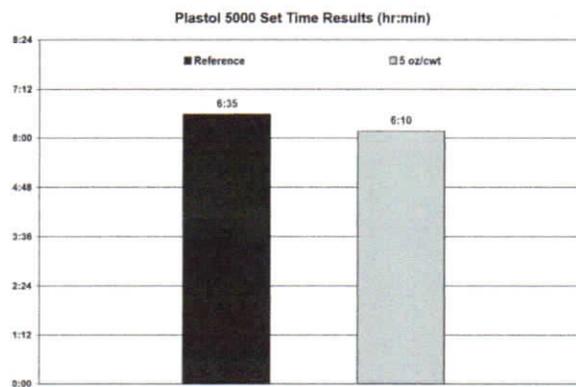
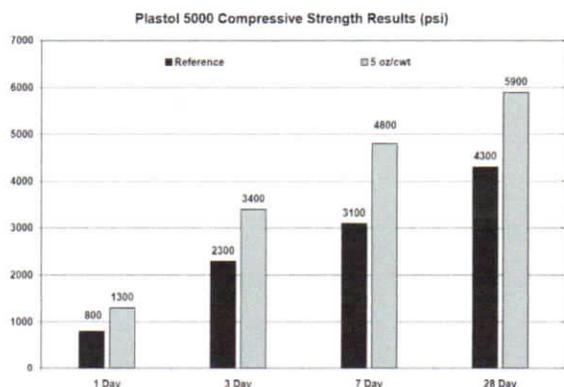
### FEATURES/BENEFITS

- Low water/cement ratio reduces water demand
- Self-compacting concrete reduces labor costs
- High early strength reduces energy costs
- Controlled setting times reduces labor costs

### TECHNICAL INFORMATION

#### Performance Data:

The following test results were achieved using typical ASTM C 494 mix design requirements, 517 lb/yd<sup>3</sup> (307 kg/m<sup>3</sup>) cement content and similar (± 0.5)% air content. These results were obtained under laboratory conditions with materials and mix designs meeting the specifications of ASTM C 494. Changes in materials and mix designs can affect the dosage response of PLASTOL 5000.



## PACKAGING

PLASTOL 5000 is packaged in bulk, 275 gal (1041 L) totes, 55 gal (208 L) drums and 5 gal (18.9 L) pails.

## SHELF LIFE

1 years in original, unopened container.

## SPECIFICATIONS/COMPLIANCES

Fully complies with the requirements of:

- ASTM C 494, Type F admixture and AASHTO M 194 Type F admixture.
- ASTM C 1017 as a Type I admixture.

## DIRECTIONS FOR USE

PLASTOL 5000 can be added to the initial batch water or directly on the freshly batched concrete and mixed for approximately 5 minutes or 70 revolutions. However, better results have been observed batching directly on the freshly batched concrete. It should not come into contact with dry cement or other admixtures until mixed thoroughly with the concrete batch.

PLASTOL 5000 is typically used at dosages of 3 to 15 oz per 100 lbs (200 to 980 mL per 100 kg) of cementitious material. Other dosages are acceptable with prior testing and confirmation of the desired performance with specific materials being used.

For any concrete application including Self-Consolidating Concrete (SCC), the dosage of PLASTOL 5000 will vary depending on the mix design, local materials, and individual needs of the concrete producer. Trial mixes should be run to verify plastic and hardened performance with local materials. If the material gradations are not optimum for SCC, a viscosity modifier may be used to improve the quality of the mix. Please consult a local Euclid Chemical Sales Professional for trial mixtures and dosage recommendations.

PLASTOL 5000 is compatible with most admixtures including air-entraining agents, accelerators, most water-reducers, retarders, shrinkage reducers, corrosion inhibitors, viscosity modifiers, and microsilica; however, each material should be added to the concrete separately.

## PRECAUTIONS / LIMITATIONS

- Care should be taken to maintain Plastol 5000 above freezing; however, freezing and subsequent thawing will not harm the material if thoroughly agitated. Never agitate with air or an air lance.
- Keep concrete from freezing until a minimum strength of 1000 psi (7 MPa) is reached.
- If re-dosing Plastol 5000 at the jobsite, it is recommended that the air content is checked to conform to job specifications.
- In all cases, consult the Safety Data Sheet before use.

Rev. 2.15

**WARRANTY:** The Euclid Chemical Company ("Euclid") solely and expressly warrants that its products shall be free from defects in materials and workmanship for one (1) year from the date of purchase. Unless authorized in writing by an officer of Euclid, no other representations or statements made by Euclid or its representatives, in writing or orally, shall alter this warranty. EUCLID MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. If any Euclid product fails to conform with this warranty, Euclid will replace the product at no cost to Buyer. Replacement of any product shall be the sole and exclusive remedy available and buyer shall have no claim for incidental or consequential damages. Any warranty claim must be made within one (1) year from the date of the claimed breach. Euclid does not authorize anyone on its behalf to make any written or oral statements which in any way alter Euclid's installation information or instructions in its product literature or on its packaging labels. Any installation of Euclid products which fails to conform with such installation information or instructions shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of Euclid's products for the Buyer's intended purposes.



## ADMIX C-1000 NF

### DESCRIPTION

Xypex is a unique chemical treatment for the waterproofing, protection and improvement of concrete. XYPEX ADMIX C-1000 NF is added to the concrete mix at the time of batching. Xypex Admix C-1000 NF consists of Portland cement and various active, proprietary chemicals. These active chemicals react with the moisture in fresh concrete and with the by-products of cement hydration to cause a catalytic reaction. This reaction generates a non-soluble crystalline formation throughout the pores and capillary tracts of the concrete that permanently seals the concrete and prevents the penetration of water and other liquids from any direction.

### XYPEX ADMIX C-SERIES

The Xypex Admix C-Series has been specially formulated to meet varying project and temperature conditions. Xypex Admix C-1000 NF is designed for concrete, where normal to a mild retarded set is desired. See Setting Time and Strength for more details. Consult with a Xypex Technical Representative for the most appropriate Xypex Admix for your project.

### COMPLIANCE

Xypex Admix C-1000NF complies with the requirements of AS 1478.1, as a type SN Special Purpose Admixture.

### RECOMMENDED FOR

- Reservoirs
- Sewage and Water Treatment Plants
- Secondary Containment Structures
- Tunnels and Subway Systems
- Basements
- Foundations
- Parking Structures
- Swimming Pools
- Pre-Cast Components
- Roof Decks

### ADVANTAGES

- Resists extreme hydrostatic pressure from either the positive or negative surface of the concrete slab
- Becomes an integral part of the substrate
- Highly resistant to aggressive chemicals

- Can seal hairline cracks up to 0.4 mm
- Allows concrete to breathe
- Non-toxic
- Less costly to apply than most other methods
- Permanent
- Added to the concrete at time of batching and therefore is not subject to climatic restraints
- Increases flexibility in construction scheduling

### PACKAGING

Xypex Admix C-1000NF is available in 3.5 kg and 20 kg buckets, and 15 kg buckets containing 5 x 3 kg soluble bags. For large projects, customized packaging is available.

### STORAGE

Xypex products must be stored dry at a minimum temperature of 7°C. Shelf life is one year when stored under proper conditions.

### DOSAGE RATES

Xypex Admix C-1000 NF (No Fines Grade): 0.8% - 1.0% by weight of cementitious content.

Consult with Xypex Australia's Technical Department or your local Xypex Representative for assistance in determining the appropriate dosage rate and for further information regarding enhanced chemical resistance, optimum concrete performance, or meeting the specific requirements and conditions of your project.

### TEST DATA

#### PERMEABILITY

ACCI Water Permeability Test, "Water Permeability of Concrete", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia

Concrete samples containing Xypex Admix at various dose rates (0.8% and 1.2%) were tested for water permeability against control samples. All the samples were subjected to a pressure of 10 bars (100 metres water-head) for 2 weeks. Water permeability coefficients were calculated and the Xypex Admix modified concrete showed significant reduction in water permeability by up to 93% at dosage rate of 1.2%.



U.S. Army Corps of Engineers CRD C48-73 "Permeability of Concrete" Setsco Services, Pte Ltd, Singapore

Six Xypex Admix-treated and six untreated concrete samples were tested for water permeability. Pressure was gradually increased over five days and then maintained at 7 bars (224 ft. water head) for 10 days. While the six reference samples showed water leakage beginning on the fifth day and increasing throughout the test period, the Xypex Admix samples showed no water leakage at any time during the test.

DIN 1048 "Water Impermeability of Concrete" DICTU S.A. Dept. Of Engineering and Construction Mgt., Santiago, Chile  
Concrete samples 120 mm thick containing Xypex Admix were tested with the same size reference samples for water impermeability. Samples were subjected to hydrostatic pressure for 28 days. Water totally permeated the untreated samples but no water penetration was detected in any of the Xypex Admix-treated samples.

#### COMPRESSIVE STRENGTH

AS 1012.9, "Compressive Strength of Cylindrical Concrete Specimens", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia  
Type-GB blend cements containing Xypex Admix at various dose rates (0.8% and 1.2%) recorded significant strength increase at early age (3~28 days) by up to 31% compared to control samples.

#### DRYING SHRINKAGE

AS 1012.13, "Determination of Drying Shrinkage of Concrete", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia

Xypex Admix modified concrete mixes were found to have significant lower drying shrinkage by up to 25% compared to the control mixes using Type-GB cement.

#### CHEMICAL RESISTANCE

AS2350.14, "Length Change in Sulphate Solution", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia

Potential expansion of concrete in sulphate environments was assessed in accordance with AS2350.14 by immersing samples in a sulphate solution over 16 weeks. Concrete samples containing Xypex Admix at different dosage rates (0.8% and 1.2%) were tested against untreated control samples for sulphate resistance. The test data showed the use of Xypex Admix demonstrated significant improvements in sulphate resistance (low expansion). Higher dose rate of 1.2% of Xypex Admix resulted in lower expansion in the sulphate solution.

"Sulphate Resistance Test" Taywood Engineering Ltd., Perth, Australia

Xypex Admix-treated concrete samples were immersed in an ammonium-sulphate solution and tested for

"resistance in a harsh environment". The performance of the Xypex-Crystalline-Technology was compared with five other concretes, including one containing a sulphate-resistant cement. Each of the test samples was cured for seven days and then placed in an ammonium-sulphate solution (132 g/l) for 180 days. The rate of corrosion was determined by measuring weight loss, and length change was noted on a weekly basis. The Xypex-Crystalline-Technology substantially improved concrete performance as compared to the reference concrete and tested very similar to the sulphate-resistant concrete. The Xypex Admix-treated samples also provided the highest level of protection as measured by change in length.

NT BUILD 443, ACCI Modified Test, "Chloride Diffusion by NordTest with 3%NaCl solution", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia

Xypex Admix modified concretes were immersed in a 3.0% sodium chloride solution for at least 35 days. The chloride diffusion coefficients were calculated according to Fick's Second Law based on the chloride content profile in the concrete samples after immersion. Significant reductions in the chloride diffusion coefficients were found with all the Xypex Admix modified concretes by up to 45% compared to control concretes. The concretes modified with high dosage rate of Xypex Admix showed highest level of protection in the chloride diffusion test.

"Sulfuric Acid Resistance Test" Aviles Engineering Corporation, Texas, USA

Concrete samples containing Xypex Admix at different dosage rates (3%, 5% and 7%) were tested against untreated control samples for Sulfuric acid resistance. After immersion in the Sulfuric acid, each sample was tested for weight loss on a daily basis until a weight loss of 50% or a definite response trend was obtained. The percentage weight loss of the samples containing Xypex Admix tested significantly lower than the control samples.

#### FREEZE/THAW DURABILITY

ASTM C 666 "Freeze/Thaw Durability" Independent Laboratory, Ohio, USA

After 300 freeze/thaw cycles, the Xypex Admix-treated samples indicated 94% relative durability.

#### POTABLE WATER EXPOSURE

AS/NZS 4020 "Products for Use In Contact With Drinking Water", Australian Water Quality Centre, Adelaide, South Australia  
NSF 61 "Drinking Water System Component-Health Effects" NSF International, Michigan, USA

Exposure testing of potable water in contact with Xypex-treated samples indicated no harmful effects.

## DIRECTIONS FOR USE

Xypex Admix C-1000 NF must be added to the concrete at the time of batching. The sequence of procedures for addition will vary according to the type of batch plant operation and equipment:

1. **READY MIX PLANT - DRY BATCH OPERATION** Prior to concrete being batched, add Xypex Admix in powder form to the drum of the ready-mix truck. After batching, mix the materials for 2 -3 minutes to ensure the Admix is distributed evenly throughout the batch. A minimum of 10 minutes must elapse before discharge of the concrete. A further 1 minute of mixing at high speed immediately prior to discharge is recommended.

2. **READY MIX PLANT - CENTRAL MIX OPERATION** Mix Xypex Admix with water to form a very thin slurry (e.g. 7.0 kg of powder mixed with 13.0 litres of water). Pour the required amount of material into the drum of the ready-mix truck. The aggregate, cement and water should be batched and mixed in the plant in accordance with standard practices (taking into account the quantity of water that has already been placed in the ready-mix truck). Pour the concrete into the truck and mix for at least 5 minutes to ensure even distribution of the Xypex Admix throughout the concrete.

3. **PRECAST BATCH PLANT** Add Xypex Admix to the rock and sand, then mix thoroughly for 2 - 3 minutes before adding the cement and water. The total concrete mass should be blended using standard practices.

### Note:

1. It is important to obtain a homogeneous mixture of Xypex Admix with the concrete. Therefore, do not add dry Admix powder directly to wet concrete as this may cause clumping and thorough dispersion will not occur.
2. Xypex soluble bags are best suited for use in the Dry Batch operation.

For further information regarding the proper use of Xypex Admix for a specific project, consult with a Xypex Technical Representative.

## SETTING TIME AND STRENGTH

The setting time of concrete is affected by the chemical and physical composition of ingredients, temperature of the concrete and climatic conditions. Extension of set time may occur when using Xypex Admix C-1000 NF. The amount of extended set will depend upon the concrete mix design and the dosage rate of the Admix. Concrete containing Xypex Admix may develop higher ultimate strengths than plain concrete. Trial mixes

should be carried out under project conditions to determine setting time and strength of the concrete.

## LIMITATIONS

When incorporating Xypex Admix, the temperature of the concrete mix should be above 4°C.

## TECHNICAL SERVICES

For more instructions, alternative application methods, or information concerning the compatibility of the Xypex treatment with other products or technologies, contact the Technical Department of Xypex Australia or your local Xypex Representative.

## SAFE HANDLING INFORMATION

Xypex is alkaline. As a cementitious powder or mixture, Xypex may cause significant skin and eye irritation. Directions for treating these problems are clearly detailed on all Xypex buckets and packaging. The Manufacturer also maintains comprehensive and up-to-date Material Safety Data Sheets on all its products. Each sheet contains health and safety information for the protection of your employees and customers. Contact Xypex Australia or your local Xypex representative to obtain copies of Material Safety Data Sheets prior to product storage or use.

## WARRANTY

Concrete Waterproofing Manufacturing Pty Ltd (trading as Xypex Australia) (the Manufacturer) warrants that the products manufactured by it shall be free from material defects and of a consistent quality. Should any of the products be proven defective, the liability of the Manufacturer shall be limited to replacement of the product ex-factory. The Manufacturer gives no warranty as to fitness of the products for any particular purpose. The user shall: determine the suitability of the product for its intended use; comply with the directions for use and safe handling information available from Xypex; where necessary, engage an experienced Xypex applicator; and assume all risks and liabilities in connection with the use of this product.