



Technical Data

EUCON SP-Series

High Range Water Reducing Admixture ASTM C 494, Type F & G

Eucon SP
Eucon SPM40
Eucon SP50
Eucon RD1
Eucon RD2

PRODUCT DESCRIPTION

Eucon SP-Series high range water reducers are highly efficient dispersing agents which dramatically reduce the tendency for cement, fly ash or slag particles to clump together. Because Eucon SP-Series high range water reducers efficiently disperse the cementitious paste throughout the concrete mixture, trapped water is released and a greater surface area of cementitious particles becomes available for hydration.

Basic Applications

Eucon SP-Series high range water reducers can be used to reduce the water-to-cementitious ratio to achieve higher strengths required for longer bridge spans, slenderer columns or thinner decks. Improved durability results are due to greater impermeability.

Eucon SP-Series can also be used to achieve flowing concrete without increasing the amount of water added to the mix. Flowing concrete is beneficial on projects with tight spacing between steel reinforcement and pre-stressing tendons.

Suggested Specifications

Eucon SP-Series high range water reducing admixtures manufactured by The Euclid Chemical Company conforming to requirements of ASTM C 494, Type F & G shall be used as required to aid placement and workability. Follow manufacturer's recommendations for dosage and dosing procedures.

CSI-Formatted Product Guide Specifications are available from Euclid Chemical Company representatives or www.euclidchemical.com.

Composition and Materials

- **Eucon SP:** Blend of sulfonated naphthalene formaldehyde condensate with no added chlorides. Eucon SP contributes less than 0.001 percent chloride ions and 0.0 percent thiocyanate ions per 100 lbs. of cement at the maximum recommended dosage.
- **Eucon SPM40:** Blend of sulfonated melamine formaldehyde condensate with no added chlorides. Eucon SPM40 contributes less than 0.005 percent chloride ions and 0.0 percent thiocyanate ions per 100 lbs. of cement at the maximum recommended dosage.
- **Eucon SP50:** Blend of melamine and naphthalene condensate with no added chlorides. Eucon SP50 contributes less than 0.009 percent chloride ions and 0.0 percent thiocyanate ions per 100 lbs. of cement at the maximum recommended dosage.
- **Eucon RD1:** Sulfonated naphthalene formaldehyde condensate plus a retarding agent with no added chlorides. Eucon RD1 contributes less than 0.003 percent chloride ions and 0.0 percent thiocyanate ions per 100 lbs. of cement at the maximum recommended dosage.
- **Eucon RD2:** Sulfonated naphthalene formaldehyde condensate plus a retarding agent with no added chlorides. Eucon RD2 contributes less than 0.002 percent chloride ions and 0.0 percent thiocyanate ions per 100 lbs. of cement at the maximum recommended dosage.

Limitations

Differences of materials used in producing concrete vary from region to region. Therefore, The Euclid Chemical Company recommends that the specifications allow the concrete producer to select from an approved Euclid Chemical Company Series of admixtures. This flexibility permits the concrete producer to optimize the concrete performance.

THE EUCLID CHEMICAL COMPANY

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TECHNICAL DATA

Applicable Standards

- ASTM C 494, Type F & G
- AASHTO M 194
- Army Corps of Engineers CRD C-87

Eucon SP-Series high range water reducers exceed all applicable standards required by ASTM, AASHTO and all state transportation agencies within the Euclid Chemical Company market.

Concrete containing Eucon SP-Series admixtures shows an improved strength at all ages, improved impermeability, increased bond of concrete to reinforcing steel, increased workability and plasticity and improved freeze-thaw resistance.

The following tables show results from tests conducted by an independent testing laboratory for conformance of Eucon SP-Series to ASTM C 494. A single dosage rate with a chosen source of materials is used to conduct testing according to ASTM C 494.

Results of tests conducted with various dosage rates and using local materials are available from a Euclid Chemical Company representative.

Admixture Name	RD1	RD2	ASTM C 494, Type G
Dosage Rate (oz./cwt.)	8.0	10.0	
Water Reduction			
Water Content (lbs.)	213	211	
Percent Reduction	16.8%	17.6%	12% Reduction (min.)
Time of Setting			
Initial (hr:min) vs Control	5:07 +1:12	7:16 +3:21	-1:00 hr to +3:30 hrs (max.)
Final (hr:min) vs Control	6:25 +1:16	8:27 +3:18	+3:30 hrs (max.)
Compressive Strength			
1-day (psi) Percent of Control	2480 141%	2520 144%	125% of Control (min.)
3-day (psi) Percent of Control	4630 151%	4750 154%	125% of Control (min.)
7-day (psi) Percent of Control	5400 144%	5810 155%	115% of Control (min.)
28-day (psi) Percent of Control	6270 136%	6700 145%	110% of Control (min.)
Length Change			
Increase Over Control (in.)	-0.0030	0.0040	0.010 (max.)
Resistance to Freeze-Thaw			
(% of Control After 300 Cycles)	92.5%	94.0%	80% of Control (min.)

Admixture Name	SP	SPM40	SP50	ASTM C 494, Type F
Dosage Rate (oz./cwt.)	7.0	14.0	10.0	
Water Reduction				
Water Content (lbs.)	213	219	216	
Percent Reduction	17.1%	14.5%	15.6%	12% Reduction (min.)
Time of Setting				
Initial (hr:min) vs Control	3:13 -0:10	4:32 0:31	4:19 0:18	-1:00 hr to +1:30 hrs (max.)
Final (hr:min) vs Control	4:19 -0:12	5:47 0:19	5:31 0:03	-1:00 hr to +1:30 hrs (max.)
Compressive Strength				
1-day (psi) Percent of Control	2890 145%	2445 142%	2430 141%	140% of Control (min.)
3-day (psi) Percent of Control	4360 135%	4710 164%	4440 155%	125% of Control (min.)
7-day (psi) Percent of Control	5030 130%	5395 128%	5190 123%	115% of Control (min.)
28-day (psi) Percent of Control	6200 133%	5900 118%	6480 130%	110% of Control (min.)
Length Change				
Increase Over Control (in.)	0.0030	-0.0030	-0.0010	0.010 (max.)
Resistance to Freeze-Thaw				
(% of Control After 300 Cycles)	92.1%	98.0%	97.0%	80% of Control (min.)



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RECOMMENDED INSTALLATION

Euclid Chemical Company Admixtures are dispensed into the concrete mixture along with portland cement, fine and coarse aggregates, and water. Admixture dispensing equipment is owned by The Euclid Chemical Company and maintained by Euclid Chemical Company Service Technicians. Each unit is calibrated and certified to assure proper quantities are added into the concrete in accordance to ASTM C 94. The dispensing equipment can be interfaced with the concrete batch plant's computer to document the amount of admixture added to each load of concrete. Admixtures should be added to the mix separately to maximize their effectiveness.

Recommended Dosage Rate

- | | High Strength | Flowing Concrete |
|-----------------------|----------------|------------------|
| • Eucon SP: | 10-25 oz./cwt. | 6-16 oz./cwt. |
| • Eucon SPM40: | 20-50 oz./cwt. | 12-32 oz./cwt. |
| • Eucon SP50: | 16-42 oz./cwt. | 10-30 oz./cwt. |
| • Eucon RD1: | 6-20 oz./cwt. | 6-20 oz./cwt. |
| • Eucon RD2: | 6-10 oz./cwt. | 6-10 oz./cwt. |
- Use of dosages on the upper end of these ranges may result in severe extended set.
 - Higher dosages may be utilized for special conditions and applications, consult a Euclid Chemical Company representative for guidance.
 - Field testing is recommended to ensure proper performance.
 - Accredited laboratories should test all concrete mix designs in accordance to ASTM standards and field testing technicians shall be ACI qualified to assure good concrete practices are followed.

Compatibility

Eucon SP-Series water reducing admixtures are compatible with the complete line of Euclid Chemical Company Products, including fly ash, air entraining agents, retarders and accelerators. However, to avoid possible chemical interactions and to achieve maximum performance, admixtures must be added separately to the concrete mixture.

Precautions

Normal safety precautions are advised when handling Euclid Chemical Company Admixtures. Use appropriate personal protective equipment to avoid ingestion or contact with eyes, skin and clothing. Prolonged contact to concentrated material might be irritating to the skin and injurious to the eyes. If contact is made, areas should be thoroughly flushed with water. Medical attention is advised in case of ingestion or eye contact. Material Safety Data Sheet is available by contacting The Euclid Chemical Company or by going to www.euclidchemical.com.

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AVAILABILITY AND COST

Euclid Chemical Company Admixtures are available to concrete producers throughout the United States and Mexico. Price information is available through The Euclid Chemical Company sales offices.

PACKAGING INFORMATION

Euclid Chemical Company Admixtures are available in bulk or 55-gal drums.

WARRANTY DISCLAIMER

The Euclid Chemical Company ("Euclid") solely and expressly warrants that its products shall be free from defects in materials and workmanship for six (6) months 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.

TECHNICAL SERVICE

- Technical service is available by contacting The Euclid Chemical Company Technical Support Services or a Euclid Chemical Company sales office.
- Technical services can be provided via telephone, e-mail, fax, in your office or at the jobsite.
- The Euclid Chemical Company representatives are available as a technical resource for Euclid Chemical Company product information, as well as other concrete related areas such as: concrete mix design, placement and curing techniques.



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An **RPM** Company

The Euclid Chemical Company is ISO 9001 Certified Cert.#109877