



SikaTard® 930

Hydration Control Admixture

Description	<p>SikaTard 930 is a hydration control admixture used to extend the working life of concrete for long periods without any negative influence on the concrete quality.</p> <p>SikaTard 930 meets ASTM C 494 requirements as a Type B, retarding admixture.</p>
Applications	<p>SikaTard 930 is mainly used in:</p> <ul style="list-style-type: none">▪ Stabilization of freshly batched concrete for long hauls.▪ Wherever controlled set times are required.▪ Where prevention of cement hydration in fresh concrete or shotcrete is required.▪ Wet and dry shotcrete applications.
Advantages	<ul style="list-style-type: none">▪ Enables increase in the workable life of concrete up to several hours.▪ Offsets the effect of slump loss and enables to control the set time of concrete.▪ Flexibility in planning and scheduling of concrete pours.▪ Concrete containing SikaTard 930 and used for shotcrete applications can be accelerated by Sigunit accelerators at any time. Concrete which is pumped or placed conventionally can be accelerated using accelerators such as SikaSet NC and Plastocrete 161FL at any time.
How to Use	
Dosage	<p>Dosage rates will depend on the period for which the concrete needs to be stabilized, the mix design and materials used, ambient conditions and any other specific project requirement. For normal usages the dosage rate varies between 2 to 5 fl.oz per 100 lbs (0.13 – 0.33 liters/100 kg) of cementitious mass, for extended retardation dosages up to 48 fl. oz (3.1 liters/100 kgs) can be used. Trial mixes should be carried out to determine the exact dosage needed. Please contact your local regional office or the Technical Service Department at 1-800-933-7452 for more information and assistance.</p>
Mixing	<p>For best results, add SikaTard 930 to the concrete mix together with the mixing water at the concrete plant. When used in combination with other admixtures, care must be taken to dispense each admixture separately into the mix. Do not mix with dry cement.</p> <p>To optimize the stabilizing effect, after the addition of SikaTard 930, Sika recommends that the combined materials be mixed for 80-100 revolutions, either in the concrete mixer or in the Ready-Mix truck.</p> <p>Combination with other Admixtures: SikaTard 930 works effectively as a single admixture or in combination with other admixtures in the Sika System.</p> <p>Shotcrete Applications: When used for wet shotcrete process, add SikaTard 930 as suggested above, the Sigunit accelerator is added at the spray nozzle to initiate fast setting.</p>



Construction

Storage and Shelf life	SikaTard 930 should be stored at above 40°F (5°C). If frozen, thaw and agitate thoroughly to return to normal state. Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C - 27°C) is 1 year. Protect from direct sun and freezing temperatures.
Packaging	SikaTard 930 is available in 55 gallon drum (208 liter), 275 gallon totes (1040 liters) and bulk delivery.
Typical Data	
Appearance	Clear liquid.
Specific Gravity	Approx. 1.1
CAUTION: IRRITANT.	Contains 5-Chloro-2-methyl-4-isothiazolin-3-one (Biocide) (CAS: 26172-55-4). May cause eye/skin/respiratory irritation. Harmful if swallowed.
Handling and Storage	Avoid direct contact. Wear personal protective equipment (chemical resistant goggles/gloves/clothing) to prevent direct contact with skin and eyes. Use only in well ventilated areas. Wash thoroughly with soap and water after use. Remove contaminated clothing and launder before reuse. SikaTard 930 should be stored at above 40°F (5°C). If frozen, thaw and agitate thoroughly to return to normal state.
First Aid	Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. Inhalation: Remove person to fresh air. Ingestion: Do not induce vomiting. Dilute with water. Contact physician. In all cases contact a physician immediately if symptoms persist.
Clean Up	Use personal protective equipment (chemical resistant goggles/gloves/clothing). Without direct contact, remove spilled or excess product and place in suitable sealed container. Dispose of excess product and container in accordance with applicable environmental regulations.

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SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.**

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Construction

Sika AER^{CA}

Description	Sika AER ^{CA} is a Vinsol [®] Resin based air entraining admixture.
Use	Sika AER ^{CA} is recommended for all normal, low and very low slump concrete exposed to freeze-thaw conditions in the presence of de-icing salts or sea water.
Benefits	Sika AER ^{CA} primary advantage is to entrain an effective air void matrix with excellent stability. Sika AER ^{CA} exhibits the following characteristics: <ul style="list-style-type: none">■ Reduces potential deterioration due to freeze-thaw cycles<ul style="list-style-type: none">■ In a saturated condition■ In the presence of de-icing salts■ Reduces bleeding and segregation■ Improves cohesiveness, workability and finishing characteristics
Standards	Sika AER ^{CA} conforms to the following standards and specifications: <ul style="list-style-type: none">■ ASTM C-260■ AASHTO M-154■ CRD C-13
Application	Sika AER ^{CA} must be dispensed separately from other admixtures, with the mix water, at time of batching.
Dosage And Installation	Sika AER ^{CA} is normally dosed at a rate of 30 mL to 150 mL per 100 kg of cementitious materials. Dosage rates will vary with local materials, conditions and intended concrete performance requirements.
Safety Precautions	Avoid contact with eyes. In case of contact, flush eyes thoroughly with water and seek medical attention. Do not take internally. If ingested, DO NOT INDUCE VOMITING, dilute material in stomach with water and seek medical attention. See Material Safety Data Sheet for further information
Packaging	Sika AER ^{CA} Liquid is available in 20 litre pails, 205 litre drums and bulk delivery. PROTECT FROM FREEZING.

For more information, consult Sika Material Safety Data Sheet.

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P1AF (Premixed)

Liquid Alkali-free Shotcrete Accelerator

Description	P1AF (Premixed) is a high performance, alkali-free liquid set accelerator for shotcrete applications.
Applications	<p>P1AF (Premixed) is suitable for both dry and wet spraying processes and it is used for:</p> <ul style="list-style-type: none">▪ Support at the face while advancing tunnels and mines▪ Rock and slope stabilization▪ High quality lining shotcrete
Advantages	<p>P1AF (Premixed) liquid shotcrete set accelerator has the following characteristics and advantages:</p> <ul style="list-style-type: none">▪ High early strength development▪ Alkali and Chloride free▪ No pollution of groundwater by leaching of alkalis▪ Distinct reduction in rebound▪ Improves bond of shotcrete to rock and concrete thus facilitating overhead spraying▪ Distinct reduction of dust
How to Use	
Dosage	<p>The most effective dosage must be determined by trial. Dosage rates will vary according to w/c ratio, materials used, ambient conditions, shotcrete methods used and the requirements of a specific project. For general applications Sika recommends a dosage between 4-8% by weight (45-86 fl.oz/100 lbs) of the total cementitious content. The performance of the P1AF (Premixed) will vary according to w/c ratio of the mix. Dosage rates outside the recommended range may be used where specialized materials such as microsilica are specified, extreme ambient conditions are encountered or unusual project conditions require special consideration. In this case please contact your local regional office or technical service department at 1-800-933-7452. The effect of P1AF (Premixed) depends on cement type, cement age, cement content and type of subgrade.</p>
Mixing	<p>P1AF (Premixed) is dosed and added on-site by a liquid dispensing system. Optimum dispersion in the shotcrete is governed by nozzle configuration and shotcreting techniques. Important information: The concrete temperature should not be lower than 59°F (15°C) when shotcreting in thick layers - 4 inches and above (100mm and above). Use of P1AF (Premixed) requires the technically correct installation of dosing and conveying equipment. Metal components that come into direct contact with the product should be fabricated of stainless steel. Do not use brass parts.</p> <p>Combination with other Sika admixtures: P1AF (Premixed) is compatible with Sika's water reducing, high range water reducing, hydration control admixtures and other admixtures.</p> <p>Trials with local materials is always recommended to verify performance.</p>



Construction

Packaging	P1AF (Premixed) is available in 55 gallon drum (208 liter), 275 gallon totes (1040 liters) and bulk delivery.
Storage and Shelf Life	Store in stainless steel or plastic container as the low pH of the admixture may cause corrosion if stored in normal steel container, which might affect the performance of the admixture. Protect from direct sunlight, heat and frost. If these conditions are unattainable, P1AF (Premixed) may precipitate. If this occurs, the performance of P1AF (Premixed) may be adversely effected and the regional Sika representative or technical service department at 1-800-933-7452 should be contacted. Shelf life when stored in unopened original containers, protected from direct sunlight and frost and kept at temperatures between 50°F and 86°F (5°C-30°C) is 6 months.
Typical Data	
Appearance	Liquid, translucent blue/green to white
Specific Gravity	Approx. 1.4
Caution	Irritant. Contains Aqueous Solution of Aluminum Salts (CAS:Mixture). May cause eye/skin/respiratory irritation. Harmful if swallowed. For further information, refer to the current Material Safety Data Sheet for this product.
Handling and Storage	Avoid direct contact. Wear personal protective equipment (chemical resistant face shield/goggles/gloves/clothing) to prevent direct contact with skin and eyes. Use only in well ventilated areas. Wash thoroughly with soap and water after use. Remove contaminated clothing and laundry before reuse.
First Aid	Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. Inhalation: Remove to fresh air. Ingestion: Do not induce vomiting. Dilute with water. Contact physician. In all cases contact a physician immediately if symptoms persist.
Clean Up	Use personal protective equipment (chemical resistant gloves/goggles/clothing). Without direct contact, remove spilled or excess product and place in suitable sealed container. Dispose of excess product and container in accordance with applicable environmental regulations.

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Construction

Sika® Plastocrete 161^{CA}

Description	Sika® Plastocrete 161 ^{CA} is a water reducing, polymer based admixture for concrete.
Use	Sika® Plastocrete 161 ^{CA} is designed for use in all types of concrete where a water reducing, strength increasing admixture is required.
Benefits	Sika® Plastocrete 161 ^{CA} improves the performance of concrete in the plastic and hardened state providing: <ul style="list-style-type: none">■ Improved workability■ Improved finishing characteristics■ Improved durability and permeability■ Increased flexural and compressive strength■ Reduced segregation and cracking■ Improved formed surfaces
Standards	Sika® Plastocrete 161 ^{CA} Liquid conforms to the following specifications: <ul style="list-style-type: none">■ ASTM C-494, TYPE A■ AASHTO M-194, TYPE A■ CRD C-87, TYPE A
Application	Sika® Plastocrete 161 ^{CA} is a highly purified and concentrated multi-component admixture. It contains no chlorides. Sika® Plastocrete 161 ^{CA} is compatible with air entraining admixtures and super-plasticizers. Sika® Plastocrete 161 ^{CA} should be dispensed separately with the water at the time of batching. Do not mix directly with other admixtures.
Dosage And Installation	Sika® Plastocrete 161 ^{CA} is normally added to the concrete at a rate of 2.5 to 5.0 ml per kg of cementitious materials. Specific dosage requirements will be dependent on local materials and the intended use of the concrete.
Safety Precautions	Sika® Plastocrete 161 ^{CA} is a non-hazardous material. Avoid contact with eyes. In case of contact, flush eyes thoroughly with water and seek medical attention. Do not take internally. If ingested, DO NOT INDUCE VOMITING, dilute material in stomach with water and seek medical attention. See Material Safety Data Sheet for further information.
Packaging	Sika® Plastocrete 161 ^{CA} is available in 20 litre pails, 205 litre drums and bulk delivery. PROTECT FROM FREEZING.

For more information, consult Sika Material Safety Data Sheet.

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Sigunit® P1AF Shotcrete Admixture

Description	Sigunit® P1AF is a water-soluble, alkali free and high-performance shotcrete accelerator in powder form. When dissolved in water it produces an alkali free set accelerator for wet sprayed shotcrete.
Where to Use	Sigunit® P1AF is suitable for wet-process shotcreting. The principle applications for Sigunit®- P1AF are: <ul style="list-style-type: none">■ Support at the face whilst advancing tunnels and mines.■ Rock- and slope stabilisation.■ High quality lining shotcrete.
Advantages	The most outstanding advantages of Sigunit®-P1AF shotcrete accelerator are: <ul style="list-style-type: none">■ Alkali-free, avoiding additional leaching of alkalis and pollution of ground and surface water.■ When correctly used, marginal reduction of shotcrete strength.■ Reduction of rebound.■ Easier overhead spraying by improved bond of shotcrete to rock and concrete.■ Reduction of dust formation.■ Chloride-free, suitable for steel reinforced shotcrete and substrates.■ Easy to dissolve on site in time for shotcreting.■ Converting powder to liquid on site, the temperature will rise to approx. 40°C (104°F); the warm solution will increase the accelerator effect considerably.■ Lower cost of logistics
Technical Data	
Packaging	25 kg (55 lb) bags and 1000 kg (2,200 lb) tote bags
Colour / Form	White / Powder
Storage	Dry, between 5° - 30°C (41° - 86°F)
Shelf Life	In original and unopened, packaging at least 2 years.
Properties at 23°C (73°F) and 50 % R.H.	
Dry matter content in solution	45%
Density (of solution)	1.45kg/L
pH	~ 3.0
Alkali content (Eqv. Na₂O), weight - %	< 0.80
Water soluble chloride (Cl), weight - %	< 0.15
Dosage - % by weight of cement	2-8 (when in 45% solution)
How to Use	
Dosage	The exact dosage must be determined by preliminary testing. For shotcrete layers up to 15 cm (6 in.) thickness in one pass, the dosage of Sigunit®-P1AF liquid, should be between 3 to 6% by weight of the cement content. Sigunit®-P1AF is dosed by means of a peristaltic pump, such as Aliva AL-403 or similar. Optimal atomisation of Sigunit®-P1AF liquid and its mixing with the shotcrete mix must be ensured.
Powder to Liquid Conversion	Powder to water ratio is 1 kg Sigunit-P1AF powder to 1.23 ltr. water Add the predetermined mix water to a mixing vessel. The water temperature must be at least 15°C (59°F). Start the mixer and add slowly the Sigunit®-P1AF until dissolved. Mix for another 60 min. Note: The temperature of the liquid will rise to approx. 40°C (104°F) during mixing.



Construction

Application	<p>The concrete mix to be sprayed is usually prepared with the following:</p> <ul style="list-style-type: none">■ 8-16 mm aggregates■ Sikatard® 930 set control admixture■ Viscocrete® 2100 Superplasticizer admixture■ Sikacrete® 950 DP Silica Fume <p>Concrete temperatures should not be lower than 15°C (59°F) (especially in cases of thick shotcrete layers). Lower temperatures will require higher dosages.</p>
Clean up	<p>Rebound and other shotcrete waste accelerated with Sigunit®-P1AF can be disposed of in the same way as non-accelerated shotcrete waste. Neat accelerator must be disposed of as special waste according to local regulations.</p>
Limitation	<ul style="list-style-type: none">■ When using sulphate-resistant types of cement, strength development may be slower.■ Sigunit®- P1AF is not compatible with other Sigunit® accelerators■ The conveyance hose for the accelerator must be thoroughly cleaned before using Sigunit®-P1AF.■ Metal parts of the dosage equipment and/or pump coming into direct contact with Sigunit®-P1AF must be of stainless steel.■ The use of Sigunit®-P1AF requires skilled and technically correct installation of dosing and conveying equipment. Please consult our Concrete Unit for further information. <p>NOTE: The set-accelerating effect depends on cement content, cement age, cement type, temperature of shotcrete and substrate as well as on layer thickness and shotcreting method.</p>
Caution	<p>Avoid contact with skin and eyes. Wear appropriate protective gloves and eye protection (goggles / face shield). In case of contact with skin or eyes, thoroughly rinse with plenty of water.</p>

For more information, consult Sika Material Safety Data Sheet.

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Sigunit® P1AF
ADMIXTURES



Sika® ViscoCrete® 2100

High Range Water Reducing Admixture



Construction

Description	Sika ViscoCrete 2100 is a high range water reducing and superplasticizing admixture utilizing Sika's 'ViscoCrete' polycarboxylate polymer technology.
Applications	Sika ViscoCrete 2100 may be used in both ready mix and precast applications, as a plant added high range water reducer to provide excellent plasticity while maintaining slump for up to 90 minutes. Controlled set times make Sika ViscoCrete 2100 ideal for horizontal and vertical applications. Sika ViscoCrete 2100 is ideal for production of Self Consolidating Concrete (SCC).
Advantages	<p>Water Reduction: Sika ViscoCrete 2100 can be dosed in small amounts to obtain water reduction from 10-15%, and will achieve water reduction up to 45% at high dosage rates. Sika ViscoCrete 2100 is suitable for all levels of water reduction.</p> <p>High Plasticity: The superplasticizing action of Sika ViscoCrete 2100 provides high-slump, flowing concrete that maintains excellent workability and may be placed with minimal vibration even at very low water cement ratio's as low as 0.25.</p> <p>Sika ViscoCrete 2100 plasticized concrete is highly fluid while maintaining complete cohesion within the concrete matrix to eliminate excessive bleeding or segregation.</p> <p>Extended Slump Life and Set Control: Sika ViscoCrete 2100 has been formulated to provide controlled and predictable extended slump life for periods of 60 to 90 minutes with normal set times.</p> <p>The combined high range water reduction and superplasticizing action of Sika ViscoCrete 2100 provide the following benefits in hardened concrete:</p> <ul style="list-style-type: none">■ Higher ultimate strengths allow for greater engineering design flexibility and structural economies.■ Reduced water cement ratios produce more durable, dense concrete with reduced permeability.■ Highly effective plasticizer reduces surface defects in concrete elements and improves aesthetic appearance. <p>It has been formulated to provide maximum water reduction and extended slump retention at low dosages.</p>
How to Use	
Dosage	Dosage rates will vary according to materials used, ambient conditions and the requirements of a specific project. Sika recommends dosage at 2-6 fl. oz. per 100 lbs. (130-390 ml/100 kg) of cementitious for conventional concrete applications. If high slump or Self Consolidating Concrete (SCC) is required, dosage from 6-12 fl.oz./100 lbs. (390-780 ml/100 kg.) of cementitious may be used. Dosage rates outside the recommended range may be used where specialized materials such as microsilica are specified, extreme ambient conditions are encountered or unusual project conditions require special consideration. In thi case, Please contact your local regional Sika office or Sika Technical Service Department 1-800- 933-7452 for more information and assistance.
Packaging	Sika ViscoCrete 2100 is available in 55 gallon drum (208 liter), 275 gallon totes (1040 liters) drums and bulk delivery.
Storage and Shelf-life	Sika ViscoCrete 2100 should be stored at above 35°F (2°C). If frozen, thaw and agitate thoroughly to return to normal state. Shelf life when stored in dry warehouse conditions between 50°F and 80°F (10°C - 27°C) is one year.



Typical Data

Appearance	Light Blue liquid.
Specific Gravity	Approx. 1.1
Caution: IRRITANT	Contains aqueous polymer solution (CAS: Mixture). May cause eye/skin/respiratory irritation. May be harmful if swallowed.
Handling and Storage	Avoid direct contact. Wear personal protective equipment (chemical resistant goggles/gloves/clothing) to prevent direct contact with skin and eyes. Use only in well ventilated areas. Wash thoroughly with soap and water after use. Remove contaminated clothing and launder before reuse.
First Aid	Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. Inhalation: Remove person to fresh air. Ingestion: Do not induce vomiting. Dilute with water. Contact physician. In all cases contact a physician immediately if symptoms persist.
Clean Up	Use personal protective equipment (chemical resistant goggles/gloves/clothing). Without direct contact, remove spilled or excess product and place in suitable sealed container. Dispose of excess product and container in accordance with applicable environmental regulations.

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