



KEMA NONSHRINK

Liquid chemical admixture for reducing the shrinkage

- ▶ Liquid
- ▶ After 28 days reduces desiccation-caused shrinking more then 65 %
- ▶ Prevent desiccation-caused cracks



Liquid additive for concrete and cement mortar that efficiently reduces desiccation-caused shrinking.	
PRODUCT DESCRIPTION	KEMA NONSHRINK contains no expansive material, but instead acts chemically to attack the primary mechanism causing shrinkage. Concrete containing KEMA NONSHRINK has shown to reduce shrinkage, by more as 65% at 28 days, and up to 50% at one year or beyond. This level of shrinkage reduction, in well proportioned concrete mixtures utilizing quality materials has demonstrated to eliminate cracking due to drying shrinkage in fully restrained concrete.
FIELD OF USE	It can be used in all concrete and cement mortars. It is especially suitable for construction concretes and environments where cracks often appear due to desiccations and the consequences of cracks can be extremely harmful; bridge plates, parking garages, construction in the coastal area, industrial floorings, concrete reservoirs etc.
FREEZE-THAW DURABILITY	<p>KEMA NONSHRINK is specially formulated for use in air-entrained concrete where freeze-thaw durability is required. The following guidelines are recommended for KEMA NONSHRINK in concrete that will be subject to freeze-thaw cycles. Testing should be done on your own mixes to determine your own results.</p> <ul style="list-style-type: none"> • Minimum specified concrete compressive strength of 31 MPa at 28 days and maximum water-cementitious materials ratio of 0,45. • Minimum plastic air content of 6%. <p>For more information consult you local sales professional on this topic.</p>
PRODUCT PROPERTIES	<ul style="list-style-type: none"> • Liquid • After 28 days reduces desiccation-caused shrinking more then 65 % • Prevent desiccation-caused cracks



PRODUCT DATA		
BASIC INFORMATION	Appearance	Greenish or transparent to light yellow liquid
	Packing	970 kg in plastic container (1000 l) 50 kg in plastic barrel / 800 kg (16x50 kg) on pallet 10 kg in plastic cans/ 600 kg (60x10 kg) on pallet
	Storage and expiration date	12 months from date of production if stored properly in undamaged original sealed packaging in dry and cool conditions. Date of production is printed on packaging.
	Density	0,96-0,98 kg/dm ³
TECHNICAL DATA	pH value	approx. 6 (at +20°C)
	Solubility in water	15 % at 21°C
	Total solid content	100 %
	Dry shrinkage (with the same W/C factor)	After 28 days the test sample had less than 65 % than the control sample
	Compressive strength (with the same W/C factor)	After 28 days the test sample achieved 80 % of control sample
Air content of fresh concrete (with the same W/C factor)		Test sample had 2 % less than the control sample
CHEMICAL ACTION	Drying shrinkage of concrete is a complicated phenomenon which is widely acknowledged to be the function of several mechanisms. The primary driver in the predominant mechanism causing shrinkage for internal relative humidity is the surface tension of water. As water-filled pores in the size ranges of 2,5 to 50 nm (nm = nanometers = one billionth of a meter) lose moisture, curved menisci are formed, and the surface tension of water pulls the walls of the pores. (In pores greater than 50 nm, the magnitude of the tensile force, relative to the size of the pore, becomes negligible; pores smaller than approximately 2.5 nm will not support the formation of a meniscus). KEMA NONSHRINK reduces the surface tension of water. With reduced surface tension, the force pulling in on the walls of the pores is reduced. With KEMA NONSHRINK at a dosage rate of 6-10 kg/m ³ , this effect results in ultimate shrinkage reductions up to 50%.	



INSTRUCTIONS FOR USE

COMPATIBILITY WITH OTHER ADMIXTURES KEMA NONSHRINK Shrinkage Reducing Admixture is compatible with conventional air-entraining agents, plasticizers, superplasticizers, set retarders, accelerators and silica fume admixtures. Precaution should be taken to avoid mixing KEMA NONSHRINK with other admixtures before they enter the concrete. Once they have been separately added to the mixture, the products will not exhibit any incompatibility. KEMA NONSHRINK has slight retarding properties (set times are typically extended less than one hour). If used in combination with other products exhibiting retarding properties, the net retardation may be more than the simple additive effect of the two products used separately.

CONSUMPTION 2 % / cement weight, 6 - 10 kg/m³ of concrete KEMA NONSHRINK is added at high dosages and should be accounted for in the mixture design. For a conventional concrete mix with 7 kg/m³ of KEMA NONSHRINK, this liquid volume will contribute to the overall porosity of the concrete in the same fashion as 7 L of added water. In addition, the effect on concrete slump will be virtually the same as the equivalent volume of water. It is therefore recommended, when incorporating KEMA NONSHRINK into an established mixture design, that it should replace an equal volume of water.

IMPACT ON FRESH CONCRETE PROPERTIES When substituted in a mixture design for an equivalent volume of water, KEMA NONSHRINK has little or no effect on concrete slump. It does however have a slight retarding effect (typically less than one hour extension of set time, see section on compatibility), and will aid in extending slump life. Where tested to date, mixtures containing KEMA NONSHRINK will require increased amounts of air entrainer to achieve a specified level of air.

IMPACT ON HARDENED CONCRETE PROPERTIES The primary impact of KEMA NONSHRINK is the reduction in drying shrinkage as previously detailed, but other hardened concrete properties are affected as well. The addition of KEMA NONSHRINK may cause a reduction in concrete compressive strengths. These reductions in compressive strengths vary from 0 to 15% depending on the mixture and materials used. The typical reduction is 10% or less. In mixtures proportioned for durability, this level of strength reduction is typically not an issue. For established concrete mixtures where strength must be maintained, superplasticizers may be used to cut water to offset the strength reduction of KEMA NONSHRINK, without compromising its shrinkage reduction capabilities.



LIMITATIONS

BASE TEMPERATURE +5°C min./ +30°C max.

AIR TEMPERATURE +5°C min./ +30°C max.

MATERIAL TEMPERATURE +5°C min./ +30°C max.

Recommendation: Remains of the unhardened/unset material have to be removed in accordance with the legislation.

Data source: All technical data in this technical sheet was obtained by laboratory research. Actual data may differ due to different working conditions.

Local restrictions: Due to specific local regulations the installed product can differ from country to country. For exact instructions for use a country specific technical sheet should be obtained.

SAFETY DATA

Product must be treated with care and protected from excessive heat, open flame or sparks. For more information, consult the MSDS.

LEGAL BASE

Information and recommendations related to use of KEMA products are presented in good faith and believed to be correct. The later is based on our knowledge and experience with the products. Information is supplied upon the condition that products are stored and used according to the recommendations and the persons receiving the same will make their own determination as to its suitability for their purposes prior to use. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to Information or the product to which information refers. In no event will KEMA be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information or the product to which Information refers. Nothing contained herein is to be construed as a recommendation to the use any product, process, equipment or formulation in conflict with any patent, and KEMA makes no representation or warranty, expressed or implied that the use thereof will not infringe any patent. All orders fall under current sales and supply conditions. The user should always check the latest technical sheet available upon demand.