

KOMPONENT®

Shrinkage-Compensating Cement Additive



PRODUCT DATASHEET

DESCRIPTION: KOMPONENT® is a calcium sulfoaluminate (CSA) cement based additive used to create shrinkage-compensating concrete, low shrinkage concrete, and non-shrink grouts. It is engineered to minimize or eliminate drying shrinkage cracking by creating controlled expansion during placement and cure that overcomes the inherent shrinkage of the portland cement and aggregates. KOMPONENT is combined with regional portland cement to produce an ASTM C845 - Type K shrinkage-compensating cement. Type K cement made with KOMPONENT reduces permeability, provides up to 60% increased abrasion resistance, prevents slab curling, improves sulfate resistance, and helps maintain dimensional stability. Long-term performance is optimized in traditional cast-in-place and post-tension designs. Design and construction are simplified by maximizing placement sizes, reducing mobilizations, and minimizing or eliminating control joints, waterstops and pour strips. Thinner slabs and walls are also viable. KOMPONENT has a proven, unsurpassed track record of use since the 1960s improving concrete durability, minimizing maintenance costs, and maximizing asset life.

USES: Use KOMPONENT to make Type K and System-K™ shrinkage-compensating concrete, low shrinkage concrete and non-shrink grouts. KOMPONENT shrinkage-compensating cement is ideal for use in industrial slabs, concrete containment structures, parking structures, bridge decks, topping slabs, deck pan applications, post-tensioned and chemically prestressed structures, architectural concrete, polished concrete, mass elements, and other cast-in-place concrete applications. Use where eliminating shrinkage cracking, reducing control joints, preventing curling and warping, improving abrasion resistance, or improving aesthetics and overall durability is desirable.

ENVIRONMENTAL ADVANTAGES: Use KOMPONENT to reduce the carbon footprint and lower the environmental impact of a project. Production of KOMPONENT emits significantly less CO₂ than portland cement. Contact a CTS Engineering representative for LEED values, environmental, and sustainability information.

APPLICATION: Use KOMPONENT to replace approximately 15-17% of total cementitious content in the mix design to create shrinkage-compensating cement concrete or grout. Actual mix designs vary depending on application, regional portland cement characteristics, regional aggregate characteristics, supplementary cementitious materials, admixtures, and concrete performance requirements. Shrinkage-compensated materials made with KOMPONENT are produced by conventional concrete and grout production equipment and installation practices. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Do not place concrete if ambient temperatures exceed 90°F (32°C). Ambient conditions must be a minimum of 40°F (4°C) and rising at time of placement. Subgrade temperature must not be less than 40°F (4°C) at time of placement. Concrete temperature at placement must not be less than 55°F (13°C). Protect concrete from freezing temperatures for 7 days after placement. Do not place concrete that is 90 minutes or older measured from the time of initial production. Refer to the KOMPONENT Shrinkage-Compensating Concrete Reference Guide for design details and installation considerations. Contact your CTS Engineering representative for project support at 1-800-929-3030.

BATCHING & MIXING: KOMPONENT is added at the batch plant or on-site using common bulk cement equipment and incorporation methods. When using bagged units for smaller projects, alternate portable concrete batching solutions are available. Contact CTS Cement for information. Typical mix designs use 90 to 100 lbs (41 to 45 kg) of KOMPONENT to replace an equivalent weight of total cementitious content per cubic yard of concrete. Bulk KOMPONENT must be weighed before the portland cement to ensure proper dosage. For System-K™ Microfiber Reinforced mix designs, K-Fibers™ are added at a rate of one (1) pre-packaged 2.2 lb unit per cubic yard. For batching and mixing instructions, refer to the KOMPONENT Shrinkage-Compensating Concrete Reference Guide for details.

WATER/CEMENT RATIO: Due to KOMPONENT's efficient consumption of mix water during hydration, the following water/cement ratios are recommended: Interior placements – 0.45; Exterior placements – 0.50; Dry shake applications – 0.55. Ensure thorough mixing and dispersion throughout the load after all components have been added into the truck. Concrete production must comply with ASTM C94/94M except where otherwise stated in CTS Cement's published literature. For lower water/cement ratio designs, contact your CTS Engineering representative for project support at 1-800-929-3030.

CURING: For general applications, seven (7) days of wet curing is required. Refer to the CTS Shrinkage-Compensating Concrete Reference Guide and ACI 223 for additional details.

OVERVIEW

Highlights:

- Prevent drying shrinkage cracking and curling
- Reduce control joints by 90-95%
- Up to 60% improved abrasion resistance
- Increase durability and lower permeability
- Improve sulfate resistance
- Increase placement sizes and minimize mobilizations
- Eliminate pour/delay strips
- Minimize long-term stress loss and creep in post-tension designs

Conforms to:

- ASTM C845 - Type K
- Used to create Type K Shrinkage-Compensating Concrete (ACI 223)

Approved:

- State (DOT) and local approvals

Tested in accordance with:

- ASTM: C845, C806, C878

MasterFormat® 2016

03 01 30	Maintenance of Cast-in-Place Concrete
03 01 50	Maintenance of Cast Decks and Underlayment
03 01 60	Maintenance of Grouting
03 01 70	Maintenance of Mass Concrete
03 05 00	Concrete Bonding Agents, Admixtures and Adhesives
03 31 00	Cast-in-Place Concrete
03 31 19	Shrinkage-Compensating Structural Concrete
03 33 00	Architectural Concrete - Cast-In-Place Concrete
03 37 13	Shotcrete
03 37 16	Pumped Concrete
03 37 19	Pneumatically Placed Concrete
03 47 00	Site-Cast Concrete
03 48 00	Precast Concrete Specialties
03 49 00	Glass-Fiber-Reinforced Concrete
03 53 19	Concrete Overlayment
03 61 00	Cementitious Grouting
03 62 13	Non-Metallic Non-Shrink Grouting
03 64 00	Injection Grouting
03 70 00	Mass Concrete

Manufacturer:

CTS Cement Manufacturing Corp.
12442 Knott St., Garden Grove, CA 92841
Tel: 800-929-3030 | Fax: 714-379-8270
Web: www.CTScement.com
E-mail: info@CTScement.com

KOMPONENT® Shrinkage-Compensating Cement Additive

COLD WEATHER: Environmental and material temperatures below 70°F (21°C) may delay setting time and reduce the rate of strength gain. Lower temperatures will have a more pronounced effect. Thinner sections will be more significantly affected. To compensate for cold temperatures, keep material warm, use heated mix water and follow ACI 306 Procedures for Cold Weather Concreting. When average high and low temperature is expected to fall below 40°F (4.4°C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301 (ACI 301M). Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

WARM WEATHER: Environmental and material temperatures above 70°F (21°C) may speed setting time and increase the rate of strength gain. Higher temperatures will have a more pronounced effect. To compensate for warm temperatures, keep material cool, use chilled mix water and follow ACI 305 Procedures for Hot Weather Concreting.

PACKAGING & AVAILABILITY: KOMPONENT is available in 50 lb (22.7 kg) and 90 lb (40.8 kg) polyethylene-lined bags and 2000 lb (907 kg) bulk bags. It is also available in bulk tanker trucks and railcars.

SHELF LIFE: KOMPONENT bagged units have a shelf life of 6 months when stored properly in a dry location, protected from moisture, out of direct sunlight, and in an undamaged package. Sealed bulk storage containers extend the shelf life of KOMPONENT up to 2 years when stored properly and protected from adverse environmental conditions.

USER RESPONSIBILITY: Before using CTS products, read current technical data sheets, bulletins, product labels and safety data sheets at www.CTScement.com. It is the user's responsibility to review instructions and warnings for any CTS products prior to use.

TECHNICAL SUPPORT: CTS Cement Manufacturing Corp. provides contractors, engineers, and project owners with professional technical services on any KOMPONENT application. For detailed information on use and applications of KOMPONENT, refer to the CTS Shrinkage-Compensating Concrete Reference Guide or contact your CTS Engineering representative for project support at 1-800-929-3030.

WARNING: DO NOT BREATHE DUST. AVOID CONTACT WITH SKIN AND EYES. Use material in well-ventilated areas only. Exposure to cement dust may irritate eyes, nose, throat, and the upper respiratory system/lungs. Silica exposure by inhalation may result in the development of lung injuries and pulmonary diseases, including silicosis and lung cancer. Seek medical treatment if you experience difficulty breathing while using this product. The use of a NIOSH/MSHA-approved respirator (P-, N- or R-95) is recommended to minimize inhalation of cement dust. Eat and drink only in dust-free areas to avoid ingesting cement dust. Skin contact with dry material or wet mixtures may result in bodily injury ranging from moderate irritation and thickening/cracking of skin to severe skin damage from chemical burns. If irritation or burning occurs, seek medical treatment. Protect eyes with goggles or safety glasses with side shields. Cover skin with protective clothing. Use chemical resistant gloves and waterproof boots. In case of skin contact with cement dust, immediately wash off dust with soap and water to avoid skin damage. In case of skin contact with wet cement, wash exposed skin areas with cold running water as soon as possible. In case of eye contact with cement dust, flush immediately and repeatedly with clean water, and consult a physician. If wet cement splashes into eyes, rinse eyes with clean water for at least 15 minutes and go to the hospital for further treatment.

Please refer to the SDS and www.CTScement.com for additional safety information regarding this material.

LIMITED WARRANTY: CTS CEMENT MANUFACTURING CORP. (CTS) warrants its materials to be of good quality and, at its option, will replace or refund the purchase price of any material proven to be defective within one (1) year from date of purchase. The above remedies shall be the limit of CTS's responsibility. Except for the foregoing, all warranties expressed or implied, including merchantability and fitness for a particular purpose, are excluded. CTS shall not be liable for any consequential, incidental, or special damages arising directly or indirectly from the use of the materials.

⚠ WARNING

CANCER and REPRODUCTIVE HARM - www.P65Warnings.ca.gov

TYPICAL PHYSICAL DATA

Type K Shrinkage-Compensating concrete, low shrinkage concrete, and non-shrink grout can be made using KOMPONENT® mixed with local portland cement.

Listed below are typical mix designs using KOMPONENT. For assistance developing project specific mix designs or very low permeability mixes, contact CTS Cement's Engineering or Technical Service team.

All mixes should be tested in a qualified lab using methods designed for shrinkage-compensating cements to ensure suitability for the required application.

TYPE K CONCRETE made with KOMPONENT

Portland Cement	470 lb
KOMPONENT	90 lb
Fine Aggregate ASTM C33	1095 lb
Coarse Aggregate ASTM C33	1800 lb
Water	37 gal
Water Reducer ASTM C494	24 oz

Performance

Slump (+/-1.5") ASTM C143	5.75 in
Expansion, 7 days ASTM C878	0.045%
Compressive Strength, 7 days ASTM C39	3400 psi (23.4 MPa)
Compressive Strength, 28 days ASTM C39	4500 psi (31.0 MPa)
Specific Gravity, KOMPONENT	2.87 g/cm ³

NON-SHRINK GROUT made with KOMPONENT

Portland Cement	846 lb
KOMPONENT	100 lb
Fine Aggregate ASTM C33	2640 lb
Water	52 gal
Water Reducer ASTM C494	24 oz

Performance

Expansion, 7 days ASTM C878	0.045%
Compressive Strength, 7 days ASTM C109 Mod.	4800 psi (33.1 MPa)
Compressive Strength, 28 days ASTM C109 Mod.	7250 psi (49.6 MPa)
Specific Gravity, KOMPONENT	2.87 g/cm ³



USGBC and related logo is a trademark owned by the U.S. Green Building Council and is used by permission.