



## CTS Type-K™ — MSDS

### Cement for Type-K Shrinkage-Compensating Concrete

October 2007

#### SECTION I — GENERAL INFORMATION

1. CTS Cement Manufacturing Corporation

11065 Knott Avenue, Suite A

Cypress, CA 90630

2. Emergency Phone Number: (800) 929-3030

3. Website: [www.ctscement.com](http://www.ctscement.com) or [www.rapidset.com](http://www.rapidset.com)

4. Trade Name and Synonyms: CTS Type-K Expansive Cement CAS #65997-15-1  
Shrinkage-Compensating Cement

5. Chemical Family: Calcium Sulfoaluminate Compounds

6. WHMIS Classification: D2A,E

7. Composition/Information on Ingredients

Type-K expansive cement is a hydraulic cement composed of 80% to 85% portland cement clinker and 15% to 20% of an expansive component clinker which are interground with gypsum to produce Type-K Cement. The major ingredients in the finished cement are as follows:

Compound CAS Number Formula

- Tricalcium Silicate 12168-85-3 C3S 50-58
- Dicalcium Silicate 10034-77-2 C2S 19-49
- Tricalcium Aluminate 12037-77-3 C3A 3-14
- Tetracalcium Alumino Ferrite 12042-78-3 C4AF 3-18
- Calcium Sulfate 7778-18-9 CS 3-10
- Calcium Oxide 1305-78-8 CaO 2-9
- Magnesium Oxide 1309-48-4 MgO 2-3
- Tetracalcium Sulfoaluminate 13067-15-3 C4A3S 4-7

*Note:* Trace amounts of potassium, sodium, chromium, and nickel compounds may also be present.

\* = Cement Industry "Shorthand"

#### SECTION II — HAZARDOUS INGREDIENTS

8. Exposure Limits

- OSHA ACGIH TVL  
TWA TWA  
Type-K Expansive Cement CAS # 65997-15-1  
Up to 95% by weight  
Respirable Dust 5mg/m<sup>3</sup>  
Total Dust 15 mg/m<sup>3</sup> 10mg/m<sup>3</sup>
- Calcium Sulfate CAS # 13397-24-5  
Up to 10% by weight  
Respirable Dust 5mg/m<sup>3</sup>  
Total Dust 15mg/m<sup>3</sup> 10mg/m<sup>3</sup>

- Crystalline Silica CAS # 14808  
Up to 0.75% by weight  
Respirable Dust 0mg/m<sup>3</sup>  
Total Dust 15mg/m<sup>3</sup> 10mg/m<sup>3</sup>

## 9. Trace Elements

Type-K Cement is made from materials mined from the earth and is processed using energy provided by fuels, therefore, trace amounts of naturally occurring, potentially harmful chemicals might show up during chemical analysis. For example, these products may contain up to 25% of insoluble residue, some of which may be crystalline silica. Other trace components may include potassium and sodium sulfate compounds, chromium compounds, and nickel compounds.

## SECTION III — HAZARDS IDENTIFICATION

### 10. Emergency Overview

Type-K Cement is a light gray powder that poses little immediate hazard. A single short-term exposure to the dry powder is not likely to cause serious harm. However, exposure of sufficient duration to wet Type-K Cement can cause serious, potentially irreversible, tissue (skin or eye) destruction in the form of chemical (caustic) burns, including third-degree burns. The same type of tissue destruction can occur if wet or moist areas of the body are exposed for sufficient duration to dry Type-K Cement.

### 11. Potential Health Effects

Relevant Routes of Exposure — Eye contact, skin contact, inhalation, and ingestion.

- Effects Resulting from Eye Contact: Exposure to airborne dust may cause immediate or delayed irritation or inflammation. Eye contact by larger amounts of dry powder or splashes of wet Type-K Cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures required immediate first-aid and medical attention to prevent significant damage to the eye.
- Effects Resulting from Skin Contact: Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure. Consequently, the only effective means of avoiding skin injury or illness involves minimizing skin contact, particularly contact with wet cement.
- Exposed persons may not feel discomfort until hours after the exposure has ended and significant exposure to dry Type-K Cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Dry Type-K Cement contacting wet skin or exposure to moist or wet Type-K Cement may cause more severe skin effects including thickening, cracking or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of (caustic) chemical burns.
- Some individuals may exhibit an allergic response upon exposure to Type-K Cement, possibly due to trace amounts of chromium. The response may appear in a variety of forms, ranging from mild rash to severe skin ulcers. Persons already sensitized may react to their first contact with the product. Other persons may first experience this effect after years of contact with Type-K Cement products.
- Effects Resulting from Inhalation:  
Type-K Cement may contain trace amounts of free crystalline silica. Prolonged exposure to respirable-free crystalline silica may aggravate other lung conditions. It also may cause delayed lung injury, including silicosis, a disabling and potentially fatal lung disease, and/or other diseases. (Also see "Carcinogenic Potential" below.)
- Exposure to Type-K Cement may cause irritation to the moist membranes of the nose, throat, and upper respiratory system. It may also leave unpleasant deposits in the nose.
- Effects Resulting from Ingestion:  
Although small quantities of dust are not known to be harmful, ill effects are possible if larger quantities are consumed. Type-K Cement should not be eaten. Type-K Cement is not listed as a carcinogen by NTP, OSHA, or IARC. It may however, contain trace amounts of substances listed as carcinogens by these organizations. Crystalline silica, a potential trace level contaminant in Type-K Cement, is not listed as a carcinogen by the International Agency for Research for Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). IARC has designated crystalline silica as carcinogenic to humans (Group 1). The NTP indicates that crystalline silica is reasonably anticipated to be a carcinogen (Group 2).

### 12. Medical conditions which may be aggravated by inhalation or dermal exposure:

Pre-existing upper respiratory and lung diseases.

Unusual (hyper) sensitivity to hexavalent chromium (chromium +6) salts.

#### SECTION IV — FIRST-AID

13. Eyes: Immediately flush eyes thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.
14. Skin: Wash skin with cool water and pH-neutral soap or a mild detergent intended for use on skin. Seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement.
15. Inhalation of Airborne Dust: Remove to fresh air. See medical help if coughing and other symptoms Do NOT subside. (*"Inhalation" of gross amounts of Type-K Cement requires immediate medical attention.*)
16. Ingestion: Do NOT induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

#### SECTION V — FIRE AND EXPLOSION DATA

17. Flash Point {provide method used}.....None
18. Lower Explosive Limit.....None
19. Upper Explosive Limit.....None
20. Auto Ignition Temperature.....Not Combustible
21. Extinguishing Media.....Not Combustible
22. Special Fire-Fighting Procedures.....None (*although Type-K Cement poses no fire-related hazards, a self-contained breathing apparatus is recommended to limit exposure to combustion products when fighting any fires.*)

#### SECTION VI — ACCIDENTAL RELEASE MEASURES

23. Collect dry material using a scoop. Avoid actions that cause dust to become airborne. Avoid inhalation of dust and contact with skin. Wear appropriate personal protective equipment as described in Section 8.
24. Scrape up wet material and place in an appropriate container. Allow the material to "dry" before disposal. Do NOT attempt to wash Type-K Cement down drains.
25. Dispose of waste material according to local, state, and federal regulations.

#### SECTION VII — HANDLING AND STORAGE

26. Keep Type-K Cement dry until used. Normal temperatures and pressures Do NOT affect the material.
27. Promptly remove dusty clothing or clothing which is wet with cement fluids and launder before reuse.
28. Wash thoroughly after exposure to dust or wet cement mixtures or fluids.

#### SECTION VIII — EXPOSURE CONTROLS/PERSONAL PROTECTION

##### 29. Skin Protection

Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) Type-K Cement products. If contact occurs, promptly wash affected area with soap and water. Where prolonged exposure to unhardened Type-K Cement products might occur, wear impervious clothing and gloves to eliminate skin contact.

- Where required, wear boots that are impervious to water to eliminate foot and ankle exposure.
- Do NOT rely on barrier creams; barrier creams should not be used in place of gloves.
- Periodically wash areas contacted by dry Type-K Cement or by wet cement or concrete fluids with a pH-neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

##### 30. Respiratory Protection

Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)