

# W.R. Grace & Co.-Conn. Triethanolamine Acetate Product Stewardship Summary

## I. Overview

W.R. Grace & Co.-Conn. is a global manufacturer and distributor of construction products that may include Triethanolamine acetate (CAS # 14806-72-5) as an important active ingredient.

Triethanolamine acetate (TEA acetate) has been in global production for more than fifty years. The majority of TEA acetate manufactured by Grace is included in cement grinding aids that reduce the energy required to manufacture cement while improving the quality of cement produced.

TEA acetate is not classified as hazardous or otherwise regulated by government agencies.

## II. Chemical Identity- Physical and Chemical Properties

The substance **Triethanolamine acetate** is a mono-constituent, organic salt manufactured by the reaction of triethanolamine and acetic acid. The identity and physical/chemical properties are summarized below.

<b>CAS number (EC inventory):</b>	14806-72-5
<b>CAS name:</b>	tris(2-hydroxyethyl)ammonium acetate
<b>IUPAC name:</b>	tris(2-hydroxyethyl)ammonium acetate
<b>Description:</b>	Triethanolamine acetate is the product of the reaction between triethanolamine and acetic acid.
<b>EC number:</b>	238-874-2
<b>EC name:</b>	tris(2-hydroxyethyl)ammonium acetate
<b>Molecular formula:</b>	C <sub>8</sub> H <sub>19</sub> N <sub>2</sub> O <sub>5</sub>
<b>Molecular weight range:</b>	209.24

TEA acetate is a solid at room temperature but it is manufactured and used in aqueous solution. Melting point determined for TEA acetate was 45°C and the decomposition temperature was 125°C. The vapour pressure of the substance at 20 °C (293K) is  $1.16 \times 10^{-1}$  Pa =  $8.68 \times 10^{-4}$  mm Hg. Triethanolamine acetate has a water solubility > 1000 g/l. The substance has no flash point and is not flammable or explosive. TEA acetate does not include any chemical groups which are associated with oxidising properties and, therefore it is not classified as oxidising.

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### III. Applications and uses of triethanolamine acetate

TEA acetate has been in commerce since the 1960s. Grace primarily uses the substance in cement grinding aids and quality improvers. The substance is also used by Grace to a lesser extent and at lower concentrations in admixtures that are sold for incorporation into concrete.

### IV. Manufacturing Processes

Triethanolamine acetate is manufactured for use as a grinding aid for cements and for use in admixtures for concrete. The general manufacturing procedure involves three basic raw materials: water, triethanolamine and acetic acid. These raw materials are transferred from containers such as storage tanks, totes, or drums into the tank where the reaction occurs to form Triethanolamine acetate. All manufacturing operations occur in fully contained areas to prevent any release to the environment. Finished products that include TEA acetate are pumped in sealed systems into storage tanks, totes or drums prior to shipment to customers located at cement plants and concrete plants. Wash-water from cleaning of containers is recycled into production of future batches.

### V. Health Effects

Triethanolamine acetate in animal toxicology studies is non-irritating to the skin and eyes and non-sensitizing. When administered orally to test animals it has an LD 50 of greater than 2000 mg per kg body weight -which is essentially non-toxic. In chronic 28 day feeding studies the *no observed* effect levels were between 150 and 200 mg per kg of body weight per day. That is roughly the equivalent of an adult human being consuming one pound of this material over the course of a month. In no feeding study were there animal deaths attributed to the agents.

The only observed effects in these studies were those of minor changes in blood lipids, electrolytes, and glucose. There was no toxicologic relevance attributed to these minor changes. TEA acetate is non-mutagenic and has demonstrated no potential for being either carcinogenic nor a reproductive hazard.



## **VI. Environmental Effects**

Environmental release of triethanolamine acetate during manufacturing or use is considered to be highly unlikely due to the manner in which it is handled and incorporated into final products. Triethanolamine acetate is considered inherently biodegradable and has no potential for bioaccumulation. As a result this product is not anticipated to be hazardous to the environment.

Finally, due to its small molecular weight and solubility in aqueous solutions, in the unlikely event that triethanolamine acetate were to gain access to human beings, it would be anticipated to be rapidly excreted with no bioaccumulation and no known cellular toxicity.

## **VII. Conclusion**

In summary, triethanolamine acetate is a substance with very limited access to the environment. It is both biodegradable in the environment and of very limited toxicity in a wide variety of animal models. This compound is anticipated to represent neither a hazard to the environment nor a hazard to human beings who may be exposed to it.

## **VIII. W.R. Grace Contacts**

Please feel free to contact one of the following Grace Representatives should you desire additional information or have questions.

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