

## 化 学 品 安 全 技 术 说 明 书

填表时间 2019-12-26

打印时间 2025-06-07

### MSDS标题

ZIRCONIUM CHLORIDE MSDS报告

### 产品标题

氯化锆;无水四氯化锆

### CAS号

10026-11-6

### 化学品及企业标识

## PRODUCT NAME

ZIRCONIUM CHLORIDE

## NFPA

Flammability	0
Toxicity	2
Body Contact	3
Reactivity	1
Chronic	2
SCALE: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4	

## PRODUCT USE

Friedel- Crafts catalyst. Component of Ziegler- type catalysts in the condensation of ethylene. Starting material in the synthesis of several zirconium compounds such as alkoxides (for curing silicone plastic film), alkoxyzirconium carboxylates (water-repellents) and zircocene. Source of the pure metal (formed as an intermediate); tanning agent; analytical chemistry.

## SYNONYMS

Cl<sub>4</sub>-Zr, ZrCl<sub>4</sub>, "zirconium (IV) chloride (1:4)", "zirconium (IV) chloride (1:4)", "zirconium tetrachloride"

## CANADIAN WHMIS SYMBOLS

## EMERGENCY OVERVIEW

### RISK

Harmful if swallowed.

Causes burns.

Risk of serious damage to eyes.

## POTENTIAL HEALTH EFFECTS

### ACUTE HEALTH EFFECTS

#### SWALLOWED

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion. Because inorganic zirconium is poorly absorbed from the digestive tract, acute oral toxicity is low. Injection is much more dangerous, causing progressive depression until death. Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and esophagus. Immediate pain and difficulties in swallowing and speaking may also be evident. Swelling of the epiglottis may make it difficult to breathe which may result in suffocation. More severe exposure may result in vomiting blood and thick mucus, shock, abnormally low blood pressure, fluctuating pulse, shallow respiration and clammy skin, inflammation of stomach wall, and rupture of esophageal tissue. Untreated shock may eventually result in kidney failure. Severe cases may result in perforation of the stomach and abdominal cavity with consequent infection, rigidity and fever. There may be severe narrowing of the esophageal or pyloric sphincters; this may occur immediately or after a delay of weeks to years. There may be coma and convulsions, followed by death due to infection of the abdominal cavity, kidneys or lungs.

### EYE

The material can produce chemical burns to the eye following direct contact. Vapors or mists may be extremely irritating. If applied to the eyes, this material causes severe eye damage. Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns. Mild burns of the epithelia generally recover rapidly and completely. Severe burns produce long-lasting and possibly irreversible damage. The appearance of the

burn may not be apparent for several weeks after the initial contact. The cornea may ultimately become deeply opaque resulting in blindness.

## **SKIN**

The material can produce chemical burns following direct contact with the skin. Skin contact is not thought to produce harmful health effects (as classified using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. The external application of zirconium can cause nodules in the skin of the armpits. Open cuts, abraded or irritated skin should not be exposed to this material. Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue. Solution of material in moisture on the skin, or perspiration, may markedly increase skin corrosion and accelerate tissue destruction. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

## **INHALED**

If inhaled, this material can irritate the throat and lungs of some persons. The material is not thought to produce adverse health effects following inhalation (as classified using animal models). Nevertheless, adverse effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. Zirconium workers exposed to fume for 1-5 years showed no abnormalities due to zirconium. Animal studies also reveal a low order of hazard from inhaled zirconium. Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage. There may be dizziness, headache, nausea and weakness. Swelling of the lungs can occur, either immediately or after a delay; symptoms of this include chest tightness, shortness of breath, frothy phlegm and cyanosis. Lack of oxygen can cause death hours after onset.

## **CHRONIC HEALTH EFFECTS**

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray. Zirconium can accumulate in the spleen. Oral

administration has not been shown to cause any ill effects. Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. Chronic exposure may inflame the skin or conjunctiva.

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