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Safety Data Sheet

1. Chemical product and company identification

Product name : Cobalt(Ⅱ) chloride hexahydrate

Company information

Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	07398
Recommended use	:	For research use only
Restrictions on use	:	Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Health hazards	Acute toxicity (oral)	Category 3
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Respiratory sensitization	Category 1
	Skin sensitization	Category 1
	Germ cell mutagenicity	Category 2
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 1B
	Specific target organ toxicity (single exposure)	Category 1 (central nervous system, digestive tract, liver, kidney)
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)
	Specific target organ toxicity (repeated exposure)	Category 1 (nervous system, respiratory organs, cardiovascular, thyroid, blood)
	Specific target organ toxicity (repeated exposure)	Category 2 (testis)
Environmental hazards	Aquatic acute	Category 1
	Aquatic chronic	Category 1

Hazard pictograms

Signal word : Danger

Hazard statements : Toxic if swallowed
Causes skin irritation
May cause an allergic skin reaction

Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation
Suspected of causing genetic defects
Suspected of causing cancer
May damage fertility or the unborn child
Causes damage to organs (central nervous system, digestive tract, liver, kidney)
Causes damage to organs (nervous system, respiratory organs, cardiovascular, thyroid, blood) through prolonged or repeated exposure
May cause damage to organs (testis) through prolonged or repeated exposure
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects

Precautionary statements

Prevention	:	Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash hands, forearms and face thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. [In case of inadequate ventilation] wear respiratory protection.
Response	:	IF SWALLOWED: Immediately call a POISON CENTER or doctor. IF ON SKIN: Wash with plenty of water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Call a POISON CENTER or doctor. IF exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor if you feel unwell. Get medical advice/attention if you feel unwell. Rinse mouth. If skin irritation or rash occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. If experiencing respiratory symptoms: Call a POISON CENTER or doctor. Take off contaminated clothing and wash it before reuse. Collect spillage.
Storage	:	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	:	Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Cobalt(Ⅱ) chloride hexahydrate	≥ 97	CoCl2・6H2O	Listed	231-589-4	7791-13-1

4. First aid measures

First aid measures

First-aid measures after inhalation : Remove the victim to fresh air, and make him blow his nose and gargle.

First-aid measures after skin contact : Wash the affected areas under running water.

First-aid measures after eye contact : Wash the affected areas under running water for at least 15 minutes. If necessary, get medical treatment.

First-aid measures after ingestion : Give the victim water or salt water and make him vomit. Get medical attention.

Personal Protection in First Aid and Measures : Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Suitable extinguishing media : This product is noncombustible.

Unsuitable extinguishing media : None

Firefighting instructions : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.

Personal protection (Emergency response) : Firefighters should wear protective equipment.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures : Wear proper protective equipment and avoid contact with skin and inhalation of dust. Conduct operations from upwind and evacuate people downwind.

Environmental precautions

Environmental precautions : Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment : Sweep up in a chemical waste container. Flush contaminated area with copious amounts of water.

7. Handling and storage

Handling

Technical measures : If necessary, wear proper protective equipment to avoid contact

with skin or inhalation of dust.

Precautions for safe handling : Avoid formation of dust and aerosols.

Storage

Storage conditions : Store the bottle tightly closed in a cool, dark place because the substance is hygroscopic.

Material used in packaging/containers : Glass, polyethylene, polypropylene.

8. Exposure controls / Personal protection equipment

ACGIH TWA	0.02 mg/m³ (as Co)

Appropriate engineering controls : Install a local ventilation system in case of dusty condition.

Protective equipment

Respiratory protection : If necessary, wear dust mask

Hand protection : Impervious protective gloves

Eye protection : Safety goggles

Skin and body protection : Protective clothing, protective boots

9. Physical and chemical properties

Physical state : Solid

Color : reddish purple

Odor : Odorless

pH : No data available

Melting point : 86 ° C

Freezing point : No data available

Boiling point : No data available

Flash point : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability : Non flammable.

Vapor pressure : No data available

Relative density : 1.924 (25/25℃)

Density : No data available

Relative gas density : No data available

Solubility : Organic solvents: Soluble in acetone, ethanol.
Water: 53.8 % (0℃)

Partition coefficient n-octanol/water (log Pow) : No data available

Explosive limits (vol %) : No data available

Viscosity, kinematic : No data available

Particle characteristics : No data available

10. Stability and reactivity

Reactivity : Turns blue when heated.

Chemical stability : Stable under normal conditions. Hygroscopic.

Possibility of hazardous reactions	:	When it reacts with concentrated sulfuric acid, hydrogen chloride is generated even at room temperature.
Conditions to avoid	:	Light, heat, moisture.
Incompatible materials	:	Acids, oxidizing substances.
Hazardous decomposition products	:	Chlorine, hydrogen chloride, cobalt oxides.

11. Toxicological information

Acute toxicity (oral)	:	Toxic if swallowed rat LD50=80mg/kg (as anhydrous salt)
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	No classification (gas) No classification (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	Causes skin irritation Based on a description that cobalt(Ⅱ) chloride is irritating to the skin in humans, it was classified into category 2.
Serious eye damage/irritation	:	Causes serious eye irritation Based on a description that cobalt(Ⅱ) chloride is irritating to the eyes, it was classified into category 2A.
Respiratory sensitization	:	May cause allergy or asthma symptoms or breathing difficulties if inhaled. There are multiple reports of the asthma due to occupational exposure to cobalt(Ⅱ) chloride . Moreover, the Japan Society for Occupational Health classified cobalt compounds as occupational sensitizers to the airway group 1 . From the above, this substance was classified into category 1.
Skin sensitization	:	May cause an allergic skin reaction It is reported that sensitization by application of cobalt(Ⅱ) chloride was observed in a maximization test with guinea pigs, and multiple positive results in human patch tests were reported. Moreover, the Japan Society for Occupational Health classified cobalt compounds as occupational skin sensitizers group 1. From the above, this substance was classified into category 1.
Germ cell mutagenicity	:	Suspected of causing genetic defects Cobalt(Ⅱ) chloride : As for in vivo, micronucleus tests and chromosomal aberration tests with bone marrow cells of mice were positive. As for in vitro, bacterial reverse mutation tests, mammalian cell gene mutation tests, and micronucleus tests in human lymphocytes were all positive. From the above, it was classified into category 2.
Carcinogenicity	:	Suspected of causing cancer IARC classifies cobalt compounds as group 2B (possibly carcinogenic to humans).
Reproductive toxicity	:	May damage fertility or the unborn child Since it has been reported that water-soluble cobalt compounds containing this substance has adverse effects on male reproductive organs, decreased fertility, and teratogenicity at a dose that is not toxic to maternal animals by the oral route, it was classified into category 1B.

STOT-single exposure	:	Causes damage to organs (central nervous system, digestive tract, liver, kidney) May cause respiratory irritation Cobalt(Ⅱ) chloride : As for experimental animals, there is a description that lowered locomotor activity, decreased muscle tone, decreased response to touch, decreased respiratory rate, effects on the liver, kidney, and gastrointestinal tract, and death (it is described that cause of death is unknown) were observed in orally dosed rats (doses equivalent to category 1). In addition, sedation, diarrhoea, and hypothermia in oral doses were reported though the animal species and doses are unknown, and pulmonary hemorrhage, pulmonary edema, and death in inhalation exposure (doses were unknown) with guinea pigs were reported. From the above, it was classified into category 1 (central nervous system, digestive tract, liver, kidney), category 3 (respiratory tract irritation).
STOT-repeated exposure	:	Causes damage to organs (nervous system, respiratory organs, cardiovascular, thyroid, blood) through prolonged or repeated exposure May cause damage to organs (testis) through prolonged or repeated exposure Cobalt(Ⅱ) chloride : In humans, it was reported that as disorders from overdose of this substance or cobalt sulfate used for the treatment of anemia, effects on the nervous system and thyroid were observed, and as result of oral administration of this substance to volunteers, it was reported that erythroid hematopoiesis was enhanced and there were many chief complaints of headaches and abdominal discomfort as subjective symptoms. Also, as cobalt sulfate had been added for the purpose of stabilizing the foam on beer, deaths due to cardiomyopathy were reported among heavy beer drinkers and myocardial damage action of cobalt was a concern. By restricting the addition of cobalt, it is said that the occurrence of cardiomyopathy and resulting death had disappeared. As for experimental animals, in tests with rats dosed with this substance by gavage for 7 months, increases in red blood cell numbers and hemoglobin levels were observed at doses of 0.5 mg/kg/day or more. In addition, in 13-week or 2-year inhalation exposure tests with rats or mice on cobalt sulfate heptahydrate, inflammatory tissue changes in the respiratory organs were observed from the low concentration of 0.3 mg/m3 in both rats and mice. Other than this, it was reported that in a test in which male mice were given 200-800 ppm of this substance in the drinking water for 12 weeks, decrease in the weight of the testes, decrease in the epididymal sperm count, reduced daily sperm production and necrosis of the seminiferous tubules and interstitial tissue were observed at 400-800 ppm. Therefore, based on information regarding effects of repeated exposure of soluble cobalt compounds to humans and experimental animals, this substance was classified into category 1 (nervous system, respiratory organs, cardiovascular, thyroid, blood) and category 2 (testis).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Very toxic to aquatic life Lemna minor EC50=0.47mg/L/7-day (as anhydrous salt)
Aquatic chronic	:	Very toxic to aquatic life with long lasting effects

Persistence and degradability

No additional information available

Bioaccumulative potential

No additional information available

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone : Classification not possible

13. Disposal considerations

Ecological waste information : Roasting method :
Recover metal cobalt by roast reduction method.
Or entrust approved waste disposal companies with the disposal.
<Note>
＊The disposal of roasting method is desirable to entrust disposal companies.

Contaminated container and packaging : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG) : 3288
Proper Shipping Name (IMDG) : TOXIC SOLID, INORGANIC, N.O.S.
Packing group (IMDG) : III
Transport hazard class(es) (IMDG) : 6.1

Air transport(IATA)

UN-No. (IATA) : 3288
Proper Shipping Name (IATA) : Toxic solid, inorganic, n.o.s.
Packing group (IATA) : III
Transport hazard class(es) (IATA) : 6.1

Marine pollutant : Applicable
MFAG-No : 151

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources : Encyclopaedia Chimica, Kyoritsu Shuppan Co, Ltd. (1963) .
Handbook of dangeroous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001) .
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.