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Safety Data Sheet

1. Chemical product and company identification

Product name : Cobalt(Ⅱ,Ⅲ) oxide, 3N5

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 : 08120
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	Respiratory sensitization	Category 1
	Skin sensitization	Category 1
	Carcinogenicity	Category 2
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs, thyroid, blood)

Hazard pictograms

Signal word : Danger

Hazard statements : May cause an allergic skin reaction
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Suspected of causing cancer
Causes damage to organs (respiratory organs, thyroid, blood) through prolonged or repeated exposure

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.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
[In case of inadequate ventilation] wear respiratory protection.

Response	:	IF ON SKIN: Wash with plenty of water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell. If skin irritation or rash occurs: Get medical advice/attention. If experiencing respiratory symptoms: Call a POISON CENTER or doctor. Take off contaminated clothing and wash it before reuse.
Storage	:	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,Ⅲ) oxide	≥ 99.95	Co3O4	Listed	215-157-2	1308-06-1

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.
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 damage to the environment by flowing of spillage to rivers.

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	:	Wear appropriate 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 in a dark, cool place and tightly closed.
Material used in packaging/containers	:	Glass, polyethylene, polypropylene.

8. Exposure controls / Personal protection equipment

ACGIH TWA	0.02 mg/m³ (I) (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	:	Black.
Odor	:	Odorless
pH	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	900 ° C (It releases oxygen and produces cobalt (II) oxide)
Flammability	:	Non flammable.
Vapor pressure	:	No data available
Relative density	:	6.11
Density	:	No data available
Relative gas density	:	No data available

Solubility	:	Water: Insoluble. Oxygen is generated in dilute acid and gradually dissolves.
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	:	It is reduced by hydrogen at high temperature to produce cobalt (II) oxide, which is further converted to cobalt. It is reduced by carbon, sodium, aluminum, carbon monoxide, etc.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Stable under normal conditions of use.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Reducing substance.
Hazardous decomposition products	:	fume.

11. Toxicological information

Acute toxicity (oral)	:	No classification rat LD50>5000mg/kg
Acute toxicity (dermal)	:	Classification not possible
Acute toxicity (inhalation)	:	Classification not possible (gas) No classification (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	Classification not possible May cause skin irritation.
Serious eye damage/irritation	:	Classification not possible May cause eye irritation.
Respiratory sensitization	:	May cause allergy or asthma symptoms or breathing difficulties if inhaled. Japan Society For Occupational Health classified cobalt compounds in occupational sensitizers to the airway group 1. Therefore, it was classified into category 1. Besides, there is a description that not all substances related to sensitization are identified.
Skin sensitization	:	May cause an allergic skin reaction Japan Society For Occupational Health classified cobalt compounds in occupational skin sensitizers group 1. Therefore, it was classified into category 1. Besides, there is a description that not all substances related to sensitization are identified.
Germ cell mutagenicity	:	Classification not possible
Carcinogenicity	:	Suspected of causing cancer IARC classifies cobalt and cobalt compounds as group 2B (possibly carcinogenic to humans).
Reproductive toxicity	:	Classification not possible
STOT-single exposure	:	Classification not possible May cause respitarory tract irritation.

STOT-repeated exposure	:	Causes damage to organs (respiratory organs, thyroid, blood) through prolonged or repeated exposure Regarding the health effects of cobalt and cobalt compounds in humans, there is the following information, which is considered to be available for the hazard assessment of this substance: It is described that in workers exposed to airborne cobalt during diamond polishing, the chief complaints of symptoms in the respiratory organs such as coughs, and effects on lung function were observed as the cases of high concentration exposure; and it is described that in workers in cobalt refineries, skin lesions, respiratory symptoms, decreased pulmonary function, anemia, and effects on thyroid function were observed. Among the symptoms listed above, the skin lesions were thought to be due to skin sensitization. It was, therefore, deemed to be findings out of the scope of the specific target organs. In experimental animals, there is a description that in a test in which hamsters were exposed to coblt(Ⅱ) oxide by whole life inhalation, pulmonary emphysema, proliferative change in the alveolar epithelium and distal bronchus were observed at 10 mg/m3. From the above, it is considered appropriate to regard the effects of repeated exposure to cobalt and cobalt compounds in humans as those by repeated exposure to this substance. Therefore, this substance was classified into category 1 (respiratory organs, thyroid, blood).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Classification not possible
Aquatic chronic	:	Classification not possible

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 : In case of a large amount of the chemical, recover metal coblt by roast reduction method. Or entrust approved waste disposal companies with the disposal. <Note> ＊In case of disposal by roasting method, it is desirable to entrust to disposal companies.
Contaminated container and	:	In case of disposal of empty bottles, dispose bottles after

packaging		removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	:	Not applicable
Proper Shipping Name (IMDG)	:	Not applicable
Packing group (IMDG)	:	Not applicable
Transport hazard class(es) (IMDG)	:	Not applicable

Air transport(IATA)

UN-No. (IATA)	:	Not applicable
Proper Shipping Name (IATA)	:	Not applicable
Packing group (IATA)	:	Not applicable
Transport hazard class(es) (IATA)	:	Not applicable

Marine pollutant : Not applicable

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 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.