

Reactivity = 0

4 First aid measures

- **After inhalation**
Supply fresh air and to be sure call for a doctor.
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
- **After skin contact**
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.
- **After eye contact**
Rinse opened eye for several minutes under running water.
Then consult a doctor.
- **After swallowing** Seek immediate medical advice.

5 Fire fighting measures

- **Suitable extinguishing agents**
Product is not flammable. Use fire fighting measures that suit the surrounding fire.
- **Special hazards caused by the material, its products of combustion or resulting gases:**
In case of fire, the following can be released:
Toxic metal oxide fume
- **Protective equipment:**
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

- **Person-related safety precautions:**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
- **Measures for environmental protection:**
Do not allow material to be released to the environment without proper governmental permits.
- **Measures for cleaning/collecting:**
Dispose contaminated material as waste according to item

13.

- **Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

- **Handling**

- **Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

- **Information about protection against explosions and fires:**

The product is not flammable

- **Storage**

- **Requirements to be met by storerooms and receptacles:**

No special requirements.

- **Information about storage in one common storage facility:**

Store away from water/moisture.

Store away from reducing agents.

- **Further information about storage conditions:**

This product is hygroscopic.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Protect from humidity and water.

8 Exposure controls and personal protection

- **Additional information about design of technical systems:**

Properly operating chemical fume hood designed for

hazardous chemicals and having an average face velocity of

at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Cobalt, elemental & inorganic compounds, as Co

	mg/m ³
ACGIH TLV	0.02; Confirmed animal carcinogen
Austria	Carcinogen
Belgium TWA	0.05
Denmark TWA	0.05
Finland TWA	0.05 (skin)
Germany	Carcinogen
Hungary TWA	0.1; 0.2-STEL
Japan OEL	0.05; 2B-Carcinogen
Korea TLV	0.02; Confirmed animal carcinogen
Netherlands MAC-TGG	0.05
Norway TWA	0.05
Poland TWA	0.05; 0.2-STEL
Russia	0.5-STEL
Sweden NGV	0.05
Switzerland MAK-W	0.1; Carcinogen
United Kingdom TWA	0.1
USA PEL	0.1 (dust and fume)

- **Additional information:** No data
- **Personal protective equipment**
- **General protective and hygienic measures**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
- **Breathing equipment:**
Use suitable respirator when high concentrations are present.
- **Protection of hands:** Impervious gloves
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing.

9 Physical and chemical properties:

- **General Information**

- **Form:** Powder
- **Color:** Black
- **Odor:** Odorless

	<u>Value/Range</u>	<u>Unit</u>	<u>Method</u>
• Change in condition			
• Melting point/Melting range:			900 ° C
• Boiling point/Boiling range:			Not determined
• Sublimation temperature / start:			Not determined
• Flash point:			Not applicable
• Ignition temperature:			Not determined
• Decomposition temperature:			Not determined
• Danger of explosion: Product does not present an explosion hazard.			
• Explosion limits:			
• Lower:			Not determined
• Upper:			Not determined
• Vapor pressure:			Not determined
• Density:		at 20 ° C	6.11 g/cm ³
• Solubility in / Miscibility with			
• Water:			Insoluble

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**
Decomposition will not occur if used and stored according to specifications.
- **Materials to be avoided:**
Water/moisture
Reducing agents

- **Dangerous reactions** No dangerous reactions known
- **Dangerous products of decomposition:** Toxic metal oxide fume

11 Toxicological information

- **Acute toxicity:**
LD/LC50 values that are relevant for classification:
Oral: LD50: >5000 mg/kg (rat)
- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** Sensitization possible through skin contact.
- **Subacute to chronic toxicity:**
Cobalt is an experimental neoplastigen and tumorigen. It is an experimental carcinogen of the connective tissue and lungs. Cobalt metal and inorganic compounds are classified as an animal carcinogen by the ACGIH. Ingestion may cause burning in the mouth, esophagus, and stomach. Inhalation of dusts and fumes may cause irritation of the respiratory tract and labored breathing and coughing. Sensitization, nausea, flushing of the face and ringing in the ears is also possible. Chronic ingestion may result in pericardial effusion, polycardial effusion, polycythemia, cardiac failure, vomiting, convulsions and thyroid enlargement.
- **Subacute to chronic toxicity:**
The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:
Nutritional and Gross Metabolic - weight loss or decreased weight gain.
- **Additional toxicological information:**
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.
ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s)

of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure.

Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

12 Ecological information:

- **General notes:**

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

- **Product:**

- **Recommendation**

Consult state, local or national regulations to ensure proper disposal.

- **Uncleaned packagings:**

- **Recommendation:**

Disposal must be made according to official regulations.

14 Transport information

Not a hazardous material for transportation.

- **DOT regulations:**

- **Hazard class:** None

- **Land transport ADR/RID (cross-border)**

- **ADR/RID class:** None

- **Maritime transport IMDG:**

- **IMDG Class:** None

- **Air transport ICAO-TI and IATA-DGR:**

- **ICAO/IATA Class:** None
- **Transport/Additional information:**
Not dangerous according to the above specifications.

15 Regulations

- **Product related hazard informations:**
- **Hazard symbols:** Xn Harmful
- **Risk phrases:**
22 Harmful if swallowed.
43 May cause sensitization by skin contact.
- **Safety phrases:**
24 Avoid contact with skin.
37 Wear suitable gloves.
- **National regulations**
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory.
- **Information about limitation of use:**
For use only by technically qualified individuals. This product contains cobalt and is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

16 Other information:

- Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.