1 Identification of substance

Product details

Trade name

Stock number:

Manufacturer/Supplier:

Informing department:

Emergency Information:

2 Hazards identification

Hazard designation:

Information pertaining to particular dangers for man and environment

GHS label elements

Prevention:

3 Composition/information on ingredients

Chemical characterization:

Designation: (CAS#)

Identification number(s):

EINECS Number:

4 First aid measures

After inhalation

After skin contact

After eye contact

After swallowing

5 Fire fighting measures

Suitable extinguishing agents

Protective equipment:

6 Accidental release measures

Person-related safety precautions:

Measures for environmental protection:

Measures for cleaning/collecting:

Additional information:

7 Handling and storage

Handling

Information for safe handling:

Information about protection against explosions and fires:

Storage

Requirements to be met by storerooms and containers:

Information about storage in one common storage facility:

Further information about storage conditions:

8 Exposure controls and personal protection

Additional information about design of technical systems:

Components with critical values that require monitoring at the workplace:

Cobalt, elemental & inorganic compounds, as Co

mg/m3

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

(Contd. on page 2)
Trade name: Chloropentaamminecobalt(III) chloride

(Contd. of page 1)

Safety Data Sheet
according to 1907/2006/EC, Article 31

Printing date: 13.07.2010
Revision: 13.07.2010

Additional information:

Personal protective equipment
General protective and hygienic measures
The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.

Breathing equipment:
Use breathing protection with high concentrations.

Eye protection:
Safety glasses
Face protection

Body protection:
Protective work clothing.

9 Physical and chemical properties:

General Information

Form: Powder
Colour: Violet
Smell: Odourless

Change in condition
Melting point/Melting range: Not determined
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 is not explosive.

Critical values for explosion:
Lower: Not determined
Upper: Not determined

Steam pressure: Not determined

Density at 20°C: 1.819 g/cm³

Solubility in / Miscibility with
Water at 25°C: 40 g/l

10 Stability and reactivity

Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.

Materials to be avoided: Oxidizing agents

Dangerous reactions:
No dangerous reactions known

Dangerous products of decomposition:
Nitrogen oxides (NOx)
Hydrogen chloride (HCl)

11 Toxicological information

Acute toxicity:
Primary irritant effect:
on the skin: May cause irritation
on the eye: May cause irritation

Sensitization:
Sensitization possible by skin contact

Additional toxicological information:
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.

Sensitisation
May cause sensitisation by skin contact.

12 Ecological information:

Additional ecological information:

General notes:
Water hazard class 1 (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.
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 for proper disposal.
Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.

Uncleaned packagings:
Recommendation:
Disposal must be made according to official regulations.

Recommended cleaning agent:
Water, if necessary with cleaning agent.

14 Transport information

Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)
ADR/RID-GGVE/E Class: None

Maritime transport IMDG/GGVSea:
IMDG/GGVSea Class: None
Marine pollutant: No

Air transport ICAO-TI and IATA-DGR:
ICAO/IATA Class: None

(Contd. on page 3)
## Trade name
Chloropentaamminecobalt(III) chloride

<table>
<thead>
<tr>
<th>Transport/Additional information:</th>
<th>Not dangerous according to the above specifications.</th>
</tr>
</thead>
</table>

### 15 Regulatory information

#### Designation according to EC guidelines:

<table>
<thead>
<tr>
<th>Code letter and hazard designation of product:</th>
<th>Xn Harmful</th>
</tr>
</thead>
</table>

#### Risk phrases:
40 Limited evidence of a carcinogenic effect.
43 May cause sensitisation by skin contact.

#### Safety phrases:
24 Avoid contact with skin.
36/37 Wear suitable protective clothing and gloves.

#### National regulations

<table>
<thead>
<tr>
<th>Information about limitation of use:</th>
<th>Employment restrictions concerning young persons must be observed. For use only by technically qualified individuals.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Water hazard class:</th>
<th>Water hazard class 1 (Self-assessment): slightly hazardous for water.</th>
</tr>
</thead>
</table>

### 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.

#### Department issuing data specification sheet:
Health, Safety and Environmental Department.

#### Contact:
Zachariah Holt

#### Abbreviations and acronyms:
- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- IATA DGPR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
- ICAO: International Civil Aviation Organization
- ICAO TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
- GHS: Globally Harmonized System of Classification and Labelling of Chemicals
- EINECS: European Inventory of Existing Commercial Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)