Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/07/2010 Reviewed on 05/06/2010

1 Identification of substance:

Product details:

Product name: Octacarbonyldicobalt

Stock number: 13060

Manufacturer/Supplier:
Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department
Emergency information:
During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:

Chemical characterization:
Description: (CAS#)
Octacarbonyldicobalt (CAS# 10210-68-1); 95-99%
Hexane (CAS# 110-54-3); 1-5%
Identification number(s):
EINECS Number: 233-514-0

3 Hazards identification

Hazard description:


T+ Very toxic
F Highly flammable

Information pertaining to particular dangers for man and environment
R 11 Highly flammable.
R 22 Harmful if swallowed.
R 26 Very toxic by inhalation.
R 40 Limited evidence of a carcinogenic effect.
R 43 May cause sensitization by skin contact.
R 62 Possible risk of impaired fertility
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

HEALTH	4
FIRE	3
REACTIVITY	2

Health (acute effects) = 4
Flammability = 3
Reactivity = 2

GHS label elements

Danger

2.7/1 - Flammable solid.
2.11/2 - Self-heating in large quantities; may catch fire.

Danger

3.1/1 - Fatal if inhaled.
3.1/4 - Harmful if swallowed.
3.4/1 - May cause an allergic skin reaction.

Warning

3.6/2 - Suspected of causing cancer.
3.7/2 - Suspected of damaging fertility or the unborn child.

(Contd. on page 2)

Material Safety Data Sheet
acc. to OSHA and ANSI

Printing date 05/07/2010 Reviewed on 05/06/2010

Product name: Octacarbonyldicobalt

(Contd. of page 1)

4.1/3 - Harmful to aquatic life.
4.1/3 - Harmful to aquatic life with long lasting effects.
Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Wear protective gloves/clothing.
Avoid release to the environment.
Response:
IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.

4 First aid measures

General information
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing has been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
After inhalation
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 CO2, sand, extinguishing powder. Do not use water.
For safety reasons unsuitable extinguishing agents Water
Special hazards caused by the material, its products of combustion or resulting gases:
In case of fire, the following can be released:
Carbon monoxide and carbon dioxide
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
Keep away from ignition sources
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.
Ensure adequate ventilation.
Keep away from ignition sources.
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:
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Open and handle container with care.
Information about protection against explosions and fires:
Keep ignition sources away.
Protect against electrostatic charges.

(Contd. on page 3)

Material Safety Data Sheet
acc. to OSHA and ANSI

Printing date 05/07/2010 Reviewed on 05/06/2010

Product name: Octacarbonyldicobalt

(Contd. of page 2)

Storage
Requirements to be met by storerooms and receptacles: Store in a cool location.
Information about storage in one common storage facility:
Store away from oxidizing agents.
Store away from air.
Further information about storage conditions:
Store under dry inert gas.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
This product is air sensitive.

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 carbonyl

	mg/m3
ACGIH TLV	0.1
Belgium TWA	0.1
Denmark TWA	0.1
France TWA	0.1
Hungary TWA	0.01; 0.02 STEL
Netherlands TWA	0.1

n-Hexane

	ppm
ACGIH TLV	50 (skin)
Austria MAK	50
Belgium TWA	50
Denmark TWA	25
Finland TWA	50; 150-STEL
France VME	50
Germany MAK	50
Hungary TWA	100; 200-STEL
Japan OEL	40 (skin)
Korea TLV	50 (skin)
Netherlands MAC-TGG	25
Norway TWA	25
Poland TWA	100; 400-STEL
Russia TWA	40; 300-STEL
Sweden NGV	25; 50-KTV
Switzerland MAK-W	50; 100-KZG-W
United Kingdom TWA	20
USA PEL	500

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.
Store protective clothing separately.
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:	Crystalline
Color:	Red-orange
Odor:	Specific type
Change in condition	
Melting point/Melting range:	ca 51°C (ca 124°F) (dec)
Boiling point/Boiling range:	Not determined

(Contd. on page 4)

Material Safety Data Sheet
acc. to OSHA and ANSI

Printing date 05/07/2010 Reviewed on 05/06/2010

Product name: Octacarbonyldicobalt

(Contd. of page 3)

Sublimation temperature / start:	Not determined
Flash point:	-13°C (9°F)
Flammability (solid, gaseous)	Highly flammable.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Explosion limits:	
Lower:	Not determined
Upper:	Not determined
Vapor pressure:	Not determined
Density at 20°C (68°F):	1.73 g/cm³
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:
Air
Oxidizing agents
Dangerous reactions Self igniting
Dangerous products of decomposition:
Carbon monoxide and carbon dioxide
Toxic metal oxide fume

11 Toxicological information

Acute toxicity:

LD/LC50 values that are relevant for classification:		
Oral	LD50	378 mg/kg (mouse) (RTECS)
		754 mg/kg (rat) (RTECS)
Inhalative	LC50	165 mg/m3 (rat) (RTECS)
	LC50/2H	26.9 mg/m3/2H (mouse) (RTECS)

Primary irritant effect:
on the skin: May cause irritation
on the eye: May cause irritation
Sensitization: Sensitization possible through skin contact.
Subacute to chronic toxicity:
Carbonyl compounds are toxic due to decomposition yielding carbon monoxide. Symptoms include asphyxia, headache, mental confusion, dizziness, impairment of vision and hearing, and fainting. High exposures can result in unconsciousness and death due to the inability of hemoglobin to carry oxygen to the tissues.
n-Hexane causes skin irritation, CNS effects, lung irritation, headache, dizziness, drowsiness, Repeated or prolonged exposure to the vapor can cause peripheral polyneuropathy. Symptoms include incoordination, slowed reaction time, blurred vision, slurred speech, facial numbness, loss of senstaiion. Gradual recovery is normally found after removal from exposure. Also causes reproductive effects in laboratory animals.
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 ducts 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.
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
Possible risk of impaired fertility.
IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.

(Contd. on page 5)

Material Safety Data Sheet
acc. to OSHA and ANSI

Printing date 05/07/2010 Reviewed on 05/06/2010

Product name: Octacarbonyldicobalt

(Contd. of page 4)

12 Ecological information:

Ecotoxical effects:
Remark: Harmful to aquatic organisms
Additional ecological information:
General notes:
Do not allow material to be released to the environment without proper governmental permits.
Harmful to aquatic organisms

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

DOT regulations:

Hazard class:	6.1
Identification number:	UN3124
Packing group:	I
Proper shipping name (technical name):	TOXIC SOLID, SELF-HEATING, N.O.S. (Octacarbonyldicobalt)
Label	6.1+4.2

Land transport ADR/RID (cross-border)

ADR/RID class:	6.1 (TS) Toxic substances
Danger code (Kemler):	664
UN-Number:	3124
Packaging group:	I
Description of goods:	3124 TOXIC SOLID, SELF-HEATING, N.O.S. (Octacarbonyldicobalt)

Maritime transport IMDG:

IMDG Class:	6.1
UN Number:	3124
Label	6.1+4.2
Packaging group:	I
Marine pollutant:	No
Proper shipping name:	TOXIC SOLID, SELF-HEATING, N.O.S. (Octacarbonyldicobalt)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class:	6.1
UN/ID Number:	3124
Label	6.1+4.2
Packaging group:	I

(Contd. on page 6)

Material Safety Data Sheet
acc. to OSHA and ANSI

Printing date 05/07/2010 Reviewed on 05/06/2010

Product name: Octacarbonyldicobalt

(Contd. of page 5)

Proper shipping name: TOXIC SOLID, SELF-HEATING, N.O.S. (Octacarbonyldicobalt)

UN "Model Regulation": UN3124, TOXIC SOLID, SELF-HEATING, N.O.S., 6.1 (4.2), I

15 Regulations

Product related hazard informations:

Hazard symbols:
T+ Very toxic
F Highly flammable

Risk phrases:
11 Highly flammable.
22 Harmful if swallowed.
26 Very toxic by inhalation.
40 Limited evidence of a carcinogenic effect.
43 May cause sensitization by skin contact.
62 Possible risk of impaired fertility
52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Safety phrases:
16 Keep away from sources of ignition - No smoking.
28 After contact with skin, wash immediately with plenty of soap and water
36/37 Wear suitable protective clothing and gloves.
45 In case of accident or if you feel unwell, seek medical advice immediately.
61 Avoid release to the environment. Refer to special instructions/Safety data sheets

National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use:
For use only by technically qualified individuals.
This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.
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.

Department issuing MSDS: 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)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
IATA-DGR: 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)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent