

SAFETY DATA SHEET

Based on Directive 91/155/EEC of the Commission of
the European Communities

COBALTCAKE

1. Identification of the substance/preparation and the company

1.1 Identification of the substance or preparation:

Synonyms : Cobaltcake, Leach product cobalt repulp, kobaltkoek
Use of the preparation: Metal industry: recycling

CAS no. : 069012-71-1
EC index no. : N.A. **NFPA code :** N.D.
EINECS no. : 273-767-4 **Molecular weight :** N.A.
RTECS no. : N.A. **Formula :** N.A.

1.2 Company/undertaking identification:

NYRSTAR BUDEL B.V.
Hoofdstraat 1, 6024 AA Budel-Dorplein
Postbus 2001, 6020 AA Budel, Holland
Tel. : (+31) 495 512911 - Fax. : (+31) 495 518285

1.3 Telephone number for emergency:

(+31) 495 512223

2. Composition/information on ingredients

| Hazardous ingredients | CAS no. | Conc in % | Hazard class. | Risks (R-phrases) |
|-----------------------|-------------|--------------|------------------|---|
| cobalt and compounds | 007440-48-4 | 5-15 | Xn | 42/43 |
| copper and compounds | 007440-50-8 | 10-15 | - | - |
| zinc and compounds | 007440-66-6 | 10-20 | - | - |
| cadmium and compounds | 007440-43-9 | 1-10 | T;N | 49-22-48/23/25-50/53 (CdSO ₄) |
| lead and compounds | 007439-92-1 | 10-30 | T;N | 61-62-20/22-33-50/53 |
| nickel and compounds | 007440-02-0 | 5-10 | Xn | 40-43 |

3. Hazards identification

- May cause cancer by inhalation (cadmium)
- May cause harm to the unborn child
- Possible risk of impaired fertility
- Also harmful by inhalation and if swallowed
- May cause sensitization by inhalation and skin contact
- Danger of cumulative effects

- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

4. First aid measures

4.1 Eye contact:

- Rinse immediately with plenty of water for 15 minutes
- Do not apply neutralizing agents
- Consult a doctor/medical service if irritation persists

4.2 Skin contact:

- Wash immediately with lots of water and soap for 15 minutes
- Consult a doctor/medical service if irritation persists

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4.3 After inhalation:

- Remove the victim into fresh air
- Unconscious: maintain adequate airway and respiration
- Consult a doctor/medical service if breathing problems develop

4.4 After ingestion:

- Never give water to an unconscious person
- Victim is fully conscious: immediately induce vomiting
- Consult a doctor/medical service

5. Fire-fighting measures

5.1 Suitable extinguishing media:

- Water
- D powder
- Polyvalent foam
- Carbon dioxide

5.2 Unsuitable extinguishing media:

- Halons

5.3 Special exposure hazards:

- May burn
- On burning: release of toxic and corrosive gases/vapours (zinc oxides, cobalt oxides, cadmium oxides, copper oxides, lead oxides)

5.4 Instructions:

- Cool tanks/drums with water spray/remove them into safety
- Dilute toxic gases with water spray
- Take account of toxic firefighting water

5.5 Special protective equipment for firefighters:

- Heat/fire exposure: compressed air/oxygen apparatus
- Heat/fire exposure: gas-tight suit

6. Accidental release measures

6.1 Personal protection: see 8.3

6.2 Environmental precautions:

- Prevent soil and water pollution
- Substance must not be discharged into the sewer
- Contain leaking substance, pump over in suitable containers
- Plug the leak, cut off the supply
- Dam up the solid spill

6.3 Clean-up:

- Prevent dust cloud formation
- Scoop solid spill into closing containers
- Carefully collect the spill/leftovers
- Take collected spill to manufacturer/competent authority
- Wash clothing and equipment after handling

7. Handling and storage

7.1 Handling:

- Observe very strict hygiene - avoid contact
- Avoid raising dust
- Do not discharge the waste into the drain
- Clean contaminated clothing

7.2 Storage:

- Self-heating of the metal may occur
- Provide for a tub to collect spills
- Keep away from: heat sources, acids

Storage temperature: Ambient temperature (-15°C +35°C)

7.3 Materials for packaging:

- suitable: big bags

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8. Exposure controls/Personal protection

8.1 Recommended engineering controls:

- Work under local exhaust/ventilation

Sampling methods:

NIOSH 7300 Cobalt, Nickel, Copper, Lead, Cadmium, Nickel (Elements)
NIOSH 7027 Cobalt & Cpds
NIOSH 7029 Copper Dust and fume
OSHA ID 121 Copper Dusts, Mists and fume, Zinc
OSHA ID 125G Copper Dusts, Mists and fume, Zinc
NIOSH 7082/NIOSH 7105 Lead
NIOSH 7048 Cadmium and Cpds
OSHA ID 189 Cadmium

8.2 Exposure limits:

cobalt and compounds as Co:

TLV-TWA: : 0.02 mg/m³
MEL-LTEL (8h-TWA) : 0.1 mg/m³ - EH40/98 UK 98

copper and compounds as Cu:

TLV-TWA : fume : 0.2 mg/m³ - ACGIH '98 - US
TLV-TWA : dusts/mists : 1 mg/m³ - ACGIH '98 - US
OES-LTEL (8h-TWA) : fume : 0.2 mg/m³ - EH40/98 UK 98
OES-LTEL (8h-TWA) : dusts/mists : 1 mg/m³ - EH40/98 UK 98
OES-STEL (15 min.) : dusts/mists : 2 mg/m³ - EH40/98 UK 98

Cadmium and compounds as Cd:

TLV-TWA : respirable fraction : 0.002 mg/m³ - ACGIH '98 - US
TLV-TWA : inhalable fraction : 0.01 mg/m³ - ACGIH '98 - US
MEL-LTEL (8h-TWA) : 0.025 mg/m³ - EH40/98 UK 98
MEL-STEL (15 min.) : -

Zinc oxide:

TLV-TWA : fume : 5 mg/m³ - ACGIH '98 - US
TLV-STEL : fume : 10 mg/m³ - ACGIH '98 - US
TLV-TWA : dust : 10 mg/m³ - ACGIH '98 - US
OES-LTEL (8h-TWA) : fume : 5 mg/m³ - EH40/98 UK 98
OES-STEL (15 min.) : fume : 10 mg/m³ - EH40/98 UK 98

Lead and inorganic compounds as Pb:

TLV-TWA : 0.05 mg/m³ - ACGIH '98 - US
OEL, LTEL (8h-TWA) : under review (EH40/98 UK 98)

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8.3 Personal protection:

eye protection:

- Face shield
- In case of dust production: protective goggles

hand protection:

- Gloves

skin protection:

- Protective clothing

materials for protective clothing:

- Neoprene with inner lining
- PVC with nyloncoating

respiratory protection:

- Dust production: dust mask with filter type P3
- High vapour concentration: gas mask

9. Physical and chemical properties

| | | | |
|---------------------------------|---|----------------|------------------|
| 9.1 Appearance (at 20°C) | : | Moist solid | |
| 9.2 Odour | : | Odourless | |
| 9.3 Colour | : | Brown-black | |
| 9.4 pH value | : | N.D. | |
| 9.5 Boiling point/boiling range | : | N.D. | °C |
| 9.6 Melting point/melting range | : | N.D. | °C |
| 9.7 Flashpoint | : | N.D. | °C |
| 9.8 Auto-ignition point | : | N.A. | °C |
| 9.9 Explosion limits | : | N.D. | vol% |
| 9.10 Vapour pressure (at 20°C) | : | N.D. | hPa |
| 9.11 Relative density (at 20°C) | : | 1/1.5 | |
| 9.12 Water solubility | : | Poorly soluble | |
| 9.13 Soluble in | : | N.D. | |
| 9.14 Relative vapour density | : | N.D. | |
| 9.15 Saturation concentration | : | N.D. | g/m ³ |
| 9.16 Viscosity | : | N.D. | Pa.s |

10. Stability and reactivity

10.1 Stability:

- Stable under normal conditions

10.2 Reactivity/Hazardous decomposition products:

- On burning: release of toxic and corrosive gases/vapours (zinc oxides, cobalt oxides, cadmium oxides, copper oxides, lead oxides)
- Reacts with (some) acids: release of highly flammable gases/vapours (hydrogen)
- Self-heating of the metal may occur by spontaneous oxidation

10.3 Conditions/materials to avoid:

- Heat sources, acids

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11. Toxicological information

11.1 Acute toxicity:

| | | |
|---------------------|--------|----------|
| LD50 oral rat | : N.D. | mg/kg |
| LD50 dermal rat | : N.D. | mg/kg |
| LD50 dermal rabbit | : N.D. | mg/kg |
| LC50 inhalation rat | : N.D. | mg/l/4 h |

11.2 Chronic toxicity:

EC carc. cat.: 2 (Cadmium sulphate) 3 (Nickel)
EC muta. cat.: not listed
EC repr. cat.: 1,3 (lead)
Carcinogenicity (TLV): A3 (Lead - Cobalt) - A2 (Cadmium) - A5 (Nickel)

IARC classification: IIB (Lead - Nickel - Cobalt) I (Cadmium)

11.3 Routes of exposure: swallowed, inhalation, eyes and skin

11.4 Acute effects/symptoms:

AFTER INHALATION OF FUME:

- Metal fume fever (may appear later)
- Harmful by inhalation
- Irritant to respiratory organs
- Irritation of the nasal mucous membranes
- Possible inflammation of the respiratory tract
- Respiratory difficulties
- Risk of lung oedema
- Lung tissue affection/degeneration

AFTER INGESTION:

- Harmful
- Vomiting
- Nausea
- Abdominal pain
- Diarrhoea
- Constipation
- Gastrointestinal complaints
- Irritation of the gastric/intestinal mucosa

AFTER EYE CONTACT:

- Slightly irritant to eyes

AFTER SKIN CONTACT:

- Slightly irritant to skin

11.5 Chronic effects:

Contains lead, cobalt and cadmium:

- After inhalation human carcinogenic (cadmium)
- May cause sensitization by skin contact and by inhalation
- Produces effects on the nervous system
- Cumulative effect
- Possible risk of impaired fertility
- Hazardous to fetus

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT:

- Feeling of weakness
- Skin rash/inflammation
- Respiratory difficulties
- Lung tissue affection/degeneration
- Gastrointestinal complaints
- Enlargement/affection of the liver
- Change in the haemogramme/blood composition
- Affection of the renal tissue
- Decreased renal function
- Slowing ossification
- Degeneration of heart tissue
- Cramps/uncontrolled muscular contractions
- Thyroid enlargement/affection

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12. Ecological information

12.1 Mobility:

- Poorly soluble in water
- Substance sinks in water
- Soil contaminant

12.2 Biodegradation:

- | | | | |
|---------|------------------|--------|-------------------------------|
| - soil: | T ½ | : N.D. | days |
| | BOD ₅ | : N.A. | g O ₂ /g substance |
| | COD | : N.A. | g O ₂ /g substance |
- water: - No data available

- ### 12.3 Bioaccumulation:
- log P_{ow} : N.D.
 - BCF : N.D.
 - Contains bioaccumulative compounds

12.4 Aquatic toxicity:

Copper-ion:

- LC50 (96 h) : 0.017 mg/l (SALMO GAIRDNERI)
- LC50 (48 h) : 0.026 mg/l (DAPHNIA MAGNA)
- EC50 (96 h) : 0.55 mg/l (CHLORELLA SP.)

Cadmium-ion:

- LC50 (96 h) : 0.08 mg/l (PIMEPHALES PROMELAS)
- EC50 (48 h) : 0.099 mg/l (DAPHNIA MAGNA)
- EC50 (96 h) : 0.105 mg/l (CHLORELLA SP.)

Zinc-ion:

- LD50 (96 h) : 2.61 mg/l (PIMEPHALES PROMELAS)
- EC50 (48 h) : 0.068 mg/l (DAPHNIA MAGNA)
- EC50 : < 0.12 mg/l (ALGAE)

Lead-ion:

- LC50 (48 h) : 0.3 mg/l (DAPHNIA MAGNA)
- EC50 : 0.14 mg/l (SELENASTR CAPR.)

Soluble compounds of copper, lead, cadmium and zinc are dangerous for the environment

12.5 Other information:

- WGK: 3 (Severe water pollutant)
- Effect on the ozone layer : N.D.
- Waste water purification : N.D.

13. Waste disposal considerations

13.1 Provisions relating to waste:

- Waste code (EC): N.A.
- Hazardous waste (91/689/EC)

13.2 Disposal methods:

- Recycle/reuse
- Landfill at an approved site in accordance with national and local regulations
- Cadmium is enumerated in the black list of substances which must not be discharged into surface water

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14. Transport information

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3077

- 14.1 **Proper shipping name:** UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (cobalt >5 %, copper >10 %, zinc >10%, cadmium >1%, nickel >5%), 9, III.
- 14.2 **Transport by road/rail (ADR/RID):** class 9, III
Danger code: 90
Danger labels on tanks: 9
on packages: 9
- 14.3 **Substance identification number (UN number):** 3077
Packing: III
- 14.4 **Maritime transport (IMDG code):** class 9 p. 9029
EMS : -
MFAG : -
Marine pollutant: P
- 14.5 **Inland navigation (ADNR):** class 9, III
- 14.6 **Air freight (ICAO):** class 9
Instruction "passenger": 911/Y911
Instruction "cargo": 911
- 14.7 **Other information:**

15. Regulatory information

Labelling in accordance with EC directives 67/548/EEC and 88/379/EEC



Toxic



Dangerous for the environment

contains: cobalt; copper; cadmium; lead, zinc and compounds

- R49 : May cause cancer by inhalation
R61 : May cause harm to the unborn child
R62 : Possible risk of impaired fertility
R20/22 : Also harmful by inhalation and if swallowed
R42/43 : May cause sensitization by inhalation and skin contact
R33 : Danger of cumulative effects
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- S53 : Avoid exposure - obtain special instructions before use
S22 : Do not breathe dust
S36/37/39 : Wear suitable protective clothing gloves, and eye/face protection
S45 : In case of accident or if you feel unwell, seek medical advice (show the label where possible)
S60 : This material and/or its container must be disposed of as hazardous waste
S61 : Avoid release to the environment. Refer to special instructions/safety data sheets.

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16. Other information

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

N.A. = NOT APPLICABLE
N.D. = NOT DETERMINED
***** = INTERNAL CLASSIFICATION

MSDS established : 30-06-2008
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Gestion of documents of Nyrstar Budel: E.Schuurmans