

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 Version 2 Revision Date 21.12.2018

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Cobalt

Product Number : 5510

Brand : Better Equipped

Index-No. : 027-001-00-9

REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration or the annual tonnage does not require a registration.

CAS-No. : 7440-48-4

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

Uses advised against : Not for sale to the general public

### 1.3 Details of the supplier of the safety data sheet

Company : Better Equipped,  
Wrenbury Business Park,  
Wrenbury Road,  
Wrenbury,  
Nantwich, Cheshire,  
CW5 8EB, UK

Telephone +44 (0) 800 9707142

Fax +44 (0) 800 066 4443

E-mail address [sales@betterequipped.co.uk](mailto:sales@betterequipped.co.uk)

### 1.4 Emergency telephone number

Emergency Phone # : +44 (0)1270 781238

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008

Respiratory sensitisation (Category 1), H334

Oral acute toxicity (Category 4), H302

Skin sensitisation (Category 1), H317

Serious eye damage/irritation (Category 2A), H319

Inhalation acute toxicity (Category 1,2, 4), H330, H332

Carcinogenicity (Category 1A, 1B), H350

Reproductive toxicity (Category 2), H361,

Specific target organ toxicity (Category 2), H373

Acute aquatic toxicity (Category 1), H400

Chronic aquatic toxicity (Category 2,3,4), H411, H412, H413

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 2.2 Label elements

#### Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word

Danger

Hazard statement(s)

H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
H413	May cause long lasting harmful effects to aquatic life.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/ physician.

Supplemental Hazard Statements

none

**2.3 Other hazards - none**

**SECTION 3: Composition/information on ingredients**

**3.2 Mixtures**

Synonyms	:	Carbon coated cobalt nanoparticles magnetic cobalt
Formula	:	Co
Molecular Weight	:	58.93 g/mol

**Hazardous ingredients according to Regulation (EC) No 1272/2008**

Component	Classification	Concentration
<b>Cobalt</b>		
CAS-No. 7440-48-4 EC-No. 231-158-0 Index-No. 027-001-00-9	Resp. Sens. 1; Skin Sens. 1; Aquatic Chronic 4; Oral Acute Toxicity 4; Serious Eye Damage/Irritation 2A; Inhalation acute toxicity 1,2,4; Carcinogenity 1A, 1B; Reproductive Toxicity 2; Specific Target Organ Toxicity 2; Acute Aquatic Toxicity 1; Chronic Aquatic Toxicity 2,3,4; H302, H317, H319, H330, H332, H334, H350, H361, H373, H400, H410, H411, H412, H413	<= 100 %
<b>Graphene-like carbon</b>		
	Eye Irrit. 2; STOT SE 3; H319, H335	< 10 %

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

#### In case of eye contact

Flush eyes with water as a precaution.

#### If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

no data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

#### Suitable extinguishing media

None stated

### 5.2 Special hazards arising from the substance or mixture

Carbon oxides, Cobalt/cobalt oxides

### 5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

### 5.4 Further information

no data available

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

#### - 6.1.1 For non-emergency personnel

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

#### - 6.1.2 For emergency responders

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

For personal protection see section 8.

## 6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

## 6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

## 6.4 Reference to other sections

For disposal see section 13.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

#### 7.1.2 Advice on general occupational hygiene:

- No smoking.
- Do not eat or drink.
- Wash hands after use.
- Remove contaminated clothing.

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

Heat sensitive.

### 7.3 Specific end use(s)

A part from the uses mentioned in section 1.2 no other specific uses are stipulated

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Cobalt	7440-48-4	TWA	0.1 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits
	Remarks	Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance those who are likely to become hyper-responsive. 54 Substances that can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing airway hyper-responsiveness, but which do not include the disease themselves. The latter substances are not classified asthmagens or respiratory sensitisers. Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible, the primary aim is to apply adequate standards of control to prevent workers from		

		<p>becoming hyper-responsive. For substances that can cause occupational asthma, COSHH requires that exposure be reduced as low as is reasonably practicable.</p> <p>Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate for all employees exposed or liable to be exposed to a substance which may cause occupational asthma and there should be appropriate consultation with an occupational health professional over the degree of risk and level of surveillance.</p> <p>Capable of causing occupational asthma. The identified substances are those which: - are assigned the risk phrase 'R42: May cause sensitisation by inhalation'; or 'R42/43: May cause sensitisation by inhalation and skin contact' or - are listed in section C of HSE publication 'Asthmagen? Critical assessments of the evidence for agents implicated in occupational asthma' as updated from time to time, or any other substance which the risk assessment has shown to be a potential cause of occupational asthma.</p> <p>Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used</p> <p>The 'Sen' notation in the list of WELs has been assigned only to those substances which may cause occupational asthma.</p>
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### 8.1.2 Information on currently recommended monitoring procedures

For currently recommended monitoring procedures, see HSE series 'Methods for the Determination of Hazardous Substances' (MDHS).

### 8.1.3 The relevant DNELs and PNECs for the substance/s for the exposure scenarios:

DNEL's. The derived no- or minimum effect level (DN(M)EL) is the level of exposure above which a human should not be exposed to a substance. Please note that when more than one summary is provided, DN(M)EL values may refer to constituents of the substance and not to the substance as a whole.

#### Data for Workers

INHALATION Exposure	Threshold	Most sensitive study
<b>Systemic Effects</b>		
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	
<b>Local Effects</b>		
Long-term:	(DNEL) 40 µg/m <sup>3</sup>	repeated dose toxicity
Acute /short term:	High hazard (no threshold derived)	
DERMAL Exposure	Threshold	Most sensitive study
<b>Systemic Effects</b>		
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	

<b>Local Effects</b>		
Long-term:	Medium hazard (no threshold derived)	
Acute /short term:	Medium hazard (no threshold derived)	
EYE Exposure		
Low hazard (no threshold derived)		

#### Data for the General Population

INHALATION Exposure	Threshold	Most sensitive study
<b>Systemic Effects</b>		
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	
<b>Local Effects</b>		
Long-term:	(DNEL) 6.3 µg/m <sup>3</sup>	carcinogenicity
Acute /short term:	High hazard (no threshold derived)	
DERMAL Exposure	Threshold	Most sensitive study
<b>Systemic Effects</b>		
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	
<b>Local Effects</b>		
Long-term:	Medium hazard (no threshold derived)	
Acute /short term:	Medium hazard (no threshold derived)	
ORAL Exposure	Threshold	Most sensitive study
<b>Systemic Effects</b>		
Long-term:	(DNEL) 29.8 µg/kg bw/day	repeated dose toxicity
Acute /short term:	No hazard identified	
EYE Exposure		
Low hazard (no threshold derived)		

PNEC's. The Predicted No-Effect Concentration (PNEC) value is the concentration of a substance below which adverse effects in the environment are not expected to occur. Please note that when more than one summary is provided, PNEC values may refer to constituents of the substance and not to the substance as a whole.

Hazard for Aquatic Organisms	
Freshwater	620 ng/L (1)
Intermittent releases (freshwater)	-
Marine water	2.36 µg/L (1)
Intermittent releases (marine water)	-
Sewage treatment plant (STP)	370 µg/L (1)
Sediment (freshwater)	53.8 mg/kg sediment dw (1)
Sediment (marine water)	69.8 mg/kg sediment dw (1)
Hazard for Air	
Air	No hazard identified (1)
Hazard for Terrestrial Organism	
Soil	10.9 mg/kg soil dw (1)
Hazard for Predators	
Secondary poisoning	No potential for bioaccumulation (1)

## 8.2 Exposure controls

### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Use Local exhaust ventilation (LEV).

### Personal protective equipment

#### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Respiratory protection

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	No data available
f)	Initial boiling point and boiling range	2,900 °C - lit.
g)	Flash point	No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapour pressure	No data available
l)	Vapour density	No data available
m)	Relative density	8.9 g/mL at 25 °C
n)	Water solubility	No data available
o)	Partition coefficient: n- octanol/water	No data available
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

### 9.2 Other safety information

no data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

None based on the data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

None under normal processing

### 10.4 Conditions to avoid

Incompatible material

### 10.5 Incompatible materials

Oxidizing agents, Strong oxidizing agents, Acetylene, Material readily reacts with acids generating flammable and/or explosive hydrogen gas., Mineral acids, Hydrazinium nitrate

### 10.6 Hazardous decomposition products

Other decomposition products - no data available  
In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Rat: 6,170 mg/kg

Symptoms: Nausea, Vomiting, gastric pain

#### Skin corrosion/irritation

no data available

#### Serious eye damage/eye irritation



no data available

**Respiratory or skin sensitisation**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Cobalt)

2A - Group 2A: Probably carcinogenic to humans (Cobalt)

2B - Group 2B: Possibly carcinogenic to humans (Cobalt)

**Reproductive toxicity**

no data available

**Specific target organ toxicity - single exposure**

no data available

**Specific target organ toxicity - repeated exposure**

**Aspiration hazard**

no data available

**Additional Information**

RTECS: Not available

Kidney injury may occur., Damage to the eyes., Lung irritation, chest pain, pulmonary edema, May cause irritation of the:, nose, Throat., sensation of heat

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**SECTION 12: Ecological information**

**12.1 Toxicity**

*Toxicity to fish*

LC50 Danio rerio (zebra fish): > 100 mg/l;

96 h OECD Test Guideline 203

(above the solubility limit in the test medium)

***Toxicity to daphnia and other aquatic invertebrates***

static test NOEC Daphnia magna (Water flea): 3.2 mg/l;

48 h Analytical monitoring: yes

OECD Test Guideline 202

(above the solubility limit in the test medium)

***Toxicity to algae***

IC50 Pseudokirchneriella subcapitata (green algae): 0.05 - 0.26 mg/l;

72 h OECD Test Guideline 201

(above the solubility limit in the test medium)

static test EC50 Pseudokirchneriella subcapitata (green algae): 0.27 mg/l;

70 h Analytical monitoring: yes

OECD Test Guideline 201

**12.2 Persistence and degradability**

no data available

**12.3 Bioaccumulative potential**

no data available

**12.4 Mobility in soil**

no data available

**12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

**12.6 Other adverse effects**

Very toxic to aquatic life.

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**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

**Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Unused product may be returned and reused, in addition to disposal.

**Contaminated packaging**

Dispose of as unused product.

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**SECTION 14: Transport information**

**14.1 UN number**

ADR/RID: 3089

IMDG: 3089

IATA: 3089

**14.2 UN proper shipping name**

ADR/RID: METAL POWDER, FLAMMABLE, N.O.S.

IMDG: METAL POWDER, FLAMMABLE, N.O.S.

IATA: Metal powder, flammable, n.o.s.

**14.3 Transport hazard class(es)**

ADR/RID: 4.1

IMDG: 4.1

IATA: 4.1

**14.4 Packaging group**

ADR/RID: II

IMDG: II

IATA: II

**14.5 Environmental hazards**

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

**14.6 Special precautions for user**

no data available

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

N/A

## SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### *EU regulations*

Major Accident Hazard	SEVESO III
Legislation	Not applicable
Occupational restrictions	Take note of Dir 94/33/EC on the protection of young people at work.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of  $\geq 0.1$  % (w/w).

### 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

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## SECTION 16: Other information

### Full text of H-Statements referred to under sections 2 and 3.

Aquatic Chronic Eye Irrit.	Chronic aquatic toxicity Eye irritation
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
H413	May cause long lasting harmful effects to aquatic life.
Resp. Sens.	Respiratory sensitization.

Skin Sens.                      Skin sensitization.  
STOT SE                        Specific target organ toxicity - single exposure.

**Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Better Equipped and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.

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