

**EC - Safety Data Sheet acc. to Guideline 93/112/C
91/155/EEC, 93/112/EC, 2001/58/EC and TRGS 220**

Trade names : CuBe2 alloy 25, alloy 190, M25

Supplier : Lamineries Matthey SA
Edition 1 issued : 07.05.2007



1. Identification of preparation and company

Preparation: Copper Beryllium alloys in form of semi-finished products according to the trade names, high conductivity and high strength alloys (depending on the trade name concerned) supplied as solid, compact and non-inhalable metal in the form of slabs or hot or cold rolled strips.

Application : as materials with exceptional characteristics with regard to electrical conductivity and mechanical or physical properties as mentioned in the relevant material data sheet. Supplied in semi-finished form for further processing for products in (e. g.) the consumer-goods sector, automotive, medical sector, watch industry and chemical processing equipment.

Manufacturer/Supplier:

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Contact for technical information and Emergency :

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2. Composition/Ingredients

Copper beryllium alloys in massive form do not require hazard labelling as per Commission Directive 1999/45/EC.

CAS-N°	% by mass	Name	EINECS-/EC-N°	INDEX-N°	EU - Classification
7440-50-8	97.1-98.2	Copper	231-159-6		
7440-41-7	1.8-2.0	Beryllium	231-150-7	004-001-007	R49, R43 T+; R26 T; R25-48/23 Xi; R36/37/38
7440-48-4	0.2-0.35	Cobalt	231-158-0	027-001-009	R42/43, R53
7439-92-1	0.2-0.6	Lead/lead compounds *	231-100-4		R61, R62 Xn; R20/22 R33 N; R50-53

* alloy M25 only



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3. Hazard identification

Copper Beryllium alloys:

Hazard Designation: Carc.Cat.2/K2 , R49, R43, T; R23, Xn: R48/20, R33*, R61*
(* M25 only)

These preparations do not require hazard labelling as per Commission Directive 1999/45/EC
– for additional information ref. to item **15./16.**

Hazards identification

These alloys as preparations in massive form present no special hazards to man and the environment.

Processes which generate particulate (dust, mist, fume) from the alloys, for example grinding, electro-discharge machining, welding or melting, can cause risk of sensitisation and chronic beryllium disease (CBD), a potentially serious lung disorder.

- R49: May cause cancer by inhalation – the classification (Carc.Cat.2/K2) is based on the beryllium content.
- R23: Also toxic by inhalation and R48/20: Also harmful: danger of serious damage to health by prolonged exposure through inhalation – chronic beryllium disease (CBD) – is based on the beryllium content.
- R43: May cause sensitisation by skin contact – is based on the beryllium content.
- R43: May cause sensitisation by skin contact – is based on the beryllium or nickel content.
- R61: May cause harm to the unborn child
- R33: Danger of cumulative effects – are based on the bio-available content of lead

4. First-aid measures

General information

There is no immediate medical risk associated with these alloys in massive form.

Inhalation

Breathing difficulties caused by inhalation of particulate requires immediate removal to fresh air. If breathing has stopped, perform artificial respiration and obtain medical help.

Skin contact

Cuts should be treated by normal first aid. Embedded foreign bodies must be removed. Copper beryllium that becomes lodged under the skin has the potential to induce sensitisation to beryllium. If rashes or other skin effects develop, obtain medical help.

Eye contact

There is no special hazard to the eyes. Avoid transferring particulate material to the eyes from the hands. Any particulate which does enter the eyes could cause damage to the eye and surrounding tissues and should be removed by copious flushing with clean water, obtain medical help.

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Ingestion

The alloys are not toxic, but ingestion should be avoided including ingestion via hand-to-mouth activity such as eating, drinking, smoking. In case of accidental swallowing of dust or powder induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If unconscious, obtain medical help.

Medical information

- Beryllium: Sensitisation, chronic beryllium disease (CBD), German BK 1110
- Cobalt: Sensitisation
- Copper: Meta
- Lead: German TRGS 505, German BK 1101 – Preventive medical check-up as per recommendations of the German Professional Association for Occupational Safety, G2/G40I Fume Fever

5. Fire fighting measures

The alloys are non-flammable. Do not use water in fire-fighting metal melting operations. To avoid risk of explosion, dry sand or other fire-fighting powders should be used.

6. Accidental release measures

Not applicable to alloys in massive form.

Measures for collecting: dispose waste material according to item 13

7. Handling und storage

7.1 Handling:

No special precautions are required for handling alloys in massive forms. Use local exhaust ventilation when particulate (dust, mist, fume) is present – ref. to **8.2**. Use gloves when handling sharp edged alloy products, to prevent metal cuts and when particulate is present, to prevent sensitisation. If necessary use disposable gloves (nitrile or vinyl) under work gloves to prevent against mechanical risks – ref. to **8.2**.

7.2 Storage:

No special precautions required. No prohibitions for mixed-goods-storage.

7.3 Specific uses:

Semi finished copper beryllium alloys, in the forms of strip, rod, wire, tubes and plate, etc. mainly used to make components for use in electrical circuits, principally in switches and connectors..



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8. Exposure controls and personal protection

8.1 Exposure limit values :

There are no occupational exposure limits for the alloys as in Sect. 1, although some do apply to certain elements contained in these preparations, such as Fe, Co, Ni, Cr, Mn and Mo and/or some of their compounds. The relevant national limit specifications should be observed. **Limits of airborne substances in the place of work in accordance with TRGS 900**

Substance	CAS-No.	Type ⁺	Value * [mg/m ³]
Copper	7440-50-8	7440-50-8	1E MAK 0.1A MAK
Beryllium	7440-50-8	7440-50-8	0.002E MAK
Cobalt	7439-96-5	7439-96-5	0.1E MAK
Lead	7439-92-1		*)BAT values B = blood - 400 µg/l (men/women >45 years of age) - 300 µg/l (women <45 years of age)

⁺ MAK : Maximum allowable concentration

TRG: Technical reference concentration

* E: Inhalable fraction

A: Alveolar fraction

ASG: General limit value for dust

8.2 Exposure controls:

- Any process which could generate airborne particulate (dust, mist, fume) from the alloys must be provided with proper controls to ensure that airborne levels are kept as far below the Occupational Exposure Standards as is practically possible – ref. to item **8.1**.
- Control to the above standards is achieved by means of local exhaust ventilation fitted with appropriate filtration of category K1 – ref. to **8.1**. Activities without full protection, such as repair and maintenance of machinery, processing equipment or ductwork, melting and casting operations, or filter change may require the use of personal respiratory protective equipment and protective over-garments. Clothing contaminated by such work must be handled in a controlled manner in order to prevent secondary exposure of workers or third parties.
- The installation and use of local exhaust ventilation and the use of respiratory equipment requires specialist advice and approval in order to ensure full protection.
- Operations which require controls include any form of abrasive machining or cutting, grinding, polishing, electro discharge machining, welding, melting and casting. Operations which may not require controls (but need risk analysis) include stamping and forming, milling, general handling and heat treatment in air below about 400°C. Heat treatment above this temperature in air could generate loose oxide scale which might become airborne. This can be minimised by heat treating above 400°C in inert atmosphere.

Respiratory protection: If observance of the limits cannot be guaranteed by means of exhausters, personnel should be provided with face or breathing masks with breathing filter class P3.

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Particle filter P2	Particle filter P3	in combination with: - ref. BIA*)
10 x exposure limit	30 x exposure limit	half-/ quarter mask or particle filtered half mask (FFP2/FFP3)
15 x exposure limit	400 x exposure limit	full mask/mouthpiece garniture

*) Recommended by BIA (German Professional Associations' Institute for Occupational Safety).

Eye protection: For processing the alloys the use of safety glasses is recommended as required by the various operations, so for example safety glasses with side protection, closed safety glasses/goggles or face shields.

Hand / body protection: Follow the standard workplace hygiene recommendations. Gloves against particulate/cuts. If necessary use disposable gloves, protection against particulate, under work gloves, protection against cuts, for example leather gloves, against mechanical risks.

9. Physical and chemical properties

9.1 General Information:

Physical State: solid matter.
Colour: bronze (gold).
Smell: odorless.

9.2 Important health, safety and environmental information:

Melting point / melting range: 870°C
Boiling point / boiling range: unknown.
Flash point: not applicable.
Danger of explosion: product is not explosive.
Density at 20°C: 8.4 g/cm³.
Solubility in / miscibility with water: insoluble.

9.3 Other information: not applicable

10. Stability and reactivity

The alloys are stable. They do not corrode, dissolve or disintegrate under normal conditions. Acid treatment of metals may generate explosive hydrogen.

11. Toxicological information

For questions concerning toxicological information, write to: Medical Director, Brush Wellman Inc., 14710 West Portage River South Road, ELMORE, Ohio 43416-9502, U.S.A .

11.1. Inhalation and skin contact

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- Based on animal experiments using beryllium materials the alloys are classified as possible human carcinogens by inhalation (Carc.Cat.2/K2 –T; R49).
- Inhalation of particulate (dust, mist, fume) generated from the alloys can lead to chronic beryllium disease (CBD), (T; R23 – Xn; R48/20). This disease can cause seriously impaired lung function and is registered in Germany as an occupational disease, BK 1110.
- Inhalation of metal fumes can cause metal fume fever.
- The alloys are classified as potential sensitiser by skin contact (Xi; R43), based its beryllium content.
- Lead dusts may enter the body by ingestion or inhalation. In Germany the occupational disease for lead and its compounds is registered under BK 1101. Bio-available lead is classified as a reproduction harm (RF3) and may cause birth defects (RE1) – alloys M25.

12. Ecological information

Non-hazardous to water as far as being solid.

13. Disposal considerations

Metal scrap is a valuable raw material and easy to recycle for reuse. Disposal in waste dumps is not harmful to the environment, but it is a waste of valuable natural resources and should therefore be avoided. For scrap consult Lamineries Matthey SA.

The preparations as in Sect. 1 do not cause contamination of the packaging materials employed.

14. Transport information

Non-dangerous good according to transport regulations.

15. Regulatory information

Labeling according to EU Directive 67/548/EEC: not required.

Though they are classified for health hazard, the alloys in massive form do not pose any immediate health risk, and so are derogated from the hazard labelling requirement, according to Directives 1999/45/EC and 67/548/EEC, so long as their hazard classification is provided via the M.S.D.S

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National regulations:

- Copper beryllium alloys are not subject to any national or international restrictions on marketing and use.
- German TRGS 900 – “Limit values relating to air in the workplace”
- German TRGS 905 (Annex I of the Directive 67/548/EEC) – “Index of substances which can cause cancer, genetic changes or limit reproduction capability”
- European Waste Catalogue – EWC (German Abfallverzeichnis-Verordnung – AVV)
- German Hazardous Water Direction: not hazardous to the aquatic environment, as per annex 1 German VwVwS (Verwaltungsvorschrift wassergefährdende Stoffe)
- Beryllium containing alloys, and lead containing copper base alloys with a max. 4% Pb, are not listed as restricted or prohibited in any end-of life requirements in the EU Directives “on end-of life vehicles 2000/53/EC (18.09.2000/21.10.2000) and 2002/525/EC (27.06.2002/ 29.06.2002)”, “on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) 2002/95/EC (27.01.2003/13.02.2003)”, “on waste electrical and electronic equipment (WEEE) 2002/96/EC (27.01.2003/13.02.2003)”.

16. Other information

List of relevant R-phrases :

- R20: Harmful by inhalation.
R20/22: Harmful by inhalation and if swallowed.
R23: Toxic by inhalation.
R25: Toxic if swallowed.
R26: Very toxic by inhalation.
R33: Danger of cumulative effects.
R36/37/38: Irritating to eyes, respiratory system and skin.
R40: Limited evidence of a carcinogenic effect.
R42/43: May cause sensitisation by inhalation and skin contact.
R43: May cause sensitisation by skin contact.
R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R48/23: Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R49: May cause cancer by inhalation.
R50: Very toxic to the aquatic organisms.
R53: May cause long-term adverse effects in the aquatic environment.
R61: May cause harm to the unborn child.
R62: Possible risk of impaired fertility

Safety phrases:

- 22 Do not breathe dust,
24 Avoid contact with skin (cobalt, related to the production and manufacturing of powders being not considered with this safety data sheet)

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- 36 Wear suitable protective clothing,
37 Wear suitable gloves (cobalt, related to the production and manufacturing of powders being not considered with this safety data sheet),
61 Avoid release to the environment. Refer to special instructions/safety data sheet (cobalt, related to the production and manufacturing of powders being not considered with this safety data sheet).

Literature:

- M.S.D.S. No. A2/02 - BRUSH WELLMAN Ltd., UK - 01. January 2003
- M.S.D.S. No. A10 - BRUSH WELLMAN Inc., U.S.A. - 03. March 2003
- Safety Facts/SF105 - BRUSH WELLMAN Inc., U.S.A. - March 2002
- Gefahrstoffrecht – 7. Auflage/Mai 2000, Band 1 u. 2 – Deutscher Bundesverlag
- TRGS 900 and TRGS 905 (annex I, Directive 67/548/EEC) – autumn 2001 Wirtschaftsverlag NW Verlag für neue Wissenschaft GmbH, Bremerhaven/ISSN 1433-2124
- BIA-Report 1/2002 (Gefahrstoffliste 2002/Gefahrstoffe am Arbeitsplatz)

The details are based on our current stand of knowledge, however, they neither depict assurance of product properties nor establish any contractually legal relationship.

This material safety data sheet describes products of Lamineries Matthey SA with respect to their safety requirements. The details given are based on the information and experience available, but they do not provide or imply guarantees regarding product characteristics, nor do they suppose a legal or contractual obligation of any kind.