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

1.1 Product identifier

Trade name ***Bismuth Lead Tin Cadmium ingot (Wood's metal)***

Stock number: 33218
CAS Number: 8049-22-7
1.2 Relevant identified uses of the substance or mixture and uses advised against.
Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Alfa Aesar GmbH & Co.KG
A Johnson Matthey Company
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com
Informing department: Product safety Tel + +049 (0) 7275 988687-0
1.4 Emergency telephone number:
Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008


GHS06 skull and crossbones

Acute Tox. 2	H330	Fatal if inhaled.


GHS08 health hazard

Muta. 2	H341	Suspected of causing genetic defects.
Carc. 1B	H350	May cause cancer.
Repr. 1A	H360Df	May damage the unborn child. Suspected of damaging fertility.
STOT RE 1	H372-H373	Causes damage to the lung, the kidneys, the reproductive system and the blood system through prolonged or repeated exposure. Route of exposure: Oral. May cause damage to the brain and the endocrine system through prolonged or repeated exposure. Route of exposure: Inhalative.


GHS09 environment

Aquatic Acute 1	H400	Very toxic to aquatic life.
Aquatic Chronic 1	H410	Very toxic to aquatic life with long lasting effects.


GHS07

Acute Tox. 4	H302	Harmful if swallowed.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC


T+; Very toxic

R26: Very toxic by inhalation.


T; Toxic

R45-61-48/23/25: May cause cancer. May cause harm to the unborn child. Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.


Xn; Harmful

R22-62-68: Harmful if swallowed. Possible risk of impaired fertility. Possible risk of irreversible effects.


N; Dangerous for the environment

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R33: Danger of cumulative effects.

Information concerning particular hazards for human and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Other hazards that do not result in classification No information known.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 The product is classified and labelled according to the CLP regulation.
Hazard pictograms


GHS06 GHS08 GHS09

Signal word Danger

Hazard-determining components of labelling:
Lead
Cadmium
Hazard statements

H302	Harmful if swallowed.
H330	Fatal if inhaled.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H360Df	May damage the unborn child. Suspected of damaging fertility.
H372-H373	Causes damage to the lung, the kidneys, the reproductive system and the blood system through prolonged or repeated exposure. Route of exposure: Oral. May cause damage to the brain and the endocrine system through prolonged or repeated exposure. Route of exposure: Inhalative.
H410	Very toxic to aquatic life with long lasting effects.

(Contd. on page 2)

Trade name *Bismuth Lead Tin Cadmium ingot (Wood's metal)*

(Contd. of page 1)

Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P284 [In case of inadequate ventilation] wear respiratory protection.
P281 Use personal protective equipment as required.
P320 Specific treatment is urgent (see on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
Additional information:
Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.
2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Dangerous components:

CAS: 7439-92-1 EINECS: 231-100-4	Lead T R61; Xn R62-20/22; N R50/53 R33 Repr. 1A, H360Df; STOT RE 2, H373; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Acute Tox. 4, H302; Acute Tox. 4, H332	25,0%
CAS: 7440-43-9 EINECS: 231-152-8	Cadmium T+ R26; T Carc. Cat. 2 R45-48/23/25; Xn R62-68-63; N R50/53 Muta. Cat. 3, Repr. Cat. 3 Acute Tox. 2, H330; Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361fd; STOT RE 1, H372; Aquatic Acute 1, H400; Aquatic Chronic 1, H410	12,5%

Additional information None known.

Non-Hazardous Ingredients

CAS: 7440-69-9 EINECS: 231-177-4	Bismuth		50,0%
CAS: 7440-31-5 EINECS: 231-141-8	Tin	substance with a Community workplace exposure limit	12,5%

SECTION 4: First aid measures

4.1 Description of first aid measures
General information
Instantly remove any clothing soiled by the product.
Remove breathing apparatus only after soiled clothing has been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
No special measures required.
After inhalation Seek medical treatment in case of complaints.
After skin contact Generally the product does not irritate the skin.
After eye contact Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.
After swallowing In case of persistent symptoms consult doctor.
4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.
4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents Special powder for metal fires. Do not use water.
For safety reasons unsuitable extinguishing agents Water.
5.2 Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Toxic metal oxide smoke
5.3 Advice for firefighters
Protective equipment: No special measures required.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures Not required.
6.2 Environmental precautions:
Do not allow material to be released to the environment without proper governmental permits.
Do not allow product to reach sewage system or water bodies.
Do not allow to enter the ground/soil.
6.3 Methods and material for containment and cleaning up:
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.
Prevention of secondary hazards: No special measures required.
6.4 Reference to other sections
See Section 7 for information on safe handling
See section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation/exhaustion at the workplace.
Open and handle container with care.
Information about protection against explosions and fires: No special measures required.

7.2 Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and containers: No special requirements.
Information about storage in one common storage facility:
Do not store together with acids.
Store away from oxidising agents.
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Store in a locked cabinet or with access restricted to technical experts or their assistants.
7.3 Specific end use(s) No further relevant information available.

(Contd. on page 3)

Trade name *Bismuth Lead Tin Cadmium ingot (Wood's metal)*

(Contd. of page 2)

SECTION 8: Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

8.1 Control parameters

Components with critical values that require monitoring at the workplace:

7439-92-1 Lead (25,0%)

MAK (Germany)	vgl.Abschn.XII
PEL (USA)	Long-term value: 0,05* mg/m³ *see 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m³ *8-hr TWA,excl. lead arsenate;See PocketGuideApp.C
TLV (USA)	Long-term value: 0,05* mg/m³ *and inorganic compounds, as Pb; BEI

7440-31-5 Tin (12,5%)

MAK (Germany)	vgl.Abschn.IIb
PEL (USA)	Long-term value: 2 mg/m³ metal
REL (USA)	Long-term value: 2 mg/m³
TLV (USA)	Long-term value: 2 mg/m³ metal

7440-43-9 Cadmium (12,5%)

MAK (Germany)	einatembare Fraktion; vgl.Abschn.XII
TRK (TRGS 900) (Germany)	Long-term value: 0,015 G mg/m³
PEL (USA)	Long-term value: 0,005 mg/m³ as Cd; see 29 CFR 1910,1027
REL (USA)	See Pocket Guide App. A
TLV (USA)	Long-term value: 0,01 0,002* mg/m³ as Cd; *respirable fraction; BEI

Ingredients with biological limit values:

7439-92-1 Lead (25,0%)

BGW (Germany)	300 µg/l Untersuchungsmaterial: Vollblut Probennahmezeitpunkt: keine Beschränkung Parameter: Blei Frauen < 45 J. 400 µg/l Untersuchungsmaterial: Vollblut Probennahmezeitpunkt: keine Beschränkung Parameter: Blei
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead 10 µg/100 ml Medium: blood Time: not critical Parameter: Lead (women of child bearing potential)

7440-43-9 Cadmium (12,5%)

BEI (USA)	5 µg/g creatinine Medium: urine Time: not critical Parameter: Cadmium (background) 5 µg/L Medium: blood Time: not critical Parameter: Cadmium (background)

Additional information: No data

8.2 Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures should be adhered to in handling the chemicals.
Store protective clothing separately.
Maintain an ergonomically appropriate working environment.
Breathing equipment:
Not required.
Use self-contained respiratory protective device in emergency situations.
Protection of hands: Not required.
Material of gloves Impervious gloves
Penetration time of glove material (in minutes) Not determined
Eye protection: Safety glasses
Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance:

Form:	Ingot
Colour:	Grey
Smell:	Odourless
Odour threshold:	Not determined.
pH-value:	Not applicable.
Change in condition	
Melting point/Melting range:	71 °C
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined
Inflammability (solid, gaseous)	Not determined.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Self-inflammability:	Product is not selfigniting.

(Contd. on page 4)

Trade name *Bismuth Lead Tin Cadmium ingot (Wood's metal)*

(Contd. of page 3)

Danger of explosion:	Not determined.
Critical values for explosion:	
Lower:	Not determined
Upper:	Not determined
Steam pressure:	Not applicable.
Density	Not determined
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with	
Water:	Insoluble
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
dynamic:	Not applicable.
kinematic:	Not applicable.
Solvent content:	
Organic solvents:	0,0 %
Solids content:	100,0 %
9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity No information known.
10.2 Chemical stability Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.
10.3 Possibility of hazardous reactions Reacts with strong oxidising agents
10.4 Conditions to avoid No further relevant information available.
10.5 Incompatible materials:
Acids
Oxidising agents
10.6 Hazardous decomposition products: Toxic metal oxide smoke

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity:
Harmful if swallowed.
Fatal if inhaled.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.
LD/LC50 values that are relevant for classification: No data
Skin irritation or corrosion: May cause irritation
Eye irritation or corrosion: May cause irritation
Sensitization: No sensitizing effect known.
Germ cell mutagenicity:
Suspected of causing genetic defects.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for components in this product.
Carcinogenicity:
May cause cancer.
IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.
EPA-B1: Probable human carcinogen, limited evidence of carcinogenicity from epidemiologic studies.
Carcinogen as defined by OSHA.
ACGIH A2: Suspected human carcinogen: Agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. Available epidemiologic studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans.
NTP-K: Known to be carcinogenic: sufficient evidence from human studies.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.
Reproductive toxicity:
May damage fertility or the unborn child.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for components in this product.
Specific target organ system toxicity - repeated exposure:
Causes damage to the lung, the kidneys, the reproductive system and the blood system through prolonged or repeated exposure. Route of exposure: Oral.
Specific target organ system toxicity - single exposure: No effects known.
Aspiration hazard: No effects known.
Subacute to chronic toxicity: No effects known.
Experience with humans: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for components in this product.
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
Harmful
Very toxic
Carcinogenic
May cause harm to the unborn child.

SECTION 12: Ecological information

12.1 Toxicity
Aquatic toxicity: No further relevant information available.
12.2 Persistence and degradability No further relevant information available.
12.3 Bioaccumulative potential No further relevant information available.
12.4 Mobility in soil No further relevant information available.
Ecotoxical effects:
Remark: Very toxic for fish
Additional ecological information:
General notes:
Do not allow material to be released to the environment without proper governmental permits.
Water danger class 3 (Self-assessment): extremely hazardous for water.
Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into soil.
Also poisonous for fish and plankton in water bodies.
May cause long lasting harmful effects to aquatic life.
Avoid transfer into the environment.
Very toxic for aquatic organisms
12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
12.6 Other adverse effects No further relevant information available.

(Contd. on page 5)

Trade name *Bismuth Lead Tin Cadmium ingot (Wood's metal)*

(Contd. of page 4)

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Recommendation
Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.
Consult state, local or national regulations for proper disposal.
Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

UN-Number	
ADR, IMDG, IATA	UN3077
14.2 UN proper shipping name	
ADR	3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Lead bar, Cadmium)
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Lead bar, Cadmium), MARINE POLLUTANT
IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Lead bar, Cadmium)
14.3 Transport hazard class(es)	
ADR	

Class	9 (M7) Miscellaneous dangerous substances and articles.
Label	9
IMDG, IATA	

Class	9 Miscellaneous dangerous substances and articles.
Label	9
Packing group	
ADR, IMDG, IATA	III
14.5 Environmental hazards:	Product contains environmentally hazardous substances: Lead bar, Cadmium
Marine pollutant:	Symbol (fish and tree)
Special marking (ADR):	Symbol (fish and tree)
Special marking (IATA):	Symbol (fish and tree)
14.6 Special precautions for user	Warning: Miscellaneous dangerous substances and articles.
Kemler Number:	90
EMS Number:	F-A,S-F
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
ADR	
Excepted quantities (EQ):	E1
Limited quantities (LQ)	5 kg
Transport category	3
Tunnel restriction code	E
UN "Model Regulation":	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Lead bar, Cadmium), 9, III

SECTION 15: Regulatory information

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

Australian Inventory of Chemical Substances
All ingredients are listed.

Standard for the Uniform Scheduling of Drugs and Poisons

7439-92-1	Lead	S4+APPENDIX C

National regulations
Information about limitation of use:
Workers should not be exposed to the hazardous materials contained in this preparation. Exceptions can be made by the authorities in certain exceptional cases.
Employment restrictions concerning young persons must be observed.
Employment restrictions concerning women of child-bearing age must be observed.
For use only by technically qualified individuals.
Classification according to VbF: Not applicable
Technical instructions (air):

Class	Share in %
I	12,5
III	12,5

Water hazard class: Water danger class 3 (Self-assessment): extremely hazardous for water.
Other regulations, limitations and prohibitive regulations

ELINCS (European List of Notified Chemical Substances)
None of the ingredients is listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.

7440-43-9	Cadmium	12,5%

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
None of the ingredients is listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use)
None of the ingredients is listed.

REACH - Pre-registered substances
All ingredients are listed.

(Contd. on page 6)

Trade name *Bismuth Lead Tin Cadmium ingot (Wood's metal)*

(Contd. of page 5)

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 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.

Relevant phrases

H302	Harmful if swallowed.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H360Df	May damage the unborn child. Suspected of damaging fertility.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H372	Causes damage to the lung, the kidneys, the reproductive system and the blood system through prolonged or repeated exposure. Route of exposure: Oral.
H373	May cause damage to the brain and the endocrine system through prolonged or repeated exposure. Route of exposure: Inhalative.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
R20/22	Harmful by inhalation and if swallowed.
R26	Very toxic by inhalation.
R33	Danger of cumulative effects.
R45	May cause cancer.
R48/23/25	Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R61	May cause harm to the unborn child.
R62	Possible risk of impaired fertility.
R63	Possible risk of harm to the unborn child.
R68	Possible risk of irreversible effects.

Department issuing SDS: Global Marketing Department

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
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)