MATERIAL SAFETY DATA SHEET according to (EC) No. 1907/2006

Trade name: VD90.5001 / VD90.5002 / VD90.5004 / VD00.5005 / VD90.5006 / VD90.5008 / VD90.5009 / VD90.5010 / VD90.5011 / VD90.5013 MARTIN Solder Balls (Pb)
Issue: February 2016

1. Identification of the substance / preparation and of the company

1.1 Identification of the substance / preparation

MARTIN Solder Balls
Alloy: SnPb

1.2 Company/undertaking identification

MARTIN GmbH
Argelsrieder Feld 1b
D-82234 Wessling
Phone: +49-(0)8153-932 93-0
Fax: +49-(0)8153-932 93-9
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1.3 Emergency telephone

Please contact the nearest poison emergency center.

2. Hazards identification

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation (EC) No. 1272/2008 (CLP- Regulation):
For products there is no obligation to classify acc. to CLP- Regulation.

2.1.2 Classification according to Directive 67/548/EEC or Directive 1999/45/EC:
guideline 67/548/EWG:

Lead compounds with the exception of lead alkyls, of lead azide and Trinitroresorcinate

Xn R : 54
- Harmful, particularly if swallowed.

S : 11-21-31-51-91
- Keep container tightly closed.
- Do not eat or smoke during work.
- Keep away from food.
- Do not breathe dust.
- Wash hands immediately after work.

guideline 1999/45/EG:
Not applicable for alloys

2.1.3 Information concerning particular hazards for human and environment:
Not applicable

2.2 Label elements

As supplied contact with the product in any danger and thus there is no labeling requirement.

2.3. Other hazards

The product is not hazardous as shipped. The main health hazards associated with this product arising from any use as Lot. The information in this data sheet thus ensure the health dangers of using this product is a lot. When heated metal and metal oxide fumes can escape, but hardly exceed the occupational exposure limit value under normal conditions. However, overheating can cause smoke emission in harmful concentrations.

Metal vapors may irritate the upper respiratory tract, nose and throat. Metal dust in powder form is

irritating to the eyes and is harmful if its intake.

2.3.1 Präventation:
Obtain special instructions before use. Avoid release to the environment

2.3.2 Reaction:
Call a poison control center or doctor.

2.3.3 Disposal:
Disposal in accordance with local / regional / national / international regulations.

3. Composition/Information on ingredients

3.1 Material

Not applicable

3.2 Mixture

Description:
Metal allay in compact form
The starting materials (pure substances) no longer act as a single component.

3.2.1 Information:
The classifications mentioned below reflect the respective pure substance and are for information only.
Tin alloys are special preparations according to Regulation (EC) 1907/2006 (REACH Regulation).
The classification of a pure substance is not applicable to its use as element of a copper alloy.

Alloy components	
Lead (Pb) CAS Nr: 7439-92-1 EG Nr: 231-100-4	
Tin (Sn) CAS Nr: 7440-31-5 EG Nr: 231-141-8	Not classified

4. First aid measures

4.1 General information:
The information on first aid related to any resulting dust and fumes.

Subacute poisoning consists almost exclusively at hot working of the metal by inhalation
To intoxication by anorg. and org. Lead compounds and their treatment s. Single substance information.
Symptoms of acute / subacute poisoning: Eyes / Skin: most small, mechanically induced irritation; Not expected resorptive effect
Inhalation: resorptive effect (see below) hours after exposure to smoke, fumes, possibly very fine dust; but more frequently occurring only after several days of exposure
Ingestion: acute Resorptive effect (see below) only after massive (jerky) receiving high doses or repeated ingestion; usually relatively slow progress

Absorption: sweetish metallic taste, salivation, nausea, vomiting (after ingestion might vomit grayish by PbCl2 education), intestinal colic, constipation, diarrhea rarely (chair can be colored black or bloody by lead sulfide formation). Possibly Damage to the blood (anemia, hemoglobinuria). Urinary retention, possibly kidney damage.
Circulatory situation: from a slightly decrease in blood pressure to danger of collapse, shock. Acute liver failure is possible. Neuromuscular symptoms (in extreme cases, quadriplegia). Central nervous system disorders (headache, insomnia, depression, paresthesia, etc., coma in severe cases).
In subacute course initially often occur only nonspecific prodromal symptoms such as loss of appetite, general weakness and malaise power, also marked pallor ("Lead pallor"). A blackish lead line at the gum line as exposure mark is not obligatory. The onset may take several weeks to lead colic differential diagnosis must be differentiated from appendicitis, Ulcusperforation and other causes of "acute abdomen".

Information for first medical help:
Contaminated eyes rinse thoroughly, then ophthalmologist.
After skin contact, thoroughly clean the affected skin with soap and plenty of water ia sufficient.
After acute inhalation effect symptomatic treatment (especially circulatory stabilization, possibly pain) and hospital transport priority.
In the event of ingestion of high doses induce vomiting and / or gastric lavage with sodium sulphate solution (3%) were under usual precautions. Subsequent addition of sodium sulfate.
In addition, plasma expanders are indicated. Intestinal colic can be successfully treated with atropine or butyl scopolamine. Soothing act also hot compresses.
For very heavy lead colic Opiatgabe is required, always combined with atropine.
The Antidotauswahl (D-penicillamine = dimethylcysteine; CaNa2 EDTA, DMSA, DMPS = Dimaval) and treatment should be based on the diagnosis and follow-up chemical laboratory exclusively in the clinic.
BAL call sound standard works as contraindicated.
Hemodialysis and peritoneal dialysis come in exceptional cases (when other drugs fail in very severe cases of intoxication or renal insufficiency) into consideration.

4.2 After inhalation:
Injured person using self-protection from the danger zone to fresh air.
After inhalation of vapors / fumes or massive dust exposure:
If breathing is difficult patient inhales oxygen. Provide medical treatment.
The Symptoms of poisoning may even occur later. Seek medical attention if problems persist.

4.3 After Skin Contact:
Remove contaminated clothing. Rough metal dust can be removed from the skin first carefully mechanically (eg with a soft brush). Then clean under running water with soap. Care should be taken to ensure that no particles are rubbed into the skin or minor skin wounds. The medical advice irritation occurs or other symptoms.

4.4 After eye contact:
Rinse eye under protection of uninjured eye for 10 minutes under running water with eyelids held open wide. Remove contact lenses, if possible. In case of troubles or persistent symptoms, went to a eye specialist

4.5 After swallowing:

Ingestion metallic lead due to dust exposure in the commercial setting is not acutely threatening.
Rinse the mouth and spit out.
In case of accidental ingestion of high doses:
Immediately - drink plenty of fluids (water) - while retaining consciousness.
Provide medical treatment.
Symptoms of poisoning may even occur later

5. Firefighting measures

5.1 Suitable extinguishing agents

Suitable extinguishing media: metal fire extinguisher Unsuitable extinguishing media: Water

5.2 Special hazards arising from the substance or mixture:

No further relevant information available.

5.3 Advice for firefighters:

In case of fire: Use self-contained breathing apparatus

6. Accidental release measures

6.1 Personal precautions

Clear-hazardous, warn affected area.
In order to eliminate the danger, the danger area may only be entered with suitable protective measures. Respiratory, eye, hand and body protection (see point 8.2)
Take up mechanically, avoid dust.
Ventilate area and then clean dirty surfaces and floor.

6.2 Environmental precautions

Do not discharge into drains, surface water, ground water. Not in underground allow to enter soil.

6.3 Methods and material for containment and cleaning up

Take up mechanically and collect in suitable container for disposal. Avoid generation of dusts.

6.4 Additional information

See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7. Handling and storage

7.1 Handling

7.1.1 Information for safe handling:

Wear personal protective equipment.
Ensure good ventilation, if necessary exhaustion at the workplace.
Avoid dust formation and deposition of dust.

7.1.2 Precautions against fire and explosion:

Avoid formation of dust

7.1.3 Further information on handling:

Do not eat, drink, smoke or take drugs.

7.2 Conditions for safe storage, including any incompatibilities

7.2.1 Requirements for storage rooms and vessels:

Likelihood of confusion! Containers must be clearly and permanently labeled. Keep container tightly closed. Storage temperature: no restrictions. Store dry.

7.2.2 Further information on storage conditions:

Store away from foodstuffs. store dry.

8. Exposure controls / personal protection

8.1 Control parameters

7439-92-1 lead	
Exhaust gas concentration (TA Luft, 24.07.2006)	Section 5.2.2 of dusts inorganic substances class II Total may, even in the presence of several substances the same class, the following values in the waste gas be exceeded: mass flow: 2,5 g/h or Mass concentration: 0.5 mg / m³ Indicated as Pb.
Biological Limits	Parameters: Lead Limit: 400 ug / l Material: Thoroughbred Sampling: no limit
EU Workplace Directive (Directive 98/24 / EC)	8-hour average:0,15 mg/m³
7440-31-5 Tin	
MAK	2 E mg/m³ Germany

8.2 Limitation and monitoring of exposure

8.2.1 General protective and hygienic measures:

Do not eat, drink, smoke or take drugs.

Keep away from food

Wash hands before breaks and at the end of work.

Do not inhale dust / smoke / mist.

8.2.2 Respiratory protection:

In an emergency (eg unintentional release of substance) the wearing of respiratory protection is required.
Observe wearing time limitations.
Respiratory protection: filter P2 or P3, color white.

8.2.3 Protection of hands:

Use protective gloves. The glove material has to be sufficiently impermeable and resistant to the substance. Check for leaks before use. gloves
Before taking off pre-clean, then keep well ventilated. Use skin care product.
Skin cream may not provide adequate protection against this substance.

8.2.4 Eye Protection:

It should be sufficient immune protection should be worn.
Use safety glasses with side shields.

8.2.5 Body protection:

Wear suitable protective clothing, depending upon how the semis are further processed

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

aggregate state:	solid fuel
Colour:	silver- grey
Odour:	Odourless
pH- value:	No data available
Change of state:	
Melting temperature:	see material data sheet
Boiling point:	No data available
Flash point:	No data available
Flammability:	
Solid:	No data available
Explosion hazard:	
Lower explosion limit:	No data available
Under explosion limit:	No data available
Ignition temperature:	No data available
Auto- ignition temperature:	
Solid:	No data available
Oxidising properties:	
Vapor pressure:	No data available
Density:	see material data sheet
Bulk density:	No data available
Water solubility:	insoluble
Partition coefficient:	No data available
Evaporation rate:	No data available

9.2 Other information

Lead and tin powder:

Explosion on contact with:

lead	Tinn
strong oxidizing agents Ammonium nitrate (lead powder); Azides (time); Chlorine trifluoride / coal; Pirate (time);	strong oxidizing agents acetaldehyde ammonium nitrate ammonium perchlorate hexachloroethane turpentine

The fabric may react dangerously with:

lead	Tinn
fluoride nitric acid Air (spontaneous combustion at very finely divided lead); Hydrogen peroxide (lead powder); Zirconium / alloy (percussion);	bases halogens oxidants acids Boron trifluoride chlorine trifluoride dichlorodisulfane carbon Dioxide copper nitrate sodium nitrosyl sulfur Tellurium (heat) Carbon tetrachloride / water vapor

10. Stability and Reactivity

10.1 Reactivity

When used according to specifications Dangerous reactions aren't to be expected.For lead see point 9.3

10.2 Chemical stability

Stable under normal temperature conditions and recommended use..

10.3 Possibility of hazardous reactions

See point 9.2

10.4 Conditions to avoid

No further relevant information available.

10.5 Incompatible materials

See point 9.2

10.6 Hazardous decomposition products:

No dangerous decomposition products known.

11. Toxicological information

11.1 Acute toxicity:
No data available

11.2 Irritation effects in animal experiments
No data available

11.3 Irritation and corrosivity
No irritant effect

11.4 Additional toxicological information:
When used and handled according to specifications, the article does not have any harmful effects to our experience and the information provided to us

11.5 Sensitization
No sensitizing effects known.

12. Ecological information

12.1 Toxicity
WGK (water hazard class):
tin (WGK 1), lead (not hazardous to waters)
Prevent spread into groundwater or drains

12.2 Persistence and degradability
Tin, lead alloys are not biodegradable and can`t therefore enter the environment.

12.3 Bioaccumulative potential
No further relevant information available

12.4 Mobility in soil
No further relevant information available

12.5 Results of PBT and vPvB assessment
PBT: Not applicable to metals
vPvB: Not applicable to metals

12.6 Other adverse effects
No further relevant information available

13. Disposal considerations

13.1 Product

13.1.1 Recommendation:
Must not be disposed together with household garbage. Do not empty into drains. If recycling is not possible, waste must be disposed of in accordance with local authority requirements.

13.1.2 Contaminated packaging:
Disposal according to official regulations.

14. Transport information

14.1 Transport

- **Transport by car ADR/RID and GGVSE (cross-boarder / inland):**
- **ADR/RID- GGVSE class: -**
- **Transport by ship IMDG/GGV See:**
- **IMDG/GGVSee- class: -**
- **Transport by plane ICAO-TI and IATA-DGR:**
- **ICAO/IATA- class: -**

14.2 Next information

Not dangerous according to the above

15. Regulatory information

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

15.1.1 Labelling according to EU guidelines:

Handle in accordance with good industrial hygiene and safety practice.

The product is presented as supplied neither to human health by inhalation or skin contact or dangerous waters there

No label required under Directive 67/548 / EEC Annex VI no. 9.3.

Although this product is not subject to identification regulations, we recommend that you perform resulting from the classification markings in the information sheet

15.1.2 Code letter and hazard

designation: No labeling

15.2 National regulations:

15.2.1 nformation about

limitation: No labeling

15.2.2 statutory order on hazardous incidents:

The data refer to the old hazard classification as the Seveso II has not yet been converted to GHS.

appendix I, No.: 9a

Quantity for operating areas in §1 Abs. 1 Satz 1: 100000 kg
Satz 2: 200000 kg

Scope: environmental hazard (risk phrase R 50 or R 50/53)

15.2.2 Classification according to Ordinance on Industrial Safety (BetrSich V):

No data available

15.2.3 Waterhazard class:

Waterhazard class (self- classification on VwVwS): low hazardous for water

16. Other Information

The information in this data sheet is based on our present state of knowledge and is provided without warranty of product features and shall not establish a legally valid contractual relationship.

16.1 Abbreviations and Acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route
RID: Réglement international concernant le transport des marchandises dangereuses par chemin de fer
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulation by the “International air Transport Association” (IATA)
ICAO: International Civil Aviation Organization
IACO-TI: Technical Instructions by the “Civil Aviation Organization” (ICAO)
CAS: Chemicals Abstracts service
GefStoffV: Gefahrstoffverordnung
PBT: persistent, bioakkumulierend, toxisch
vPvB: sehr persistent, sehr bioakkumulierend
VwVwS: Verwaltungsvorschrift wassergefährdender Stoffe