1 Designation of the substance / mixture and firm name

1.1 Product identifier

Trade name: Solder wire — Pb60Sn40 with flux core 1122 ROM1

REACH registration: Lead 01-2119513221-59-xxxx; Tin 01-2119486474-28-xxxx

UFI: VFEK-4F0F-G00N-J85U

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

Use of the substance / preparation: Solder for soldering

1.3 Details of the supplier of the safety data sheet

Manufacturer / Supplier:

Wetec GmbH & Co. KG
Dönges-Str. 1
DE-42929 Wermelskirchen
Phone: +49 (0) 2196 / 97 56-0
E-Mail: info@wetec.de
Internet: www.wetec.de
Fax: … – 100

E-mail address of the qualified person: sicherheitsdatenblatt@wetec.de
Responsible department: Telephone: +49 (0) 2196 / 97 56 153

1.4 Emergency telephone number

Wetec: +49 (0) 2196 / 97 56-0 Mon-Fr. 08:00-16:00 CET

2 Possible hazards

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP / GHS Regulation)

Lact.; H362
Repr. 1A; H360FD
STOT RE 1; H372
Skin Sens. 1; H317

2.2 Label elements

Regulation (EC) No. 1272/2008 (CLP / GHS Regulation)

Pictograms

GHS08 GHS07

Signal word: Hazard, Warning

Hazard-determining component (s) for labelling:
lead, massive [particle diameter ≥ 1 mm]

Hazard statements

H360FD	May impair fertility. May cause harm to the unborn child.
H362	May cause harm to breastfed babies.
H372	Cause damage to central nervous system, blood and kidneys through prolonged or repeated exposure
H317	May cause an allergic skin reaction.

Safety instructions

P201	Obtain special instructions before use.
P260	Do not breathe dust/vapour/spray.
P263	Avoid contact during pregnancy / while nursing.
P280	Wear protective gloves / protective clothing / eye protection / face protection.
P308 + P313	In case of exposure or suspicion: Seek medical advice resp. medical attendance.
P332 + P313	If skin irritation occurs: Get medical advice / attention.

Supplemental labelling elements
“For business users only"

2.3 Other hazards

Soldering and smelting processes during which dust, smoke or vapours form may cause lead to be absorbed into the body to a sufficient extent as to be harmful to human health. Oxidation products (including lead compounds) may form on the surface of metallic lead.

3 Composition / information on ingredients

3.1 Substances

Not applicable.

3.2 Mixtures

Chemical characterization
Alloy of tin and lead

contains flux core up to 3.5% (natural resins, halogenated activated)

Ingredients

Substance	CAS -No.	EG no.	Content	Classification according to (EC) No.1272/2008	Routes of exposure, target organ, concrete impact
tin	7440-31-5	231-141-8	59,5 – 60,5 %	-	-
lead, massive [particle diameter ≥ 1 mm]	7439-92-1	231-100-4	Remainder	Repr. 1A; H360FD Lact.; H362 STOT RE1; H372	H372 - central nervous system, kidneys, haematological (blood) system
colophonium	8050-09-7	232-475-7	< 3,5 %	Skin Sens. 1; H317	skin

4 First Aid Measures

4.1 Description of first aid measures

After skin contact:
In case of burns immediately cool the burnt area for several minutes with cold running water. In case of serious burns cover the wound with sterile material. Seek medical advice resp. medical attendance.

After eye contact:
Wash the eye with water for several minutes while holding up the lid. Remove any existing contact lenses if possible. Continue rinsing.

Seek medical advice resp. medical attendance.

After swallowing:
Rinse mouth and drink plenty of water or milk. Seek medical advice resp. medical attendance.

After inhalation:
Ventilate or suck out the working areas sufficiently during soldering. The regulations of the institutions for statutory accident insurance and prevention, the rules of work safety and hygiene must be observed. Remove affected person to fresh air. In cases of sickness seek medical advice resp. medical attendance.

4.2 Most important symptoms and effects, both acute and delayed

Clinical manifestations of lead poisoning include weakness, irritability, asthenia, nausea, abdominal pain associated with constipation and anaemia.
Allergic reaction

4.3 Indication of any immediate medical attention and special treatment needed

Symptoms of poisoning can only occur after several hours.

5 Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Dry sand

Unsuitable extinguishing media
Water spray, Full water jet, foam

5.2 Special hazards arising from the substance or mixture

Hazardous products of combustion or resulting gases
Substance itself is not flammable. At the source of the fire, the action of heat on lead-containing alloys can produce harmful vapours and fumes. No warning of odours! Hazardous fumes in the event of fire outbreaks are lead fumes and lead oxide.

5.3 Advice for fire-fighters

Attention! Lead generates lead oxides as combustion gases. Wear self-contained breathing apparatus. Wear a protective suit.

Additional information

Suppress gases/vapours/mist with water spray jet. Prevent extinguishing water from penetrating into the surface water, ground water and soil!

6 Measures in case of unintentional release

6.1 Personal precautions, protective equipment and emergency procedures

Provide fresh air in closed rooms. Avoid dust formation. Do not breathe gas / fumes / vapour. Remove all uninvolved persons to windward (against the wind). Avoid contact with skin, eyes and clothing.

6.2 Environmental precautions

Make sure that the material cannot leak into the sewerage system/surface water/ground water. If penetrating into water, soil or drainage systems notify the respective authorities accordingly.

6.3 Methods and material for containment and cleaning up

Pick up by mechanical means (in as dry a state as possible). Conduct to suitable containers for recycling or disposal. Handle the collected material in accordance with the chapter on “Disposal”.

6.4 Reference to other sections

For information on personal protective equipment refer to Section 8. For information concerning disposal refer to Section 13.

7 Handling and storage

7.1 Precautions for safe handling

Precautions for safe handling
Ensure good ventilation, if necessary exhaustion, at the workplace. Do not breathe flue gases. The regulations of the employer’s liability insurance association must be observed in addition to hygiene regulations.

Protection against fire and explosion
No special measures required. The product is not combustible.

7.2 Conditions for safe storage, including any incompatibilities

Requirements as to storerooms and receptacles
No special requirements.

Information on storage with other products
Do not store together with:
- food, drink and animal feeding stuffs,
- compressed or liquefied gases or gases dissolved under pressure,
- substances liable to spontaneous combustion,
- substances which, in contact with water, emit flammable gases,
- other combustible or combustion supporting material,
- flammable solids

Further information on storage conditions
No special measures required.

7.3 Specific applications

Solder for soldering

8 Limitation and monitoring of exposure / personal protective equipment

8.1 Control parameters

Limit values at the workplace

TRGS 505
In the "Begründung zu Blei in TRGS 903" it is pointed out that the content of lead in the blood of exposed workers shows an insufficient correlation with lead in the air at the workplace, so that no occupational exposure limit value in air can be derived. Therefore, no occupational exposure limit value in air has been established in Germany.
The binding air limit value of 0.15 mg lead/m3 according to Directive 98/24/EC is to be regarded as the maximum upper limit in the air at the workplace.

TRGS 900
The Technical Rule for Hazardous Substances (TRGS 900) stipulates a workplace exposure limit value applicable to inorganic tin (IV) compounds in the inhalable fraction of 2 mg/m^3.

Biological limits

TRGS 903
Lead concentration in whole blood: 150 µg/l blood for men and women > 45 a
50 µg/l bood for women < 45 a

DNEL and PNEC values

DNEL values (employee)

End point	Threshold value	Protection objective, route of exposure	Use in	Exposure time
Lead, massive [particle diameter ≥ 1 mm] 7439-92-1				
DNEL	200 µg/l	Human, inhaled	Employees (industry)	chronic – systemic effects
DNEL	50 µg/l	Human, inhaled	Pregnancies	chronic – systemic effects
DNEL	20 µg/l	Human, inhaled	Child	chronic – systemic effects
Tin 7440-31-5				
DNEL	71mg/m³	Human, inhaled	Employees (industry)	chronic – systemic effects
DNEL	10 mg/kg bw/day	Human, dermal	Employees (industry)	chronic - systemic effects
DNEL	17 mg/m³	Human, inhaled	General population	chronic - systemic effects
DNEL	80 mg/kg bw/day	Human, dermal	General population	chronic - systemic effects
DNEL	5 mg/kg bw/day	Human, oral	General population	chronic – systemic effects

PNEC values

End point	Threshold value	Environmental compartment	Exposure time
Lead, massive [particle diameter ≥ 1 mm] 7439-92-1			
PNEC	2.4 µg/l	fresh water	short term (one time)
PNEC	186 mg/kg	freshwater sediment without bioavailability correction	short term (one time)

PNEC	49.7 mg/kg	freshwater sediment with bioavailability correction	short term (one time)
PNEC	3.3 µg/l	seawater	short term (one time)
PNEC	168 mg/kg	seawater sediment	short term (one time)
PNEC	100 µg/l	Wastewater treatment plant (STP)	short term (one time)
PNEC	10.9 mg/kg bw/day	oral - secondary poisoning (mammals)	short term (one time)
PNEC	212 mg/kg	soil	short term (one time)

Further information
In the case of activities involving lead and lead compounds, it should be noted that only part of the individual exposure of employees is caused by inhalation of lead dusts and lead fumes. Despite only a low concentration of lead in the air at the workplace, the biological limit value (BGW) can be exceeded. A significant part of the exposure may be caused by oral uptake via hand-mouth contact as a result of poor hygiene, while dermal uptake may be neglected. Hygiene includes operational and personal cleanliness as well as personal behaviors.

Requirements pertaining to Austria:
Limit value – Ordinance igdF
Threshold limit value: 0,1 mg lead/m^3 inhalable fraction/daily average value based on 8-hour shift
Threshold limit value: 0,4 mg leads/m^3 inhalable fraction/short-time value, maximum duration 15 min. as a mean value extending over the evaluation period and for a maximum of 4 times per shift

Information on the biological limit values pertaining to lead:
Council Directive 98/24/EC: 70 µg/dl
Employees exposed to the effects of lead and its compounds need to undergo medical/occupational precautionary check-ups (in Germany in accordance with the former G2 principle “Lead and its compounds (with the exception of lead alkyls)”. Moreover, the TRGS 505 Action Plan needs to be observed).

Requirements pertaining to Austria:
Ordinance governing health monitoring at the workplace idgF
Aptness:
Blood:
EPP: 120 µg/100 ml RBC
Blood-lead: 30 µg/100 ml

Urine:
ALA-U: 10 mg/l (Davis; males, females > 45 a)
6 mg/l (Davis; males, females ≤ 45 a)

Aptness with early follow-up examination:
Blood:
Blood-lead: 70 µg/100 ml (males, females > 45 a)
45 µg/l (females ≤ 45 a)

Urine:
ALA-U: 20 mg/urine (males, females > 45 a)
10 mg/l urine (females ≤ 45 a)

8.2 Limitation and monitoring of exposure

Never inhale dust, smoke or mist; refrain from eating, drinking and smoking at work; always wash your hands before break times. After finishing work it is recommendable to give the whole-body a thorough cleansing

Suitable technical control equipment
Ensure good ventilation, if necessary exhaustion, at the workplace. Do not breathe flue gases.

Personal protective equipment

Respiratory protection
When carrying out soldering work always ensure adequate ventilation. This is attainable by a local extraction system or a general exhaust-air system. Where workplace exposure limits are exceeded, suitable breathing apparatus (particulate filter P2) must be worn (observe wearing-life limits!).

Hand protection
Protective gloves (recommendable, for example, are leather or neoprene gloves).

Eye protection
Close-fitting safety goggles (DIN EN 166)

Body protection
Suitable protective clothing is essential.

General protective and hygiene measures
Keep well away from foodstuffs and fodder. Never eat or drink at work and refrain from smoking! Always wash your hands before break times and after finishing work. Avoid contact with the eyes and skin. Never inhale dust/smoke/aerosols. Use a separate storage place for protective clothing.

Limitation and monitoring of environmental exposure
One or more of the following measures can be adopted to restrict discharges into water:
- Chemical precipitation: Primarily used for metal ion deposits
- Sedimentation
- Filtration: Final cleaning stage
- Electrolysis: For low metal concentrations
- Reverse osmosis: Widely used method for separating dissolved metals
- Ion exchange: Final cleaning stage for separating heavy-metal ions from the process waste-water

One or more of the following measures can be adopted to restrict releases into the atmosphere:
- Electrostatic precipitation (flue gas cleaning) observing large distances away from electrical equipment: Electrostatic wet separators
- Centrifugal-force separators (cyclone units) with a fabric prefilter or bag filter: High-performance fine-dust filter (smelting, soldering): For attaining emission levels such as those achieved applying particle-filtering, membrane processes
- Ceramic and metal mesh filters PM 10; fine-dust particles are removed from the exhaust air
- Wet separators

When removing lead(compounds) from sewage treatment plants, the minimum quantity of 84% needs to be attained as stipulated in the CSR. Captured solids from the company's own waste-water treatment plant need to be assigned to metal recovery systems or a disposed of as hazardous waste. Sewage sludge is to be assigned to recycling, incineration or landfill systems or used as a fertilizer for the agricultural sector.

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

	solder	flux
Shape:	solid	solid
Colour:	silvery	light yellow to amber
Odour:	odourless	specific

pH – value:	n.a.	n.a.
Melting point/range:	183 - 190°C	80 – 100°C
Boiling point/range:	n.a.	n.a.
Flash point:	n.e.	~203°C
Inflammation temperature:	n.a.	n.a.
Decomposition temperature:	n.e.	n.e.
Density:	~8.5 g/cm³	
Specific density (at 20°C):		1.1 g/cm³
Spontaneous inflammability:	This product is not self-igniting.	
Explosion hazard	This product is not self-igniting.	
Solubility in water:	insoluble	
n.a. = not applicable	n.e. = not estimable	

9.2 Other information

No data available

10 Stability and reactivity

10.1 Reactivity

The material is at normal environmental conditions not reactive.

10.2 Chemical Stability

The material is at normal environmental conditions and under expected temperature and pressure conditions during storage and handling stabil.

10.3 Possible hazardous reaction

With nitric acid, formation of hazardous nitrous gases. Violent reaction to oxidising agents.

10.4 Conditions to be avoided

See section 7. Further information not available. No decomposition in case of appropriate use.

10.5 Materials to be avoided

No additional information available.

10.6 Hazardous decomposition products

Reacts with air and water and forms lead ions. Lead is unstable to alkalis and lime mortar.

11 Toxicological information

11.1 Information to toxicological effects

Toxicokinetic, metabolism and distribution

No data available.

Acute toxicity

Not classified as acutely toxic (based on available data, the classification criteria are not met)

Lead, massive [particle diameter ≥ 1 mm] 7439-92-1	
LD50/oral/rat	> 2.000 mg/kg
LD50/dermal/rabbit	> 2.000 mg/kg

LC50/inhalative/dust/rat/4h	> 5 mg/l
Tin 7440-31-5	
LD50/oral/rat	> 2.000 mg/kg BW/day
LD50/dermal/rabbit	> 2.000 mg/kg BW
LC50/inhalative/dust/rat/4h	> 5 mg/l

Irritation/corrosion to the skin
Based on available data, the classification criteria are not met

Serious eye damage / eye irritation
Based on available data, the classification criteria are not met.

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Carcinogenicity
Based on available data, the classification criteria are not met.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure
Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure
Based on available data, the classification criteria are not met.

Aspiration hazard
No data available

Delayed and immediate effects as well as well as chronic effects after short or long-term exposure
Oral or inhalation intake may result in the percentage of lead mobilised in the gastro-intestinal tract and present in the bowels being resorbed in the organism. Increased intake of lead compounds over a longer period of time may, among others, cause disorders to occur affecting the haemoglobin biosynthesis and lead to irreversible nerve damage.

Other disclosures
Solid lead is not toxic.

12 Ecological information

12.1 Toxicity

Lead, massive [particle diameter ≥ 1 mm] 7439-92-1	
LC50/96h./Fish (acute)	107 µg/l (exposure time: 96 h - Species: Oncorhynchus mykiss)

	Based on soluble lead salts; pH >7,5 – 8,5
	Based on available data, the classification criteria are not met
EC50/48h./Daphnia (acute)	170.5 µg/l (exposure time: 48 h - Species: Daphnia magna) Based on soluble lead salts; pH >7,5 – 8,5
	Based on available data, the classification criteria are not met
EC50/72h./other aquatic organisms (acute)	233.1 µg/l (exposure time: 72 h - Species: Pseudokirchneriella subcapitata)
	Based on available data, the classification criteria are not met
fish (chronic)	no data available
Daphnia (chronic)	no data available
other aquatic organisms (chronic)	no data available
Bacterial toxicity	no data available

12.2 Persistence and degradability

No information available

12.3 Bioaccumulation potential

No information available

12.4 Mobility in soil

No information available

12.5 Results of PBT and vPvB assessment

No information available

12.6 Harmful endocrine properties

This mixture contains lead, which is classified as a substance of very high concern (SVHC).

12.7 Other adverse effects

No information available

Other disclosures

Lead is quickly removed from the water column and binds itself to suspended soil and sediment particles. Lead is an inorganic substance and is not degradable. It persists in the environment. Biodegradation is not relevant for inorganic substances. Inorganic lead is regarded as bio-accumulative in the environment and can accumulate in aquatic and terrestrial plants and animals. Lead is hardly soluble and is thought to be adsorbed by soil and sediments. Mobility is deemed to be low.

13 Disposal considerations

13.1 Waste treatment methods

Product
A waste code number in pursuance of the European Waste Catalogue (AVV) needs to be allocated in consultation with the regional waste-disposal company or authority.

Disposal should take place in accordance with the respective national and regional regulations. Observe the obligation to furnish evidence! The unused product as well as residual quantities can be

recycled in lead-smelting works (specialised waste-disposal companies).

Contaminated packaging materials
Disposal in accordance with official regulations

Cleaned packaging materials
Non-contaminated and cleaned packaging materials can be used for recycling purposes

14 Transport regulations

14.1 UN- Number
No dangerous good in sense of ADR/RID/AND transport regulation.

No dangerous good in sense of IMDG transport regulation.

No dangerous good in sense of ICAO-TI/IATA-DGR transport regulation.

14.2 UN proper shipping name
No dangerous good in sense of ADR/RID/AND transport regulation.

No dangerous good in sense of IMDG transport regulation.

No dangerous good in sense of ICAO-TI/IATA-DGR transport regulation

14.3 Transport hazard class(es)
No dangerous good in sense of ADR/RID/AND transport regulation.

No dangerous good in sense of IMDG transport regulation.

No dangerous good in sense of ICAO-TI/IATA-DGR transport regulation

14.4 Packaging group
No dangerous good in sense of ADR/RID/AND transport regulation.

No dangerous good in sense of IMDG transport regulation.

No dangerous good in sense of ICAO-TI/IATA-DGR transport regulation

14.5 Environmental hazards
For information on environmental hazards, where relevant, see above.

14.6 Special precautions for users
No information available

14.7 Transportation in bulk in pursuance of Annex II to the MARPOL Convention and in accordance with the IBC Code
The product is not transported in bulk.

15 Information on legislation

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

EU regulations

Council Regulation (EC) No. 1907/2006 (REACH) Annex XIV (list of substances requiring authorisation)
According to the available data and/or information provided by the sub-suppliers, the product contains no substance(s) classified as requiring authorisation pursuant to the REACH

Regulation (EC) 1907/2006 Annex XIV.

REACH Candidate List of substances of very high concern (SVHC) for the authorisation procedure

According to the available data and/or according to the information provided by the pre-suppliers, the product contains the following substance(s) which is/are considered to be an eligible substance(s) for inclusion in Annex XIV (List of substances subject to authorisation) in accordance with Article 57 in conjunction with Article 59 of REACH Regulation (EC) 1907/2006:

No.	Name of the substance	CAS -No.	EC No.
1	**Lead, massive [particle diameter ≥ 1 mm]**	**7439-92-1**	**231-100-4**

Council Regulation (EC) No. 1907/2006 (REACH) Annex XVII: Restrictions to the production, placing on the market and use of certain hazardous substances, mixtures and products

The product contains the following substance(s) subject to the REACH Regulation (EC) 1907/2006 Annex XVII:

Name of the substance	CAS -No.	EC No.	No.
Lead, massive [particle diameter ≥ 1 mm]	**7439-92-1**	**231-100-4**	**30, 63**

Council Directive 2012/18/EU for the control of major accident-hazards involving hazardous substances

The product is not subject to the requirements of Annex I, Part 1 and 2

Other regulations

The national regulations are applicable to the use of this product.

National regulations

Water hazard classification

Class nwg

Source Classification in accordance with AwSV (Ordinance on Installations for the Handling of substances hazardous to water).

Storage category according to TRGS 510

10-13 Other combustible and non-combustible liquids and solids not allocated in LGK 1 - 8.

15.2 Chemical safety assessment

A chemical safety assessment has been carried out in respect of the following substance(s) in this mixture

CAS-No. 7439-92-1

16 Other information

16.1 Changes made since the last version

Changes to the text are identified as such in the margin of the page

16.2 Abbreviations and acronyms

AND: Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the international carriage of dangerous goods by inland waterways)
ADR: Accord européen sur le transport des marchandises dangereuses par Route
(European Agreement concerning the international carriage of dangerous goods by Road)
CAS: Chemical Abstracts Service
CLP: Regulation (EC) Nr. 1272/2008 for Classification, Labelling and Packaging of substances and mixtures
EC: European Community
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
IATA: International Air Transport Association
ICAO-TI: International Civil Aviation Organization-Technical Instructions
IMDG: International Maritime Code for Dangerous Goods
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%
LGK: Storage category
PBT: Persistent, bioaccumulative, toxic
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
RID: Règlement concernant le transport International ferroviaire des merchandises Dangereuses
(Regulations for the International Carriage of Dangerous Goods by Rail)
TRGS: Technical rules for hazardous substances (Germany)
vPvB: very persistent and very bioaccummulative

16.3 Important literature references and data sources

Data sources used to create the data sheet:
Regulation (EC) No. 1907/2006 (REACH), 1272/2008 (CLP / GHS Regulation), in the respective applicable version. EC Directives 2000/39/EC, 2006/15/EC and 2009/161/EU.
National workplace exposure limit values list of the respective countries in the relevant valid version.
Transport regulations in accordance with ADR, RID, IMDG and IATA in the relevant valid version.
Data sources that have been used for determining physical, toxicological and eco-toxicological data are quoted directly in the respective sections.

16.4 Classification for mixtures and used evaluation method according to Article 9 of Regulation (EC) No. 1272/2008

Physical hazards: Evaluation of test data acc. Annex I, Part 2
Health and Environmental Hazards: Calculation method acc. Annex I, part 3, 4 and 5.

The information given in this Safety Data Sheet reflects the latest knowledge ref. to our product. The Safety Data Sheet intends to describe the product with reference to its safety requirements. This does not imply a warranty that our product is of a specific quality in terms of liability or guarantee provisions and therefore, the information is without obligation.