GROSVENOR ELECTRONICS SUPPLIES UK
MATERIAL SAFETY DATA SHEET

HIGH PURITY SOLDER ALLOYS

1. PRODUCT & COMPANY IDENTIFICATION

Grosvenor Electronics Supplies (UK), Priory Tec. Park, Saxon Way, Hessle, East Yorkshire. HU13 9PB.

Product Identification : High Purity Tin/Lead Solder Alloys.

Trade Name : Ingots, Solid Wire, Pellets, Tinmans & Blowpipe

Uses : Hand or Machine Soldering.

2. COMPOSITION/INFORMATION ON INGREDIENTS.

Note: Solder Wire and Bar is considered to be an article and is not subject to the Classification (Hazard Information and Packaging for Supply) Regulations 1994, because it is not hazardous as supplied. However, this product may become hazardous in use and the information included in this data sheet reflects the hazards associated with solder reflow operations.

Alloy	Lead Content %	Alloy	Lead Content %
5/95	95.0	50EN	50.0
HMP	93.7	SAV1	48.5
2.5S	92.6	BI3	47.3
10/90	90.0	BI8	46.0
SN10	88.4	BI14	43.0
15/85	85.5	GS60B	40.4
20/80	80.7	60EN, SN60 60P	40.0
45D	80.1	59S	39.0
25/75	76.0	SAV6	38.2
29ANT	70.6	63EN, SN63	37.3
30EN	70.6	TLS4	36.5
GRDD	69.2	SN62	36.1
35EN	65.0	70/30	30.1
BI10	63.5	80/20	20.3
40EN, SN40	60.7	85/15	15.0
45EN	55.0	90/10	10.3

Component	CAS NO	Classification Symbol	Risk Phrases
Lead Metal	7439-92-1	-	-
Antimony Metal	7440-36-0	-	-

3. HAZARDS IDENTIFICATION.

Solder alloys containing lead give off negligible lead fume at normal soldering temperatures and at temperatures up to 500°C. Lead is harmful if absorbed into the body and can cause lead poisoning, birth defects and other reproductive harm.

4. FIRST AID MEASURES

Inhalation : Providing soldering temperature are kept below 500ºC these products will not give off harmful fumes. Any flux used with the products may generate irritating or harmful fumes. The safety data sheet for the flux should be read to ascertain health hazards and appropriate first aid measures.

Ingestion : Seek Medical Advice

Skin contact : The constituents of the alloys are not absored through the skin. Contamination of the skin during handing should be removed by washing hands with soap and warm water particularly before eating, drinking or smoking.

Eye contact : Fluxes used with these products may generate fumes which may irritate the eyes. Fluxes may spit during soldering. Contact with molton or hot solder will cause severe eye damage. Flush immediately with plenty of water. In cases where spitting flux has entered the eye seek medical attention.

5. FIRE FIGHTING

Extinguishers Suitable: dry chemical, carbon dioxide, water spray or foam
Unsuitable: water jet

Temperatures over 500ºC may produce heavy metal dust, fumes and/or vapours. Fire fighters should wear full protective clothing and positive pressure breathing appartatus.

6. ACCIDENTAL RELEASE MEASURES.

Not applicable.

7. HANDLING - STORAGE

Avoid inhaling the fumes emitted by the fluxes used with these products. Ensure that the general area is well ventilated. Wash hands with soap and water after handling solder, particularly before eating, drinking or smoking. The products should be stored in a cool, dry area. Keep out of the reach of children and away from food and drink.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

In normal soldering operations where the temperature is below 500°C the exposure to lead will be minimal and the risks from the toxic effects of lead insignificant. (Ref: *Approved Code of Practice supporting the Control of Lead at Work Regulations.)* Extraction should be provided to control exposure to flux fumes. Suitable examples include bench top, soldering iron tip extraction or an extraction arm.

Occupational Exposure Limits

Substance	**Long term exposure limit (8 hour TWA)**	**Short term exposure limit (15 minute)**
Lead *	0.15 mg/m³ (MEL)	-

* From appendix 1 of the Approved Code of Practice supporting the Control of Lead at Work Regulations.

Employees should be under medical surveillance if the risk assesment made under the Control of Lead at Work Regulations indicates they are likely to be exposed to significant concentrations of lead, or if an Employment Medical Advisor or appointed doctor so certifies.

A women employed on work which exposes her to lead should notify her employer as soon as possible if she becomes pregnant. The Employment Medical Advisor/Appointed Doctor should be informed of the pregnancy.

Under the Management of Health and Safety at Work (Amendment) Regulations, employers are required to assess the particular risks to health at work of pregnant workers and workers who have recently given birth or who are breast feeding.

Respiratory Protection: Necessary if there is a risk of exposure to flux fumes.

Eye Protection **:** Operators should wear safety glasses or goggles to protect the eyes from spitting flux or if there is a risk of contact with molton or hot solder.

Hand Protection **:** Heat resistance leather gloves should be worn if there ia a risk of contact with molten or hot solder

9. PHYSICAL AND CHEMICAL DATA

Appearance	:	Silver-white to grey bars, anodes, sticks, pellets or solid wires
Odour	:	Odourless at ambient temperatures.
Boiling range	:	The vapour pressure of lead may be significant above 500°C
Solubility in Water	:	Insoluble.

Alloy	Liquidus ºC	SolidusºC	Density	Alloy	LiquidusºC	SolidusºC	Density
5/95	315	300	10.8	**Bi10**	220	136	10.1
HMP	301	296	11.1	**SAV1**	215	183	8.9
2.5S	300	300	11.1	**50EN**	212	183	8.9
10/90	299	275	10.5	**85/15**	212	183	7.7
SN10	299	268	10.6	**80/20**	200	183	7.9
15/85	288	227	10.2	**Bi3**	195	175	8.9
20/80	275	183	10.0	**Bi8**	190	170	9.1
45D	270	178	10.3	**SAV6**	190	183	8.5
25/75	265	183	9.8	**60EN, SN60,**	188	183	8.5
30EN	255	183	9.6	**GS60B**	188	183	8.5
29Ant	248	185	9.7	**70/30**	188	183	8.2
GRDD	248	183	9.6	**59S**	183	183	8.5
35EN	245	183	9.5	**63EN, SN63**	183	183	8.4
40EN, SN40	234	183	9.3	**TLS4**	182	179	8.2
45EN	224	183	9.1	**SN62**	179	179	8.5
90/10	224	183	7.5	**Bi14**	168	136	9.2

10. STABILITY - REACTIVITY

Conditions to Avoid

If solder is exposed to temperatures above 500°C then lead dust, fume and/or vapour may be produced. Contact of water with molton solder will cause molten metal to be violenty ejected.

Materials to Avoid

Solder will react with concentrated nitric acid to release toxic fumes of nitric oxide, which oxidises to nitrogen dioxide, a red gas with a pungent odour. If personnel are exposed to these gases then immediate medical attention should be sought, as symptoms can be delayed for a considerable time and can be fatal.

Under reducing conditions antimony containing alloys may form the toxic gas stibline (antimony trihydride.)

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Lead can cause weakness, pains in the joints, vomiting, loss of appetite and stupor.

Chronic Toxicity

Lead can cause weakness, insomnia, headache and possible paralysis. Chronic overexposure to lead may result in damage to the blood forming, nervous, urinary and reproductive systems. Lead is classified as a 2B carcinogen by the IARC (1987), i.e. evidence of carcinogenicity is adequate in animals but inadequate for humans. Severe lead toxicity has long been known to cause sterility, abortion and neonatal mortality and morbidity.

12. ECOLOGICAL INFORMATION

Lead is not degradable and will persist in the environment. Lead is insoluble in water and is not attacked by most inorganic acids and bases.

13. DISPOSAL CONSIDERATIONS

Wherever possible unwanted solder should be recycled for recovery of metal. Otherwise disposal should be in accordance with local and national legislation. In the UK this is the Control of Pollution Act 1974, the Environmental Protection Act 1990 and regulations made under them.

14. TRANSPORT INFORMATION

Solder alloys are not classified as hazardous for transport.

15. REGULATORY INFORMATION

Classification according to the Chemicals (Hazard information and Packaging for Supply) Regulations 1994:

Tin/lead solder alloy is considered to be an article and is not subject to the above regulations. However, it is recommended that the following information be included on labels:

Contains lead which may harm your health. Lead can cause birth defects and other reproductive harm.

Regulations forbid the use of lead containing solder in any private or public drinking water supply system.

After handling solder wash hands with soap and water before eating, drinking and smoking.

Keep out of the reach of children.

Applicable EC Directives

Directive 82/605/EEC on the protection of workers from the risks related to the exposure to metallic lead and its ionic compounds at work.

Directive 80/1107/EEC on the protection of workers from the risk related to physical, chemical and biological agents at work.

Directive 92/85/EEC on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding

Applicable UK Legislation

The Health and Safety at Work etc Act 1974
The Control of Lead at Work Regulation 1998
The Control of Substances Hazardous to Health Regulations 1999
The Management of Health and Safety at Work Regulations 1999.

The information contained in this safety data sheet is accurate to the best of knowledge and belief of Grosvenor Electronics Supplies (UK). As we cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, are used this safety data sheet cannot constitute the user's assessment of workplace risk. Users are advised to make their own test to determine the safety and suitability of each product or product combination for their own purposes.

16. OTHER INFORMATION

Recommended Uses

This safety data sheet covers a range of alloys in the form of wire and bar. Reference should be made to the Grosvenor Data sheets or Technical Department for further information.

Further Detailed Guidance from the UK Health and Safety Executive

HS(G)37: An Introduction to local Exhaust Ventilation
HS(G)53: Respiratory Protective Equipment – a Practical Guide for Users
HS(G)97: A Step by Step Guide to the COSHH Regulations

Approved Code of Practice to the Control of Lead at Work Regulations
Approved Code of Practice – Management of Health and Safety at Work
General Approved Code of Practice to the COSHH Regulations

EH40: Occupational Exposure Limits (revised annually)

This safety data sheet is based on the requirement of the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994, (Commission Directive 91/155/EEC, as amended by Directive 93/112/EEC)

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