

| 4. HEALTH & HAZARD INFORMATION | |
|--------------------------------|-----|
| HAZARDS IDENTIFICATION | N.A |

| 5. FIRE AND EXPLOSION HAZARD INFORMATION | |
|--|---|
| FLASH POINT | N.A °C |
| AUTO-IGNITION TEMPERATURE | N.A °C |
| EXPLOSION LIMIT IN AIR, % | LOWER N.A °C |
| | UPPER N.A °C |
| SUITABLE EXTINGUISHING MEDIA | Use any means of extinction appropriate for surrounding fire conditions such as water spray (Do not use if metal is molten), carbon dioxide, dry chemical, or foam. |

| 6. PERSONEL PROTECTIVE EQUIPMENT | |
|----------------------------------|--|
| RESPIRATORY PROTECTION | Where alloy dust or fumes are generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH-approved respiratory protection equipment |
| HAND PROTECTION | Where hot or molten metal is handled, heat resistant gloves. |
| EYE PROTECTION | Goggles or face shield should be worn where fume or dust is generated. |
| OTHER | Use adequate local or general ventilation to maintain the concentration of fumes in the working environment well below recommended occupational exposure limits for tin. Supply sufficient replacement air to make up for air removed by the exhaust system. |

| 7. FIRST AID MEASUREMENT | |
|--------------------------|--|
| AFTER INHALATION | Remove to the fresh air. |
| AFTER SKIN CONTACT | Wash off with plenty of water. Remove contaminated clothing. |
| AFTER EYE CONTACT | Rince out with plenty water for at least 10 minutes with eyelid held wide open . Summon eye specialist. |
| AFTER SWALLOWING | Immediately summon doctor. |

| 8. STABILITY AND REACTIVITY | |
|----------------------------------|---|
| CHEMICAL STABILITY | Solid state of alloy is stable under normal temperatures and pressures. |
| CONDITION TO BE AVOID | Strong heating. |
| SUBSTANCE TO BE AVOID | Ammonium compounds, halogen-halogen compound, oxidizing agent, acid |
| HAZARDOUS DECOMPOSITION PRODUCTS | At high temperature tin oxide fumes may be generated. |
| HAZARDOUS POLYMERIZATION | Will not occur. |

9. STORAGE AND HANDLING

Store in a dry, covered area away from incompatible materials and food or feedstuffs. Solder bar which moisture contained should be dried before inserting in a molten solder bath. Otherwise, entrained moisture could expand explosively and spatter molten metal out of the bath. Follow good industrial hygiene and housekeeping practices. Do not eat, drink or smoke while working with this material. Wash hands before eating, drinking or smoking in appropriate, designated areas.

10. ACCEDENTAL RELEASE MEASURES

SPILL AND LEAK
PROCEDURE

Allow to solidify. Forward for disposal. Cleand up affected area.

DISPOSAL METHOD

Material is recycleable. Do not allow to enter sewerage system.

11. DISPOSAL CONSIDERATIONS

This material must be disposed of in accordance with the respective national regulations.

Note

N.A. : No Applicable

N.I. : No Information

TLV-TWA : Threshole Limit Value - Time Weighted Average

LD50 : Lethal dose

Specification No.: SPSDB049/Rev.01

Attn:

Customer Name:

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PRODUCT SPECIFICATION

Of

LEAD FREE TIN BALL

1. Product Description

Product Type: Lead Free Solder Ball
 Alloy Type: Pure Tin
 Diameter: Refer to Item No.4
 Packing Size: 10 Kgs.
 Product Code: TIN BALL

2. Specification of solder

| Compositions | Specification, % WT |
|----------------|---------------------|
| Tin (Sn) | 99.85 min. |
| Lead (Pb) | 0.05 max. |
| Antimony (Sb) | 0.04 max. |
| Copper (Cu) | 0.04 max. |
| Bismuth (Bi) | 0.03 max. |
| Zinc (Zn) | 0.005 max. |
| Iron (Fe) | 0.01 max. |
| Aluminium (Al) | - |
| Arsenic (As) | 0.05 max. |
| Silver (Ag) | 0.01 max. |
| Cadmium (Cd) | 0.001 max. |

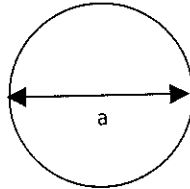
Remark: Some of specification value in this table may be changed depend on establishment of environmental or quality agreement such as RoHS, JIS standard, ASTM standard etc.



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3. Physical Properties of Solder(For information only)

| | |
|---------------------------------------|-------------|
| Solidus Temperature, °C: | Approx. 232 |
| Liquidus Temperature, °C: | Approx. 232 |
| Specific gravity, g/cm ³ : | Approx. 7.3 |

4. Shape, dimension and weight**Shape of ball****Dimension of ball**

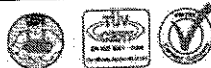
| Diameter, a | Specification, mm | Weight, g |
|--------------|-------------------|--------------|
| 15 mm | 15 ± 1 | Approx. 12.5 |
| 25 mm (1") | 25 ± 1 | Approx. 58 |
| 1.5 " | 38 ± 1 | Approx. 209 |
| 2.5 " | 50 ± 1 | Approx. 475 |

5. Storage Condition

Store in a dry, covered area and store away from incompatible materials, food or feedstuffs. Solder ball which moisture contained should be dried before inserting in a molten solder bath.

6. Health and Hazard Information

Wear a chemical mask if the operators are allergic to the fumes released during soldering.
For more information, please refer to Material Safety Data Sheet.

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REVISION

| Name of product : LEAD FREE TIN BALL | | Specification No. : SPSDB049/Rev.01 | |
|--------------------------------------|----------------|-------------------------------------|--------|
| Revision date | Revision point | Reason of revision | Remark |
| 28-Sep-06 | New issued | - | |
| 01/02/2007 | Change format | - | |
| | | | |

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