MULTICORE SOLDERS LIMITED

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Ref: SD0217 RS 685-005; 685-011; 685-027; 685-033

Material Safety Data Sheet
Product Information

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name Multicore Tin/Lead Solder Wire containing Modified Rosin-Based Fluxes

Multicore flux cored solder wire is identified by the alloy and flux codes shown below. The flux code can be found under the work 'Type' on the label.

Alloys:

Tin/Lead: 5/95, 10/90. 15/85, 20/80, 30/70, 30EN, 35/65, 40/60, 40EN, 45/55, 45EN, 50/50, Sn50, 50EN, 60/40, Sn60, 60EN, 63/37, Sn63, 63EN

Tin/Lead/Silver: HMP, Sn62, TLS4

Tin/Lead/Copper: Savbit No.1, Savbit No.6

Tin/Lead/Bismuth: Bi14

Flux Types: 2005, X32, X38, X39, X42

Manufacturer Multicore Solders Ltd, Kelsey House, Wood Lane End, Hemel Hempstead, Herts, HP2 4RQ, United Kingdom
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2. COMPOSITION / INFORMATION ON INGREDIENTS

Alloy	*Liquidus*	*Solidus*	*Density*	*Lead Content % max.*	*Rosin Content % max.*
5/95	315	300	10.8	95.0	3.5
HMP	301	296	11.1	92.5	3.5
10/90	299	275	10.5	90.0	3.5
15/85	288	227	10.2	85.6	3.5
20/80	275	183	10.0	80.6	3.5
30/70, 30 EN	255	183	9.7	70.6	3.5
35/65	245	183	9.5	65.1	3.5
40/60, 40 EN	234	183	9.3	60.7	3.5
45/55, 45 EN	224	183	9.1	55.7	3.5
Savbit No.1	215	183	8.9	48.4	3.5
50/50, Sn50, 50 EN	212	183	8.9	50.7	3.5
Savbit No.6	190	183	8.5	38.7	3.5
60/40, Sn60, 60 EN	183	183	8.5	40.8	3.5
63/37, Sn63, 63 EN	183	183	8.4	36.8	3.5
Sn62,TLS4	179	179	8.5	36.5	3.5
Bi14	168	136	9.2	44.5	3.5

Component	*CAS No.*	*Classification Symbol*	*Risk Phrases*
Lead metal	7439-92-1	-	-
Modified rosin	*	Xn	R42/43

* The CAS number is variable and depends on the exact identity of the modified rosins used. In the absence of data indicating that modified rosins are not sensitisers, Multicore Solders has classified them as Harmful, with Risk Phrase R 42/43.

Risk phrases

R42/43 May cause sensitisation by inhalation and skin contact

3. HAZARDS IDENTIFICATION

Inhalation of the flux fumes given off at soldering temperatures will irritate the nose and throat. Repeated or prolonged exposure to flux fumes may cause an allergic reaction leading to occupational asthma. Skin exposed to flux fume may develop irritation and rash. 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 Flux fumes emitted during soldering will irritate the nose and throat and may cause an asthmatic type reaction.

Remove patient to fresh air. Obtain medical attention if there is any respiratory distress.

Ingestion Seek medical advice.

Skin Contact Modified rosin and the flux fume may cause a rash to develop.

Wash hands with soap and water after handling solder wire. If any skin irritation develops seek medical attention.

Eye Contact Flux fumes may irritate the eyes. The flux may spit during soldering.

Flush ***immediately*** with plenty of water. In cases where spitting flux has entered the eye seek medical attention.

5. FIRE FIGHTING MEASURES

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

Temperatures above 500°C may produce heavy metal dust, fumes and /or vapours. The flux will give rise to irritating fumes. Fire fighters should wear full protective clothing and positive pressure breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Not applicable.

7. HANDLING AND STORAGE

The fumes produced during soldering should be extracted away from the breathing zone of the operators. Avoid inhaling flux fumes. Ensure that the general area is well ventilated. Wash hands with soap and water after handing solder, particularly before eating, drinking or smoking. This product should be stored in a cool, dry area. Keep out of 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. 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 [1]	0.15 mg/m^3 (MEL)	-
Rosin flux fume (as resin acids)[2]	0.05 mg/m^3 (MEL)	0.15 mg/m^3 (sensitiser)

1. *From Appendix 1 of the Approved Code of Practice supporting the Control of Lead at Work Regulations*
2. *EH40 Occupational Exposure Limits* (revised annually)

Employees should be under medical surveillance if the risk assessment 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 woman 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 high concentrations of flux fumes.

Eye Protection: Operators should wear safety glasses or goggles to protect the eyes from spitting flux.

Under the Control of Substances Hazardous to Health Regulations 1994, there is a requirement for personnel who are exposed to substances hazardous to health to be under appropriate health surveillance. Guidance on this can be found in the HSE publication *Preventing Asthma at Work - How to Control Respiratory Sensitisers.*

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Silver-white to grey alloy wire
Odour	Odourless at ambient temperatures
Boiling range	Flux chars above 250°C. The vapour pressure of lead may be significant above 500°C
Solubility in water	Insoluble

10. STABILITY AND REACTIVITY

Conditions to Avoid

If solder is exposed to temperatures above 500°C then lead dust, fume and/or vapour may be produced.

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.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

The flux fumes produced during soldering will irritate the nose, throat and respiratory system. For personnel that have become sensitised to modified rosin fumes, further exposure can cause symptoms of asthma (attacks of wheezing, chest tightness and breathlessness), alveolitis (breathlessness, and flu-like symptoms), or rhinitis and conjunctivitis (runny or stuffy nose and watery or prickly eyes typical of hay fever.) Modified rosin and the flux fume can also cause sensitisation by skin contact causing skin rash, weals and / or pustules to develop.

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

Chronic Toxicity

Prolonged or repeated exposure to modified rosin flux fume may cause some workers to develop an allergic reaction leading to occupational asthma. Cases of occupational asthma due to inhalation of modified rosin fumes produced from solder fluxes are reportable under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995.

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 for 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 wire is not classified as hazardous for transport.

15. REGULATORY INFORMATION

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

Flux cored solder wire 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.

Avoid breathing fumes given out during soldering. Flux fumes may irritate the nose, throat and lungs and may after prolonged/repeated exposure give an allergic reaction (asthma.)

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

Keep out of 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 exposure 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 Regulations 1998
The Control of Substances Hazardous to Health Regulations 1994
The Management of Health and Safety at Work Regulations 1992
The Management of Health and Safety at Work (Amendment) Regulations 1994
The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995

The information presented in this safety data sheet is accurate to the best of knowledge and belief of Multicore Solders Ltd. 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 tests 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 flux cored solder wires with halide and halide-free activation.

Reference should be made to the Multicore Technical Data Sheets or to the Multicore Technical Sales Team 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) 61: Surveillance of People Exposed to Health Risks at Work
HS(G) 97: A Step by Step Guide to the COSHH Regulations

L55 Preventing Asthma at Work: How to Control Respiratory Sensitisers
L73 A Guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995

MS24: Medical Aspects of Occupational Skin Diseases
MS25: Medical Aspects of Occupational Asthma

Approved Code of Practice - Management of Health and Safety at Work
General Approved Code of Practice to the COSHH Regulations
Health Surveillance Under COSHH: Guidance for Employers

EH26: Occupational Skin Diseases: Health and Safety Precautions
EH40: Occupational Exposure Limits (revised annually)

IND(G)95L Respiratory Sensitisers: A Guide for Employers
IND(G)172L Breathe Freely - A Worker's Information Card on Respiratory Sensitisers
IND(G)248L Solder fume and you
IND(G)249L Controlling health risks from rosin (colophony) based solder fluxes

Engineering Sheet No 17 Assessing exposure to rosin (colophony) based solder flux fume

MDHS 83 Methods for the Determination of Hazardous Substances. Resin acids in rosin (colophony) solder flux fume

This safety data sheet complies with the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994, (Commission Directive 91/155/EEC, as amended by Directive 93/112/EEC.)

Reason for revision: To include the new occupational exposure limit for rosin flux fume and to amend the list of alloys to reflect the current product range.