Health and Safety Data Sheet

1. Identification of Substance/Preparation and of the Supplier

Description : CEL tin/lead solder wire containing rosin based flux 16, 18, 20, 22, 24 and 26swg.

Part No./Code : Single Core Flux

CEL Part No.	Anglia Order Code	CEL Part No.	Anglia Order Code
41A501C/1	680116 / 680216	41A501F/1	680122 / 680222
41A501D/1	680118 / 680218	41A501G/1	680124 / 680224
41A501E/1	680120 / 680220	41A501H/1	680126 / 680226

Multiple Core Flux

CEL Part No.	Anglia Order Code	CEL Part No.	Anglia Order Code
40A501D/1	680418 / 680518	40A252D	680318
40A501F/1	680422 / 680522	40A252F	680322

Low Residue Flux

CEL Part No.	Anglia Order Code	CEL Part No.	Anglia Order Code
42A501D/1	680618 / 680718	42A501F/1	680622 / 680722

Supplier : Anglia (refer to sheet 4 for contact details).

2. Composition / Information on Ingredients

Note : Solder wire 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 in this data sheet reflects the hazards associated with solder reflow operations.

Chemical Breakdown : Tin 60%, Lead 40% typical values.
Flux (non-corrosive activated rosin) 2%, Halide content 0.5%

Low residue type:
Flux (non-corrosive semi-actvated rosin) 1%, Halide content 0.0%

Component	CAS No.	Classification Symbol	Risk Phrases
Lead metal	7439-92-1	-	-
Rosin	8050-09-7	Xn	R42/43*

*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, throat and respiratory system. Exposure to flux fumes may cause an allergic reaction leading to occupational asthma. Flux fumes produced during soldering may irritate the skin and cause a rash to develop. Solder alloys containing lead give off negligible lead fumes 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 : Not relevant.

Skin Contact : Rosin and rosin fumes produced during soldering 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 fluxes 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

Handling:

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 handling solder, particularly before eating, drinking or smoking.

Storage:

The products 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. (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[1]	0.15mg/m3 (MEL)	-
Rosin flux fume (as resin acids)[2]	0.05mg/m3 (MEL)	0.15mg/m3 (sensitiser)

1. From Appendix 1 of the Approved Code of Practice supporting the Control of Lead at Work Regulations.
2. From MDHS 83: Methods for the Determination of Hazardous Substances. Resin acids in rosin (colophony) solder flux fume.

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 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.

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	: Solder alloy wire, grey in colour.
Odour	: Not perceptable at ambient temperatures.
Melting Range	: 183°C to 188 °C. 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, fumes 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 :
The flux fumes produced during soldering will irritate the nose, throat and respiratory system. For personnel that have become sensitised to 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). Rosin can also cause sensitisation by skin contact causing skin rash, weals and/or pustules to develop. Skin exposed to flux fumes may be affected by irritation and rash. Lead can cause weakness, pains in the joints, vomiting, loss of appetite and stupor. Prolonged or repeated exposure to rosin flux fume may cause some workers to develop respiratory sensitisation. Cases of occupational asthma due to inhalation of rosin fumes produced from solder fluxes are reportable under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995.

Chronic :
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 in 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 provided in this Health & Safety Data Sheet is accurate to the best of our knowledge and belief. 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 Data Sheet cannot constitute the user's assessment of workplace risk. Users are advised to make their own tests to determine the safety and suitablity of each product or product combination for their own purposes.

16. Other Information

Recommended Uses :
Reference should be made to Anglia Product Data covering CEL Rosin Flux-Cored Solder Wire.

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	Health Surveillance 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 Health and Safety Data Sheet is based on the requirements of the Chemicals (Hazard Informationand Packaging for Supply) Regulations 1994, (Commission Directive 91/155/EEC, as amended by Directive 93/112/EEC). It was revised on April 16th 2007, and replaces all previous editions.

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