

# Safety Data Sheet

## Micro-Fuel Cell, Class A-2C

SDS Revision Date:

10/05/2016

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

**Product Identity** Micro-Fuel Cell, Class A-2C

**Alternate Names** Micro-Fuel Cell, Class A-2C

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

**Intended use** See Technical Data Sheet.

**Application Method** See Technical Data Sheet.

#### 1.3. Details of the supplier of the safety data sheet

**Company Name** Teledyne Instruments/Analytical Instruments  
16830 Chestnut Street  
Industry, CA 91748. USA

#### Emergency

**CHEMTREC (USA)** (800) 424-9300

**Customer Service: Teledyne Instruments/Analytical Instruments** 626-934-1500  
Technical Support: 626-934-1673  
Environment, Health and Safety: 626-934-1592

### 2. Hazard identification of the product

#### 2.1. Classification of the substance or mixture

Skin Irrit. 3;H316 Causes mild skin irritation. (Not adopted by US OSHA)

Carc. 1A;H350 May cause cancer.

Aquatic Acute 1;H400 Very toxic to aquatic life.

#### 2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.



**Danger**

H316 Causes mild skin irritation.

H350 May cause cancer.

H400 Very toxic to aquatic life.

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### [Prevention]:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe mist / vapors / spray.

P262 Do not get in eyes, on skin, or on clothing.

P273 Avoid release to the environment.

P281 Use personal protective equipment as required.

### [Response]:

P301+310 IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician.

P308+313 IF exposed or concerned: Get medical advice / attention.

P331 Do NOT induce vomiting.

P332+313 If skin irritation occurs: Get medical advice / attention.

P391 Collect spillage.

### [Storage]:

P405 Store locked up.

### [Disposal]:

P501 Dispose of contents / container in accordance with local / national regulations.

## 3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Lead Compounds (as Pb) CAS Number: 0007439-92-1	75 - 100	Carc. 1A;H350 Aquatic Acute 1;H400	[1][2]
Acetic acid CAS Number: 0000064-19-7	1.0 - 10	Flam. Liq. 3;H226 Skin Corr. 1A;H314 Eye Irrit. 2;H319	[1][2]
Potassium acetate CAS Number: 0000127-08-2	1.0 - 10		[1]

[1] Substance classified with a health or environmental hazard.

[2] Substance with a workplace exposure limit.

[3] PBT-substance or vPvB-substance.

\*The full texts of the phrases are shown in Section 16.

## 4. First aid measures

### 4.1. Description of first aid measures

#### General

In all cases of doubt, or when symptoms persist, seek medical attention.  
Never give anything by mouth to an unconscious person.

#### Inhalation

Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate

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**Eyes** medical attention. Give nothing by mouth.  
Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.

**Skin** Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.

**Ingestion** If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

### 4.2. Most important symptoms and effects, both acute and delayed

#### Overview

Effects of overexposure:

Ingestion: The electrolyte could be harmful or fatal if swallowed.

Eye: The electrolyte is corrosive; eye contact could result in permanent loss of vision.

Dermal: The electrolyte is corrosive; skin contact could result in a chemical burn.

Inhalation: Liquid inhalation is unlikely.

Signs/symptoms of exposure: Contact with skin or eyes will cause a burning sensation and/or feel soapy or slippery to touch.

Possible cancer hazard. Contains an ingredient which may cause cancer based on animal data (See Section 3 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure.

See section 2 for further details.

#### Skin

Causes mild skin irritation. (Not adopted by US OSHA)

#### Chronic effects

Medical conditions aggravated by exposure: Persons with pre-existing skin disorders or eye problems, or impaired respiratory function may be more susceptible to the effects of these substances.

Carcinogenicity: NTP Annual Report on Carcinogens: Not listed LARC Monographs: Not listed. OSHA: Not listed.

Other health hazards: Lead is listed as a chemical known to the State of California to cause birth defects or other reproductive harm. As the cell is used, lead acetate is formed in the electrolyte. Lead acetate is listed as a chemical known to the State of California to cause cancer.

## 5. Fire-fighting measures

### 5.1. Extinguishing media

Recommended extinguishing media; alcohol resistant foam, CO<sub>2</sub>, powder, water spray.  
Do not use; water jet.

### 5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: No hazardous decomposition data available.

Do not breathe mist / vapors / spray.

Do not get in eyes, on skin, or on clothing.

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### 5.3. Advice for fire-fighters

The electrolyte in the Class A-2C Micro-Fuel Cells is not flammable. There are no fire or explosion hazards associated with Class A-2C cells.

Wear NIOSH/OSHA approved self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

ERG Guide No. ----

## 6. Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

### 6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

### 6.3. Methods and material for containment and cleaning up

Wipe down the area several times with a wet paper towel. Use a fresh towel each time. Contaminated paper towels are considered hazardous waste.

## 7. Handling and storage

### 7.1. Precautions for safe handling

Protective measures during cell replacement:

Before opening the bag containing the sensor cell, check the sensor cell for leakage. If the sensor cell leaks, do not open the bag. If there is liquid around the cell while in the instrument, put on gloves and eye protection before removing the sensor cell.

See section 2 for further details. - [Prevention]:

### 7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.

Incompatible materials: Avoid contact between the sensor electrolyte and strong acids and oxidizing agents.

See section 2 for further details. - [Storage]:

### 7.3. Specific end use(s)

No data available.

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### 8. Exposure controls and personal protection

#### 8.1. Control parameters

Exposure			
CAS No.	Ingredient	Source	Value
0000064-19-7	Acetic acid	OSHA	TWA 10 ppm (25 mg/m <sup>3</sup> )
		ACGIH	TWA: 10 ppm STEL: 15 ppm
		NIOSH	TWA 10 ppm (25 mg/m <sup>3</sup> ) ST 15 ppm (37 mg/m <sup>3</sup> )
		Supplier	No Established Limit
0000127-08-2	Potassium acetate	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
0007439-92-1	Lead Compounds (as Pb)	OSHA	[1910.1025] TWA 0.050 mg/m <sup>3</sup>
		ACGIH	TWA: 0.05 mg/m <sup>3</sup> R, 2B, 2A
		NIOSH	TWA (8-hour) 0.050 mg/m <sup>3</sup>
		Supplier	No Established Limit

#### Carcinogen Data

CAS No.	Ingredient	Source	Value
0000064-19-7	Acetic acid	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000127-08-2	Potassium acetate	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-92-1	Lead Compounds (as Pb)	OSHA	Select Carcinogen: Yes
		NTP	Known: No; Suspected: Yes
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;

#### 8.2. Exposure controls

##### Respiratory

If workers are exposed to concentrations above the exposure limit they must use the appropriate, certified respirators.

##### Eyes

Chemical splash goggles.

##### Skin

Wear overalls to keep skin contact to a minimum. Impervious rubber gloves

##### Engineering Controls

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

##### Other Work Practices

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

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See section 2 for further details. - [Prevention]:

### 9. Physical and chemical properties

<b>Appearance</b>	Article Solid
<b>Odor</b>	None
<b>Odor threshold</b>	Not Measured
<b>pH</b>	Not Measured
<b>Melting point / freezing point</b>	Not Measured
<b>Initial boiling point and boiling range</b>	Not Measured
<b>Flash Point</b>	Not Measured
<b>Evaporation rate (Ether = 1)</b>	Not Measured
<b>Flammability (solid, gas)</b>	Not Applicable
<b>Upper/lower flammability or explosive limits</b>	<b>Lower Explosive Limit:</b> Not Measured <b>Upper Explosive Limit:</b> Not Measured
<b>Vapor pressure (Pa)</b>	Not Measured
<b>Vapor Density</b>	Not Measured
<b>Specific Gravity</b>	Not Measured
<b>Solubility in Water</b>	Insoluble
<b>Partition coefficient n-octanol/water (Log Kow)</b>	Not Measured
<b>Auto-ignition temperature</b>	Not Measured
<b>Decomposition temperature</b>	Not Measured
<b>Viscosity (cSt)</b>	Not Measured

#### 9.2. Other information

No other relevant information.

### 10. Stability and reactivity

#### 10.1. Reactivity

Hazardous Polymerization will not occur.

#### 10.2. Chemical stability

Stable under normal circumstances.

#### 10.3. Possibility of hazardous reactions

No data available.

#### 10.4. Conditions to avoid

The sensors are stable under normal conditions of use. Avoid contact between the sensor electrolyte and strong acids and oxidizing agents.

#### 10.5. Incompatible materials

Avoid contact between the sensor electrolyte and strong acids and oxidizing agents.

#### 10.6. Hazardous decomposition products

No hazardous decomposition data available.

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### 11. Toxicological information

**Acute toxicity**

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr	Inhalation Dust/Mist LD50, mg/L/4hr	Inhalation Gas LD50, ppm
Lead Compounds (as Pb) - (7439-92-1)	No data available	No data available	No data available	No data available	No data available
Acetic acid - (64-19-7)	3,310.00, Rat - Category: 5	1,112.00, Rabbit - Category: 4	11.40, Rat - Category: 4	No data available	16,000.00, Rat - Category: NA
Potassium acetate - (127-08-2)	3,250.00, Rat - Category: 5	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	3	Causes mild skin irritation. (Not adopted by US OSHA)
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	1A	May cause cancer.
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

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### 12. Ecological information

#### 12.1. Toxicity

Very toxic to aquatic life.

#### Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Lead Compounds (as Pb) - (7439-92-1)	0.44, Cyprinus carpio	4.40, Daphnia magna	0.25 (72 hr), Scenedesmus subspicatus
Acetic acid - (64-19-7)	79.00, Pimephales promelas	65.00, Daphnia magna	73.40 (96 hr), Navicula seminulum
Potassium acetate - (127-08-2)	Not Available	Not Available	Not Available

#### 12.2. Persistence and degradability

There is no data available on the preparation itself.

#### 12.3. Bioaccumulative potential

Not Measured

#### 12.4. Mobility in soil

No data available.

#### 12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

#### 12.6. Other adverse effects

No data available.

### 13. Disposal considerations

#### 13.1. Waste treatment methods

Do not allow into drains or water courses. Wastes and emptied containers should be disposed of in accordance with regulations made under the Control of Pollution Act and the Environmental Protection Act.

Using information provided in this data sheet advice should be obtained from the Waste Regulation Authority, whether the special waste regulations apply.

### 14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
<b>14.1. UN number</b>	Not Applicable	Not Regulated	Not Regulated
<b>14.2. UN proper shipping name</b>	Not Regulated	Not Regulated	Not Regulated
<b>14.3. Transport hazard class(es)</b>		<b>IMDG:</b> Not Applicable <b>Sub Class:</b> Not Applicable	<b>Air Class:</b> Not Applicable
<b>14.4. Packing group</b>	Not Applicable	Not Applicable	Not Applicable



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### 14.5. Environmental hazards

**IMDG** Marine Pollutant: Yes ( Lead Compounds (as Pb) )

### 14.6. Special precautions for user

No further information

## 15. Regulatory information

**Regulatory Overview** The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

**Toxic Substance Control Act ( TSCA)** All components of this material are either listed or exempt from listing on the TSCA Inventory.

**WHMIS Classification** D2A

### US EPA Tier II Hazards

**Fire:** No

**Sudden Release of Pressure:** No

**Reactive:** No

**Immediate (Acute):** Yes

**Delayed (Chronic):** Yes

### EPCRA 311/312 Chemicals and RQs (lbs):

Acetic acid ( 5,000.00)

Lead Compounds (as Pb) ( 10.00)

### EPCRA 302 Extremely Hazardous :

(No Product Ingredients Listed)

### EPCRA 313 Toxic Chemicals:

Lead Compounds (as Pb)

### Proposition 65 - Carcinogens (>0.0%):

Lead Compounds (as Pb)

### Proposition 65 - Developmental Toxins (>0.0%):

Lead Compounds (as Pb)

### Proposition 65 - Female Repro Toxins (>0.0%):

Lead Compounds (as Pb)

### Proposition 65 - Male Repro Toxins (>0.0%):

Lead Compounds (as Pb)

### N.J. RTK Substances (>1%):

Acetic acid

Lead Compounds (as Pb)

### Penn RTK Substances (>1%):

Acetic acid

Lead Compounds (as Pb)

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### 16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H226 Flammable liquid and vapor.

H314 Causes severe skin burns and eye damage.

H319 Causes serious eye irritation.

H350 May cause cancer.

H400 Very toxic to aquatic life.

**This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.**

All chemicals may pose unknown hazards and should be used with caution. While the information contained in this Material Safety Data Sheet is believed to be correct and is offered for your information, consideration and investigation, Teledyne Analytical Instruments assumes no responsibility of the completeness or accuracy of the information contained herein.

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