## Icon Description automatically generatedSafety data sheet: Carbon electrode for supercapacitors

SAFETY DATA SHEET

# IDENTIFICATION

## Product Identifier

|  |  |
| --- | --- |
| Product Name | Carbon electrode for  supercapacitors |
| Product Number | 10004 |
| Brand | enyGy |

* 1. Other means of identification

Carbon electrode, graphene electrode

## Recommended use of the chemical and restrictions on use

Manufacture of supercapacitors

* 1. Details of supplier

|  |  |
| --- | --- |
| Company details | enyGy  6/45 Duerdin St,  Notting Hill VIC 3168,  Australia |
| Telephone | + 61 425 254 882 |
| Email | [yufei.wang@enygy.com](mailto:yufei.wang@enygy.com) |

* 1. Emergency phone number

|  |  |
| --- | --- |
| enyGy contact | +61 425 254 882 |
| Poisons Information Centre | 13 11 26 |

# HAZARDS IDENTIFICATION

## Classification of hazardous chemical

Not classified as hazardous according to GHS

Contains engineered/manufactured nanomaterials. Caution: *Hazards not fully characterised*

## Label elements, including precautionary statements

|  |  |
| --- | --- |
| Pictogram | Not applicable |
| Signal word | Not applicable |
| Hazard statement(s) | Not applicable |
| Prevention – Precautionary statement(s) | Not applicable |
| Response– Precautionary statement(s) | Not applicable |
| Storage – Precautionary statement(s) | Not applicable |
| Disposal – Precautionary statement(s) | Not applicable |

* 1. Other information

The components of this substance have been classified as non-hazardous but practical experience has shown slight staining to occur if rubbed. Take general precautions when using and avoid direct contact with skin. Do not try to damage the film and avoid of dust formation as it poses an inhalation risk and an increased flammability risk.

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# COMPOSITION AND INFORMATION ON INGREDIENTS

|  |  |
| --- | --- |
| Substance | Carbon electrode on aluminium substrate |
| Description | Carbon based active materials (activated carbon and graphene) with  binder additives. |

Components

Full details of ingredients are not disclosed as they contain commercially confidential information. This is in accordance with Schedule 8 of the WHS Regulations (disclosure of ingredients), where the undisclosed ingredient(s) is not classified as hazardous and has no established exposure standard.

# FIRST AID MEASURES

## Description of first aid measures

|  |  |
| --- | --- |
| General advice | * Move person away from contamination area if safe to do so. Wear   gloves and appropriate PPE to prevent further contamination |
| In case of skin contact | * Remove all contaminated clothing * Flush skin and hair with running water, soap is recommended * Seek medical attention if irritation occurs |
| In case of eye contact | * Flush eyes immediately with fresh running water * Ensure complete irrigation of the eye by keeping eyelids apart and away from eye by occasionally lifting the upper and lower eyelids * Seek medical attention * Remove contact lenses if easy to do so. Otherwise this should be undertaken by skilled personnel |
| If inhaled | * Move person to fresh air, away from contaminated area * Lay patient down and keep them warm, calm and rested * Prothesis such as false teeth should be removed prior to first aid procedures * Apply artificial respiration if not breathing * Transport to hospital or doctor |
| If ingested | * Rinse mouth with water and then give a glass of water * First aid generally not required but if doubt, call Poisons Information Centre or a doctor |

* 1. Symptoms caused by exposure

The most important known symptoms are described on label and Section 2. Also beware of the staining of clothing and contact surfaces.

## Medical attention and special treatment

No data available.

# FIREFIGHTING MEASURES

## Suitable extinguishing equipment

As with most organic solids, fire is possible at elevated temperatures or in contact with ignition source. If this occurs, use agent most appropriate to extinguish fire in local area. This can include water spray, foam, dry chemical powder, CO2 etc.

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* 1. Specific hazards arising from the chemical

Combustion products include carbon monoxide (CO) and carbon dioxide (CO2). No data available on other decomposition products.

## Special protective equipment and precautions for firefighters

Wear self-contained breathing apparatus for firefighting where necessary. Avoid contamination with oxidizing agents (ie: nitrates, oxidizing acids, chlorine bleaches etc.) as ignition can occur

# ACCIDENTAL RELEASE MEASURES

## Personal precautions, protective equipment, and emergency procedures

Avoid generating any dust when using (ie: from cracking, rubbing or delaminating the electrode from the substrate). If powder is generated unintentionally, avoid breathing in vapours, ensure adequate ventilation. Wear personal protective equipment such as gloves and safety glasses when handling to avoid skin and eye contact. See Section 8 for more details.

## Environmental precautions

Do not allow material to enter drains.

## Methods and materials for containment and cleaning up

Sweep up any waste material and keep in suitable closed container for disposal.

# HANDLING AND STORAGE

## Precautions for safe handling

Avoid personal contact and use in a well-ventilated area. Wear gloves when handling and do not rub or damage the electrode as carbon dust may be generated. If dust is generated, work in a fumehood or wear an appropriate particulates mask. DO NOT INGEST.

## Conditions for safe storage, including any incompatibles

Store in a cool, dry place. Keep container tightly closed and away from sunlight.

# EXPOSURE CONTROLS AND PERSONAL PROTECTION

## Control parameters

We are unaware of any exposure limits or standards.

## Engineering controls

Use in a well-ventilated area and adhere to general industry hygiene practice.

* 1. Personal protective equipment

|  |  |
| --- | --- |
| Eye and face protection | Use eye protection such as safety glasses as recommended by the  appropriate government standards (AS/NZS 1336, AS/NZS 1337). |
| Skin protection | Handle with gloves at all times, inspect gloves for holes and damage prior to use. Use proper glove removal technique to avoid touching skin  with this product. |
| Inhalation protection | Respiratory protection not required, if film is damaged and generates  particulates, wear a particulates mask (P2 or equivalent) or work in a fumehood. |

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# PHYSICAL AND CHEMICAL PROPERTIES

## Basic physical and chemical properties

|  |  |
| --- | --- |
| Appearance | Black electrode on aluminium substrate |
| Odour | No data available |
| Odour threshold | No data available |
| pH | No data available |
| Melting/freezing point | No data available |
| Boiling point & boiling range | No data available |
| Flash point | No data available |
| Evaporation rate | No data available |
| Flammability (solid, gas) | No data available |
| Upper/lower flammability or  explosive limits | No data available |
| Vapour pressure | No data available |
| Vapour density | No data available |
| Relative density | No data available |
| Solubility (H2O) | Miscible |
| Partition coefficient:  n-octanol/water | No data available |
| Auto-ignition temperature | No data available |
| Decomposition temperature | No data available |
| Viscosity | No data available |

* 1. Additional physical/chemical information

The carbon material may become flammable at elevated temperatures and on exposure to ignition sources

# STABILITY AND REACTIVITY

## Reactivity

No data available

## Chemical stability

Stable at room temperature in closed containers and normal storage and handling conditions.

## Possibility of hazardous reactions

No data available

## Conditions to avoid

Avoid ignition sources if slurry is dried completely.

## Incompatible materials

Strong oxidizing agents

## Hazardous decomposition products

Combustion products include carbon monoxide (CO) and carbon dioxide (CO2). No data available on other decomposition products.

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# TOXICOLOGICAL INFORMATION

## Toxicological effects

|  |  |
| --- | --- |
| Acute toxicity | No data available |
| Skin corrosion/irritation | Practical experience predicts that slight skin irritation or inflammation may occur in some individuals after direct contact. Skin contact should not have harmful health effects though  beware of entry through open wounds, lesions or abrasions. |
| Serious eye damage/irritation | No data available |
| Respiratory or skin sensitisation | No data available |
| Germ cell mutagenicity | No data available |
| Carcinogenicity | No data available |
| Reproductive toxicity | No data available |
| Specific target organ toxicity –  single exposure | No data available |
| Specific target organ toxicity –  repeated exposure | No data available |
| Aspiration hazard | No data available |

* 1. Information on possible routes of exposure

Skin and eye contact represents the most common possible routes of exposure. Beware of touching eyes/face with contaminated gloves. Inhalation risks are low due to the chemical being in a solid form, but be aware of dust if electrode is broken or cracked.

## Early onset symptoms related to exposure

Skin and eye irritation

## Delayed health effects from exposure

No data available

## Exposure levels and health effects

No data available

## Interactive effects

No data available

# ECOLOGOICAL INFORMATION

## Ecotoxicity

No data available

## Persistence and degradability

No data available

## Bioaccumulative potential

No data available

## Mobility in soil

No data available

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* 1. Other adverse effects

No data available

# DISPOSAL CONSIDERATIONS

## Safe handling and disposal methods

Dispose of unused material to a licensed chemical disposal company in a suitable, inert container with a tightly closed lid and contents clearly labelled. Avoid damaging/cracking the film and generating dust, if absolutely necessary, wear a particulates mask (P2 or higher) or conduct work in a fumehood.

## Disposal of any contaminated packaging

Wash/sweep out residual material and collect waste in inert container for disposal. The rinsed container can be dried and disposed of as unused product.

## Environmental regulations

No data available

# TRANSPORT INFORMATION

|  |  |
| --- | --- |
| UN number | No data available |
| Proper shipping name or  Technical name | Carbon electrode for supercapacitors |
| Transport hazard class | No data available |
| Packing group | No data available |
| Environmental hazards | No data available |
| Special precautions for user | No data available |
| Additional information | No data available |
| Hazchem or emergency  action code | No data available |

1. REGULATORY INFORMATION

## Safety, health and environmental regulations

Standard for the Uniform Scheduling of Medicines and Poisons:

No data available

# OTHER INFORMATION

This information is prepared by enyGy from in-house testing and expertise and the aid of information from:

* ChemWatch Review SDS
* MTI Corporation SDS
* Safework Australia - Preparation of safety data sheets for hazardous chemicals: Code of Practice
* SDS from relevant materials supplier

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