

MATERIAL SAFETY DATA SHEET

radiello[®]: chemiadsorbing cartridge code 172

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CLINICA DEL LAVORO E DELLA RIABILITAZIONE
I.R.C.C.S.

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1. Product and company identification

1.1 Product identification	radiello [®] : chemiadsorbing cartridge code 172
1.1.1 Use	Sampling substrate for environmental assays of ozone.
1.1.2 Trade name	Chemiadsorbing cartridge code 172
1.2 Company identification	
1.2.1 Name of supplier	Fondazione Salvatore Maugeri
Address	Centro di Ricerche Ambientali/Padova Via Svizzera 16, 35127 Padova E-mail: fsm@fsm.it
Telephone number	Tel. 0498 064 511 - Fax 0498 064 555
1.3 Emergency contact number	
National Toxicology Center	Tel. 0382 24444

2. Composition. Information on ingredients

The cartridge is made of a microporous polyethylene tube filled with silica gel coated with 4,4'-dipyridylethylene and closed, at one end, by a PTFE cap. During exposure, acid-catalyzed ozonolysis of the 4,4'-dipyridylethylene generates 4-pyridylaldehyde. The silica gel ensures the presence of water, which is necessary to complete the ozonolysis reaction.

<i>Ingredients</i>	<i>%</i>	<i>Symbol</i>	<i>R phrases</i>
4-4' -DIPYRIDYLETHYLENE	<1%	Xi	R36/37/38
SILICA GEL (CAS 112926-00-8 CE 231-545-4)	<30%	not required	not required

3. Health hazard identification

The product is not classified as dangerous according to directive 1999/45, Law N. 65 of 14/03/03 and Law N. 260 of 28/07/04 (Hazardous Products). The concentration of 4-4'-DIPYRIDYLETHYLENE is below the limit obliging the use of the risk phrases R36/37/38, so it is not necessary to report on the product.

4. First aid measures

- 4.1 General indications** In the case of doubt or in the presence of symptoms consult a doctor, taking a copy of this material safety data sheet. Do not administer any substances by mouth to an unconscious person.
- 4.2 First aid procedures in the case of:**
- 4.2.1 Inhalation** Inhalation of the product is not foreseen in normal conditions of its use. However, should inhalation occur, it is not expected that there would be effects deriving from inhalation of airborne substances that could be released from the product. In the case of respiratory symptoms (cough, dyspnea) move the person to fresh air, place in a semi-seated position, and provide artificial respiration if the person is not breathing.
- 4.2.2 Contact with the skin** Wash the skin with soap and flush with running water for several minutes. Consult a doctor if there are symptoms of irritation (reddening, pain).
- 4.2.3 Contact with the eyes** The product is not expected to come in contact with the eyes during normal conditions of its use. However, should this occur, flush the eyes, kept open, with large amounts of running water for at least 15 minutes. Consult a doctor if symptoms of irritation (reddening, pain) develop.
- 4.2.4 Ingestion** It is not expected that the product can be ingested during normal conditions of use. However, should this occur, do not administer anything to drink. Only rinse the mouth and consult a doctor.

5. Fire fighting measures

In the case of a fire in a closed environment (e.g. in a warehouse in which the product is stored) follow the rules below:

- 5.1 General indications** Move all people away and upwind of the fire. Do not enter closed rooms without adequate protection, as specified in point 5.5.
- 5.2 Extinguishing media** Water spray, carbon dioxide, powders.
- 5.3 Extinguishing media that must not be used** Not known.
- 5.4 Exposure risks in the case of fire** Irritant or toxic fumes may develop in the case of fire.

5.5 Fire fighting equipment Use personal protective devices suitable for fighting the fire.

6. Accidental release measures

6.1 Personal precautions It is advisable to protect the skin when handling the product. Avoid contact with the skin and eyes.

6.2 Environmental precautions Given the amount of the product and its type of packaging, accidental damage to the environment does not appear possible. Do not dispose of the product (or part of it) in the environment.

6.3 Cleaning-up methods

6.3.1 Decontamination In the case of spills, minimize dust formation. Sweep up the product completely and send it for correct disposal. Wash away the last traces with abundant water.

6.3.2 Elimination Eliminate the contaminated aqueous solution in conformity with existing regulations.

7. Handling and storage

7.1 Handling

7.1.1 Technical measures There are no specific technical requirements for handling the product.

7.1.2 Precautionary measures Avoid contact with the eyes, skin and clothes. Avoid inhaling the dust. Avoid prolonged and repeated exposures.

7.2 Storage

7.2.1 Technical measures Take the necessary measures to avoid accidental spills of the product in the case of breakage of the containers.

7.2.2 Storage conditions Store in original containers or other appropriately labeled, suitable containers. Store in a cool, dry environment away from sources of heat. Keep the containers hermetically sealed.

8. Exposure control. Personal protection

- | | |
|---|--|
| 8.1 General hygiene measures | Respect existing safety regulations and use according to the recommendations of the supplier, as indicated in point 7.1. Ensure good ventilation. Wash hands after handling the product. |
| 8.2 Personal protection measures | |
| 8.2.1 Respiratory protection | Not necessary during normal use of the product. |
| 8.2.2 Eye protection | Wear protective glasses resistant to chemical agents. |
| 8.2.3 Hand protection | Wear appropriate protective gloves |
| 8.2.4 Skin protection | Wear work clothes or suitable protective clothing. |
| 8.3 Engineering controls | Safety shower and eye-bath. A mechanical drain is essential. |

9. Physical and chemical properties

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|---|---|
| 9.1 Physical state | Microporous polyethylene tube filled with solid granules. |
| 9.2 Color | Clear-colored solid. |
| 9.3 Odor | Not perceptible. |
| 9.4 pH | Not applicable. |
| 9.5 Boiling point | Not applicable. |
| 9.6 Melting point | 148°C for 4-4'-DIPYRIDYLETHYLENE. |
| 9.7 Flash point | Not inflammable. |
| 9.8 Flammability | Not inflammable. |
| 9.9 Auto-ignition | Not inflammable. |
| 9.10 Explosive properties | Not applicable. |
| 9.11 Combustion properties | Not applicable. |
| 9.12 Vapor pressure | Not applicable. |
| 9.13 Relative density | Not applicable. |
| 9.14 Solubility in water | Not applicable. |
| 9.15 Solubility in organic solvents | Not applicable. |
| 9.16 Partition coefficient
n-octanol/water | Not applicable. |
| 9.17 Vapor density | Not applicable. |
| 9.18 Miscibility | Not applicable. |

9.19 Evaporation rate	Not applicable.
9.20 Conductivity	Not applicable.
9.21 Viscosity	Not applicable.

10. Stability and reactivity

10.1 Conditions to avoid	Stable product, avoid sources of heat and ignition.
10.2 Materials to avoid	Strongly oxidizing agents.
10.3 Hazardous decomposition products	The product is stable. The thermal decomposition products in the case of fire are carbon monoxide, nitrogen oxide, carbon dioxide.

11. Toxicological information

11.1 Toxicity data	Detailed studies have not been conducted on the chemical, physical and toxicological properties of the product.
11.2 Type of exposure	
11.2.1 Inhalation	The product can irritate the mucosa and the upper respiratory tract if inhaled..
11.2.2 Skin contact	If it comes in contact with the skin, the product can be irritant.
11.2.3 Eye contact	If the product comes into contact with the eyes it can cause reddening, burning, pain and tears.
11.2.4 Ingestion	If ingested the product can be harmful and toxic.

12. Ecological information

Not available.

13. Disposal considerations

For disposal purposes, the product (or part of it) is considered as special waste. After use, the material must be disposed of in conformity with the disposal of other laboratory products. Contact a Center authorized to dispose of this type of waste. Do not dispose of the product in the environment.

14. Transport information

14.1 General information	The product is not subject to any international regulations concerning its transport.
14.2 Road and rail transport (ADR/RID)	Not dangerous.
14.3 Sea transport (IMDG/IMO)	Not dangerous.
14.4 Air transport (ICAO/IATA)	Not dangerous.

15. Regulatory information

15.1 Labeling	Not required.
15.2 Hazard symbols	None.
15.3 Risk phrases	None.
15.4 Safety phrases	S26: In the case of contact with the eyes, wash the eyes immediately with copious amounts of water and consult a doctor. S61: Do not dispose of in the environment. Refer to the special instructions/safety data sheets.
15.5 Specific national information	For 4-4'-DIPYRIDYLETHYLENE Germany WGK:3 Self-classification

16. Other information

<i>Ingredients</i>	<i>Symbol</i>	<i>R phrases</i>
SILICA GEL	non required	not required S22;S24/25
4-4' –DIPYRIDYLETHYLENE	Xi	R36/37/38

S26; 37/39

R 36/37/38: "Irritant to the eyes, respiratory tract and skin".

S 26: "In the case of contact with the eyes, wash the eyes with copious amounts of water and consult a doctor".

S 37/39 : "Use appropriate gloves and protect the eyes and face".

S22 : "Do not inhale dusts"

S24/25: "Avoid contact with the eyes and skin".

Advice to users

The information in this material safety data sheet is based on our current knowledge and on Italian and European Community regulations. The product must not be used for any purposes other than those specified in section 1, in the absence of written instructions on its handling. It is the user's responsibility to take all measures necessary to conform with local and national regulations.

The information in this data sheet complies with Directive CEE 1999/45 (assimilated in Italy by Law No. 65 of 14/03/03) and with Directive CEE 2001/58 (assimilated in Italy by Ministerial Decree 7/9/2002). The set of regulations mentioned is simply intended to help the user comply with his or her obligations during the use of the products.