

MATERIAL SAFETY DATA SHEET

radiello[®]: chemiadsorbing cartridge code 168

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FONDAZIONE SALVATORE MAUGERI
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 168 |
| 1.1.1 Use | Sampling substrate for environmental assays of ammonia adsorbed in the form of ammonium ions |
| 1.1.2 Trade name | Adsorbing cartridge code 147 |
| 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: fsmgd@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 sampling device is a polyethylene tube impregnated with phosphoric acid. The ammonia is adsorbed in the form of ammonium ions. Airborne ammonium salts dispersed as particulate matter do not cross the diffusive membrane of the radiello.

| <i>Ingredients</i> | <i>%</i> | <i>Symbol</i> | <i>R phrases</i> |
|---|----------|---------------|------------------|
| POLYETHYLENE (CAS 9002-88-4) | >90% | not required | not required |
| PHOSPHORIC ACID (CAS 7664-38-2 CE 231-633-2) | <10% | C | R34 |

3. Health hazard identification

The product is not classified as hazardous according to directive 1999/45 and Law N. 65 of 14/03/03 and Law N. 260 of 28/07/04 (Hazardous Products) since the concentration of phosphoric acid in the product is less than 10%. This concentration is below the level defined by the regulations on hazardous products (Enclosure I, Table IV, Law N 65 of 14/03/03).

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, specified in point 5.5.

5.2 Extinguishing media

Water spray, carbon dioxide, dry chemical powders or appropriate foams.

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. Refer to point 11.2 for the symptoms.
- 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** Do not contaminate water supplies. Do not allow the material to enter drains or rivers.
- 6.3 Cleaning-up methods**
- 6.3.1 Decontamination** Spills cannot occur during conditions of normal use.
- 6.3.2 Elimination** Eliminate any damaged cartridges 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 dusts. Avoid prolonged and repeated exposures. Do not smoke.

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.

8. Exposure control. Personal protection

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|---|--|
| 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 Engineering controls | Eye baths. |
| 8.3 Personal protection measures | |
| 8.3.1 Respiratory protection | Not necessary in the case of normal use of the product. |
| 8.3.2 Eye protection | Wear protective glasses when the adsorbing substrate is subjected to laboratory analysis in order to prevent splashes of chemical agents entering the eyes. |
| 8.3.3 Hand protection | Wear appropriate protective gloves |
| 8.3.4 Skin protection | Wear work clothes or suitable protective clothing. |

9. Physical and chemical properties

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| 9.1 Physical state | Slightly humid cylinder made of synthetic material. |
| 9.2 Color | Whitish solid. |
| 9.3 Odor | Not perceptible. |
| 9.4 pH | Not applicable. |
| 9.5 Boiling point | Not applicable. |
| 9.6 Melting point | Not applicable. |
| 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. |

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

10. Stability and reactivity

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| 10.1 Conditions to avoid | Stable product, avoid sources of heat or ignition. |
| 10.2 Materials to avoid | Strong oxidants. |
| 10.3 Hazardous decomposition products | The product is stable. In the case of the fire the thermal degradation products are carbon monoxide, carbon dioxide, acrolein and formaldehyde. |

11. Toxicological information

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|----------------------------|---|
| 11.1 Toxicity data | Detailed studies have not been conducted on the chemical, physical and toxicological properties of the product. |
| 11.2 Acute toxicity | |
| 11.2.1 Inhalation | This is not a normal route of exposure given the structural characteristics of the product. The product can irritate the mucosa and the upper respiratory tract if inhaled. Exposure to thermal degradation products can cause “fever due to inhalation of polymer fumes”, a temporary influenza-like state that generally occurs after numerous exposures and disappears within 36-48 hours. |
| 11.2.2 Skin contact | If it comes in contact with the skin, the product can be irritant. In the case of <u>fire</u> compounds are generated that can cause irritation of the skin. |
| 11.2.3 Eye contact | This is not a normal route of exposure given the structural characteristics of the product. If the product comes into contact with the eyes it can cause reddening, burning, pain and tears. In the case of <u>fire</u> compounds are generated that can cause irritation and lesions of the eyes. |
| 11.2.4 Ingestion | This is not a normal route of exposure given the structural characteristics of the product. If ingested the product can be harmful. |

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|---|---|
| 11.3 Chronic toxicity | |
| 11.3.1 Inhalation | This is not a normal route of exposure. |
| 11.3.2 Skin contact | This is not a normal route of exposure. |
| 11.3.3 Eye contact | This is not a normal route of exposure. |
| 11.3.4 Ingestion | This is not a normal route of exposure. |
| 11.4 Delayed effects | Significant delayed effects are not expected. |
| 11.5 Corrosiveness. Irritant potential | |
| 11.5.1 Skin | The product can cause irritation to the skin. |
| 11.5.2 Mucosa | The product can cause irritation to the mucosa. |
| 11.5.3 Eyes | The product can cause irritation to the eyes. |
| 11.6 Sensitizing potential | See point 11.4 |
| 11.7 Carcinogenicity | The product is classified as a group 3 carcinogen for humans |
| 11.8 Mutagenicity | Results of studies of the mutagenic potential of polyethylenes have not demonstrated a clear mutagenic effect. |
| 11.9 Effects on reproduction | At the current state of knowledge, studies to determine the teratogenic potential (in humans and in animals) of the product do not appear to have been conducted. |
| 11.10 Teratogenic effects | Not demonstrated. |
| 11.11 Narcotic effect | Not expected. |

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

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| 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 (ICAQ/IATA) | Not dangerous. |

15. Regulatory information

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|------------------------------------|--|
| 15.1 Labeling | Not required. |
| 15.2 Hazard symbols | None. |
| 15.3 Risk phrases | None. |
| 15.4 Safety phrases | S22: Do not inhale dusts S26: In the case of contact with the eyes, wash the eyes immediately with copious amounts of water and consult a doctor. S45: In the case of fire use a water spray, carbon dioxide, dry chemical powders or appropriate foams. |
| 15.4 Specific national information | Germany WGK:3 Self-classification |

16. Other information

| <i>Ingredients</i> | <i>Symbol</i> | <i>R phrases</i> |
|--------------------|---------------|---|
| POLYETHYLENE | not required | not required S 22: do not inhale dusts |

PHOSPHORIC ACID

C

R34

S26: In the case of contact with the eyes, wash the eyes immediately with copious amounts of water and consult a doctor.

S45: In the case of fire use a water spray, carbon dioxide, dry chemical powders or appropriate foams.

R 34: Causes burns

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 this product