

MATERIAL SAFETY DATA SHEET

radiello[®]: adsorbing cartridge code 170

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1. Product and company identification

1.1 Product identification	radiello [®] : adsorbing cartridge code 170
1.1.1 Use	Sampling substrate for environmental assays of hydrogen sulfide.
1.1.2 Trade name	Adsorbing cartridge code 170
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 pd@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 made of microporous polyethylene impregnated with zinc acetate. Hydrogen sulfide is chemiadsorbed by the zinc acetate and transformed into stable zinc sulfide.

<i>Ingredients</i>	<i>%</i>	<i>Symbol</i>	<i>R phrases</i>
POLYETHYLENE (CAS 9002-88-4)	>80%	not required	not required
ZINC ACETATE (CAS 557-34-6 CE 209-170-2)	<10%	Xn;N	R22;R36;R50/53

3. Health hazard identification

The product is not classified as dangerous to either man or the environment according to directive 1999/45, Law N. 65 of 14/03/03 and Law N. 260 of 28/07/04 (Hazardous Products) since the concentration of zinc acetate is less than 10%: therefore, the risk phrases (R22; R36; R50/53) are not necessary since the minimum values are tabulated as >25% for R22 (Enclosure I, Law N. 65 of 14 March) and > 20% for R36 (Enclosure IV, Law N. 65 of 14 March).

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, foams, appropriate dry chemical powders.
- 5.3 Extinguishing media that must not be used** Not known.
- 5.4 Exposure risks in the case of fire** Toxic fumes may develop in the case of fire. Refer to point 11.2 for 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** Given the amount of the product, the only warning is not to dispose of the product 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.

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 Engineering controls	Eye baths.
8.3 Personal protection measures	
8.3.1 Respiratory protection	Not necessary during 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 contact with chemical agents.
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

9.1 Physical state	Slightly humid cylinder made of synthetic material.
9.2 Color	Pale gray 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.

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, carbon dioxide, zinc/zinc oxide, acrolein and formaldehyde.

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 Acute toxicity	For ZINC ACETATE Oral LD50 for rats: 749 mg/Kg For the dihydrate: Oral LD50 for mice: 287 mg/Kg Oral LD50 for rats: mg/Kg Intraperitoneal LD50 for mice: 749 mg/Kg

11.3 Type of exposure

11.3.1 Inhalation

This is not a normal route of exposure given the structural characteristics of the product. The product can irritate the mucosa and the 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.

11.3.2 Skin contact

If it comes in contact with the skin, the product can be irritant. In the case of fire compounds are generated that can cause irritation of the skin.

11.3.3 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 fire compounds are generated that can cause irritation and lesions of the eyes.

11.3.4 Ingestion

This is not a normal route of exposure given the structural characteristics of the product. If ingested the product can be harmful.

11.4 Corrosiveness. Irritant potential

11.4.1 Skin

The product can cause irritation to the skin.

11.4.2 Mucosa

The product can cause irritation to the mucosa.

11.4.3 Eyes

The product can cause irritation to the eyes.

11.5 Carcinogenicity

POLYETHYLENE is classified as a group 3 carcinogen for humans

11.6 Mutagenicity

Results of studies of the mutagenic potential of POLYLETHYLENES have not demonstrated a clear mutagenic effect.

Studies have been performed for zince acetate:

mice: a dose of 24 Ug/plate applied to lymphocytes produced mutations in micro-organisms, while a dose of 10 mg/L on lymphocytes caused mutations of the somatic cells;

hamster: a dose of 45 mg/L applied to the ovaries cause phytogenesis.

- 11.7 Effects on reproduction** At the current state of knowledge, studies to determine the teratogenic potential (in humans and in animals) of POLYETHYLENE do not appear to have been conducted, while the studies on ZINC ACETATE showed:
for rats: a subcutaneous dose of 80 mg/kg for 1 day produced effects on the male reproductive system, including spermatogenesis (genetic, morphological, mortality and sperm count);
for rabbits: an intravaginal dose of 10525 UG/Kg for 1 day had an effect on fertility.
- 11.8 Teratogenic effects** Not seen.
- 11.9 Narcotic effect** Not expected.

12. Ecological information

Ecotoxicological effects of zinc acetate

The LC50 for the *Pimephales promelas* species of fish for a period of 96 h was 0.88 mg/L.

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 (ICAQ/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 POLYETHYLENE Germany WGK:3 Self-classification For ZINC ACETATE Germany WGK:3 ID number: 3831

16. Other information

<i>Ingredients</i>	<i>Symbol</i>	<i>R phrases</i>
POLYETHYLENE	not required	not required S22: Do not inhale dusts
PHOSPHORIC ACID	Xn;N	R22: Harmful if ingested R36: Irritant to the eyes R50/53: Very toxic to aquatic organisms. Can cause long-term damage to aquatic ecosystems. S22 S26: In the case of contact with the eyes, wash the eyes with copious amounts of water and consult a doctor S60: This material and its container must be disposed of as hazardous waste. S61: Do not dispose of in the environment. Refer to the special instructions/safety data sheets..

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.