



# INTEROFFICE CORRESPONDENCE

DATE: October 12, 1994

TO: L. A. Collins, Solar Pond Projects, Bldg. 080, X6968

FROM: E. H. Wilson, Solar Pond Projects, Bldg. 080, X6952 *E.H. Wilson*

SUBJECT: WP 12189-RADSORB USED IN THE INVESTIGATION DERIVED MATERIALS (IDM) SOIL SAMPLES IN TENT SIX ON 750 PAD FROM PHASE I RFI/RI BOREHOLES - EHW-011-94

DOE Order: 4700.1

Action: None required

The purpose of this memorandum is to identify by the properties of the RADSORB material used in the packaging of IDM from the 1993 campaign of Solar Pond Phase I boreholes.

Every drum that contains IDM soil cuttings from the Phase I RFI/RI boreholes also contains at least one pound of RADSORB or 0.3 % If the average weight is 301 lbs for 30 gal drum 75 % full of soil. RADSORB is a polyacrylate/polyacrylamide material that is an insoluble (at pH of 7.5), non toxic, hygroscopic absorbent chemical. It can absorb up to 250 times it's weight in water or up to 30 times its weight in aqueous chemical solutions under ambient pressures (0 to 2 psi gage). It is a corrosion inhibitor of metal surfaces in high humidity conditions. High pressure environments reduce RADSORB absorbent abilities. At 50 psi gage RADSORB retains only 10 times its weight in water.

Additional details on the chemical properties of this material are being investigated. Environmental Scientific, Inc. of North Carolina (919-941-0847) are being contacted for information on the physical and mechanical properties of this material.

jlb

- Attachments:
1. Material Safety Data Sheets
  2. Product Bulletin

cc:

- T. d. Beckman
- T. D. Schmidt
- File
- ERPD Records (2)

**BEST AVAILABLE COPY**

**ADMIN RECORD**  
1101-A-000160

# MATERIAL SAFETY DATA SHEET

## RADSORB

### SECTION 1 - IDENTIFICATION

MANUFACTURER'S NAME ENVIRONMENTAL SCIENTIFIC, INC.  
ADDRESS 5400 SOUTH MIAMI BLVD.  
MORRISVILLE, NC 27560  
EMERGENCY PHONE NUMBER FOR TRANSPORTATION EMERGENCY  
Call 919-941-0847  
Ingestion or skin contact call ENVIRONMENTAL  
SCIENTIFIC 919/941-0847  
PHONE NUMBER 919-941-0847  
EFFECTIVE DATE 3-30-94  
CHEMICAL FAMILY Polyacrylate/polyacrylamide, crosslinked  
TRADE NAME RADSORB  
DOT CLASSIFICATION Not applicable  
DOT HAZARD CLASS Not applicable

### SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS	HAZARDOUS %	TLV (Units)
None	0.0%	None

### SECTION 3 - PHYSICAL DATA

VOLATILITY (%) None  
SOLUBILITY IN WATER Insoluble, but swellable in aqueous fluids.  
pH VALUE 6.5 +/- 1.0  
PHYSICAL FORM Granular solid  
PARTICLE SIZE 200 +/- 100  $\mu$   
MOISTURE CONTENT <5%  
BULK DENSITY 40 +/- 5 lbs/ft<sup>3</sup>

### SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not applicable  
EXTINGUISH MEDIA Water, CO<sub>2</sub>, foam, dry powder.  
UNUSUAL FIRE AND FIRE HAZARD None

### SECTION 5 - HEALTH EFFECTS INFORMATION

SKIN CONTACT: Prolonged contact may cause slight irritation due to the some-  
what abrasive powder.  
EYE CONTACT: May cause slight irritation and swelling of mucous membrane.  
INHALATION: May cause irritation to the respiratory tract and lungs.

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RADSORB MSDS continued

FIRST AID:

SKIN CONTACT: Wash with soap and water.  
EYE CONTACT: Rinse with plenty of water for at least 15 minutes. If discomfort continues, seek medical attention.  
INHALATION: Remove to fresh air. If discomfort continues, seek medical attention.  
INGESTION: If discomfort continues, seek medical attention.

SECTION 6 - REACTIVITY INFORMATION

STABILITY:	Stable.
INCOMPATIBILITY:	Strong oxidants; e.g., sodium hypochlorite, alkalis and acids
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS TO AVOID:	Keep from getting damp or wet, until ready to use.
THERMAL DECOMPOSITION PRODUCTS:	In the event of combustion CO, CO <sub>2</sub> , NO <sub>x</sub> may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 7 - PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION	Not required under normal use conditions. If significant dusting occurs, wear NIOSH approved dust respirator.
VENTILATION	If significant dusting occurs, local exhaust ventilation is recommended.
OTHER PROTECTION	No special precautions. Avoid eye and skin contact, and inhalation of dust.

SECTION 8 - SPILL AND DISPOSAL

SPILL CONTROL AND RECOVERY:

SOLID SPILLS	Sweep up and place in reclaim or disposal container. Wear protective equipment specified in Section 7.
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DISPOSAL	Radsorb is not a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261; it does not have characteristics of Subpart C, and it is not listed under Subpart D. Radsorb is a non-hazardous solid waste and can be disposed of by incineration or in a sanitary landfill in accordance with local, state and federal regulations.
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SECTION 9 - TRANSPORTATION INFORMATION

DOT SHIPPING NAME/HAZARD CODE:	Radsorb is not regulated during transportation.
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RADSORB MSDS continued

**SECTION 10 - REGULATORY INFORMATION**

- TOSCA: Radsorb does not contain ingredients (at a level of 1% or greater) on the List of Toxic Chemicals.
- FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15: Radsorb does not contain ingredients specifically listed.
- CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112: Radsorb does not contain ingredients covered by the Clean Air Act.
- CALIFORNIA PROPOSITION 65: Radsorb does not contain chemicals on the current Proposition 65 list.
- MICHIGAN CRITICAL MATERIALS: Radsorb does not contain ingredients listed on the Michigan Critical Materials Register.

**SECTION 11 - USER'S RESPONSIBILITY**

This Radsorb material safety data sheet provides health and safety information. Radsorb is to be used in applications consistent with our product literature. Individuals handling Radsorb should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your ESI sales representative for further information.

**SECTION 12 - STORAGE**

- STORAGE: Keep material in a dry location and sealed to minimize water absorption before use.

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# ENVIRONMENTAL SCIENTIFIC INC.

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## PRODUCT BULLETIN

# RADSORB

RADSORB IS A SOLID, GRANULAR, EXTREME ABSORBENCY, HIGH RETENTION CROSS-LINKED HOMOPOLYMER, DESIGNED TO ABSORB WATER OR AQUEOUS CHEMICAL SOLUTIONS. AQUEOUS SOLUTIONS CAUSE RADSORB TO SWELL AND FORM A GEL THAT STRONGLY HOLDS THE WATER MOLECULES, EVEN UNDER PRESSURE. RADSORB SIGNIFICANTLY REDUCES RADWASTE DISPOSAL COSTS BY REDUCING THE VOLUME OF ABSORBENT NEEDED TO MEET REGULATORY REQUIREMENTS IN PACKAGING, SHIPPING OR STORING RADWASTE.

## FUNCTION

RADSORB IS A SIGNIFICANT BREAKTHROUGH IN CONTROL OF CONDENSATION AS WELL AS WATER OR AQUEOUS SOLUTION LEACHATE IN RADWASTE CONTAINERS. IT RAPIDLY ABSORBS AND RETAINS LARGE QUANTITIES OF THESE LIQUIDS, PREVENTING ACCUMULATION AND POSSIBLE SEEPAGE TO THE ENVIRONMENT. CONTAMINATION IS QUICKLY LOCKED UP WITHIN THE POLYMER...BIVALENT AND TRIVALENT CATIONS BIND TO THE POLYMER VIA NEGATIVE CARBOXYLIC GROUPS. IT WILL NOT AGE OR BIODEGRADE. RADSORB IS EXCELLENT FOR CONDENSATE AND LEACHATE CONTROL IN 17H DRUMS, LSA BOXES, AS WELL AS B-25 AND OTHER RADWASTE STORAGE AND SHIPPING CONTAINERS. RADSORB ALSO REMOVES MOISTURE FROM AIR WITHIN THESE CONTAINERS, MINIMIZING POTENTIAL CORROSION OF METAL SURFACES DUE TO HIGH HUMIDITY.

## FEATURES

- + RAPID, SAFE, EFFICIENT AND INEXPENSIVE.
- + RAPIDLY ABSORBS AND LOCKS IN UP TO 250 TIMES ITS WEIGHT IN WATER, AND UP TO 30 TIMES ITS WEIGHT IN AQUEOUS CHEMICAL SOLUTIONS.
- + HYGROSCOPIC...DESICCANT; DEHYDRATING AGENT; INHIBITS CONDENSATE FORMATION.
- + HIGH GEL STRENGTH...EXCELLENT LIQUID RETENTION UNDER PRESSURE.
- + WILL NOT BIODEGRADE...VERY LONG TERM RETENTION.
- + NON-AGING...INDEFINITE SHELF-LIFE.
- + ANTI-CORROSIVE...INHIBITS CORROSION.
- + NOT AFFECTED BY TEMPERATURE EXTREMES...-50° TO 160°F.
- + ACCEPTED AT BURIAL SITES.
- + EASY TO SHIP, STORE & HANDLE...LIGHT WEIGHT, SMALL VOLUME.
- + NONTOXIC...SAFE TO USE.

## TECHNOLOGY

ONCE ABSORBED INTO RADSORB, CONTAMINATED WATER REACTS CHEMICALLY WITH CROSS-

## PHYSICAL DATA

Bulk Density		36.2 to 41.2 lbs/ft <sup>3</sup>
Particle Size		100 to 300 microns
Absorption Time to Capacity		90 Seconds
Capacity:	(Distilled Water)	-30 gals/lb
	(0.9% NaCl)	-3.0 gals/lb
Distilled Water Retention		
for 10 Minutes at:	2 psi	250X Wt.
	3 psi	100X Wt.
	15 psi	50X Wt.
	20 psi	30X Wt.
	50 psi	10X Wt.
Appearance		White Granular Solid
pH (20°C gel)		7.5 +/- 0.3

## APPLICATIONS

- + FOR MIXING OR LAYERING WITH SOIL, CORE SAMPLES, SUMP SILT, ETC.
- + FOR MIXING WITH RADWASTE IN STORAGE AND SHIPPING CONTAINERS.
- + FOR LAYERING BETWEEN RADWASTE IN STORAGE AND SHIPPING CONTAINERS.

## STORAGE AND HANDLING

RADSORB IS HYGROSCOPIC AND WILL ABSORB ATMOSPHERIC MOISTURE. IT MUST BE STORED IN A SEALED CONTAINER OR IN A DRY ENVIRONMENT.

RADSORB IS NONTOXIC; HOWEVER, AS WITH ANY CHEMICAL, IT SHOULD BE HANDLED CAREFULLY. TAKE NECESSARY PRECAUTIONS TO AVOID INHALATION OF DUST. DO NOT TAKE INTERNALLY. KEEP OUT OF REACH OF CHILDREN.

## GENERAL INFORMATION

RADSORB IS AVAILABLE PACKAGED IN 50, 100 AND 400 POUND, POLYETHYLENE LINED, FIBERBOARD KEGS; 400 POUND STEEL DRUMS; AND 50 POUND POLYETHYLENE PAILS. LARGER SIZE PACKAGING IS AVAILABLE ON REQUEST.

IF YOU NEED ASSISTANCE OR ADDITIONAL INFORMATION, PLEASE CALL OR WRITE ENVIRONMENTAL SCIENTIFIC, INC. AT THE NUMBER/ADDRESS BELOW.

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