



RESYN BIOSCIENCES

# Material Safety Data Sheet

Prepared on: September 13, 2012

MagReSyn<sup>®</sup> TiO<sub>2</sub>

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product code** MR-TID002 (2 ml); MR-TID005 (5 ml); MR-TID010 (2 x 5 ml)

**Product name** MagReSyn<sup>®</sup> TiO<sub>2</sub>

**General Use** Magnetic microparticles with immobilized titanium dioxide nanoparticles suspended in a 20% ethanol solution. The product is intended for biomolecule (specifically phosphopeptide) immobilization for a variety of subsequent end-user applications in research and development. This product is for research and development use only. It is not intended for any animal or human therapeutic or diagnostic use unless otherwise stated.

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## 2. COMPOSITION

### Hazardous/Non-hazardous Components

Chemical Name	CAS #	Weight %
MagReSyn <sup>®</sup> TiO <sub>2</sub>	-----	2.5%
Ethanol	64-17-5	20%
Water	7732-18-5	75%

Synonyms for Ethanol: Ethyl alcohol, alcohol

### 3. HAZARDS IDENTIFICATION

**GHS Classification for Ethanol:** FLAMMABLE LIQUIDS, Category 2: Highly flammable liquid and vapor

SERIOUS EYE DAMAGE/IRRITATION, Category 2B:  
Warning

SPECIFIC TARGET ORGAN SYSTEMIC TOXICITY  
(SINGLE EXPOSURE), Category 3: Warning  
Reproductive toxicity, Category 1: Danger

**Signal Words for Ethanol:** DANGER

**GHS Hazard Statements:** PHYSICAL HAZARDS:  
Highly flammable liquid and vapor.

HEALTH HAZARDS:  
Causes eye irritation.  
Reproductive toxicant.  
May be harmful if swallowed and enters airways.

ENVIRONMENTAL HAZARDS:  
Not classified as an environmental hazard under GHS  
criteria.

**GHS Precautionary Statements  
for Ethanol:**

PREVENTION:  
Keep away from heat/sparks/open flames/hot surfaces.  
No smoking.  
Keep container tightly closed.  
Ground/bond container and receiving equipment.  
Use explosion-proof electrical/ventilating/lighting  
equipment. Use only non-sparking tools.  
Take precautionary measures against static discharge.  
Avoid breathing dust/fume/gas/mist/vapors/spray.  
Wash hands thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves/protective clothing/eye  
protection/face protection.

RESPONSE:  
IF SWALLOWED: Immediately call a POISON CENTER or  
doctor/physician. Induce vomiting only if directed to by  
medical personnel.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**IN CASE OF FIRE:**

Use dry chemical, foam or other appropriate extinguishing media.

**STORAGE:**

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

**DISPOSAL:**

Dispose of contents and container to appropriate waste site or reclaimed in accordance with local and national regulations.

**GHS Label Elements Symbol(s)  
for Ethanol:**



**Form** Solid in an ethanol aqueous formulation

**HMIS (for ethanol)**

Health	2
Flammability	3
Reactivity	0

## 4. FIRST AID MEASURES

<b>Skin contact</b>	Wash or flush skin immediately and thoroughly with soap and water, If irritation develops, seek medical attention
<b>Eye contact</b>	Flush for 15 minutes thoroughly with plenty of water; seek medical attention
<b>Ingestion</b>	If ingested contact a physician; do not give anything by mouth to an unconscious person. Transport to nearest medical facility for additional treatment. Do not induce vomiting.
<b>Inhalation</b>	Move to fresh air. If breathing becomes difficult, seek medical aid.
<b>Notes to physician</b>	Treat symptomatically

## 5. FIRE-FIGHTING MEASURES

In the event of fire, responders should follow appropriate protective measures to prevent skin contact and inhalation.

### **Suitable extinguishing media**

Dry chemical, foam or other appropriate extinguishing media. Water may be ineffective.

### **Special protective equipment for firefighters**

Wear self-contained breathing apparatus and protective equipment as appropriate for fire response activities.

### **Special Considerations:**

Highly flammable. Material can burn with an invisible flame.

## 6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations. Avoid contact with spilled or released material.

### **Personal precautions**

In the event of a spill or leak, use personal protective equipment to minimize contact with skin.

Keep away from heat, sparks and open flame.

Provide sufficient ventilation

### **Methods for cleaning up**

Clean up spill immediately using an inert absorbent material; dispose of according to applicable local, regional, or federal regulations.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Avoid dust formation; avoid contact with skin and eyes. Avoid breathing vapor; avoid contact with eyes, skin and clothing. Keep away from ignition sources, use only electrically grounded handling equipment and ensure adequate ventilation/fume exhaust hoods. Do not eat, drink or smoke while handling.
<b>Storage</b>	Keep in properly labeled containers. Store in ventilated room or shade below 27°C (80°F) and away from direct sunlight. Follow all precautionary information on container label. Keep away from oxidizing agents, reducing agents, acids, alkalis, and moisture.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure limits

Chemical Name	OSHA PEL (TWA)	OSHA PEL (ceiling)	ACGIH TLV	MAK
Titanium Dioxide	15 mg/m <sup>3</sup>	None	10 mg/m <sup>3</sup>	None
Ethanol	1000 ppm	None	1000 ppm	500 ppm

**Engineering measures**                      Ensure adequate fresh air ventilation is available, especially in confined areas; use local exhaust ventilation

### Personal protective equipment

**Respiratory protection**                      In case of insufficient ventilation, wear particulate respiratory protection

**Hand protection**                              Use protective gloves to prevent unnecessary skin contact

**Eye protection**                                Use safety glasses with side-shields or safety goggles

**Skin and body protection**                      Lightweight protective clothing

**Hygiene measures**                              Handle in accordance with good laboratory hygiene practices

**Environmental exposure controls**                      Prevent product from entering drains

## 9. PHYSICAL AND CHEMICAL PROPERTIES

	<b>MagReSyn<sup>®</sup> TiO<sub>2</sub> Microparticles</b>	<b>Water</b>	<b>Ethanol</b>
Physical form	Solid in aqueous media	Clear liquid	Clear liquid
Color	Black	Colorless	Colorless
Odor	None	None	Mild
Boiling Point	No data available	100°C / 212°F	78°C / 172 °F
Melting Point	No data available	0°C / 32°F	-114°C / -173 °F
Flash Point	No data available	Non-flammable	13°C / 55°F 36°C / 97°F (20%)
Auto ignition temperature	No data available	Not applicable	363°C/ 685 °F
Oxidizing properties	No data available	No data available	No data available
Water Solubility	No data available	Complete	at 20 °C / 68 °F Completely miscible
pH	Not applicable (for solid spheres)	7.0	Not applicable
Specific Gravity	No data available	1.00 at 20 °C / 68 °F	.790 at 20 °C / 68 °F
Viscosity	Not applicable	No data available	1.200 cP at 20 °C / 68 °F
Flammability	No data available	Not applicable	Flammable
Vapor Density (air =1)	Not applicable	Not applicable	1.59 at 20 °C / 68 °F
Vapor pressure	Not applicable	No data available	44 mmHG at 20°C / 68 °F
Lower/upper explosive limit	No data available	Not applicable	3.3% to 19%
Decomposition temperature	No data available	Stable under normal conditions of use	Stable under normal conditions of use

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	Stable under normal conditions of use
<b>Materials to avoid</b>	None known
<b>Hazardous decomposition products</b>	None expected under normal use conditions.
<b>Polymerization</b>	Hazardous polymerization is not known to occur

## 11. TOXICOLOGICAL INFORMATION

Chemical Name	LD50 (oral)	LD50 (dermal)	LC50 (inhalation)
MagReSyn <sup>®</sup> TiO <sub>2</sub> Microparticles	No data available	No data available	No data available
Water	Low toxicity	Low toxicity	Low toxicity
Ethanol	Low/moderate toxicity. LD50: 3450-7060 mg/kg (rat)	Low toxicity	Expected to be of low toxicity if inhaled. LC50: 20,000-20,363 mg/kg (rat)

**Complete toxicological properties have yet to be determined for nanoparticles.**

### Principle Routes of Exposure/ Potential Health effects

<b>Eyes</b>	May cause eye irritation in the event of contact
<b>Skin</b>	May cause skin irritation and/or dermatitis on contact; not a skin sensitizer
<b>Inhalation</b>	May cause irritation of respiratory tract if vapor is inhaled. Inhalation of high concentrations may cause effects to the central nervous system.
<b>Ingestion</b>	Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Causes central nervous system impairment occurs at high doses.

### Specific Effects

<b>Carcinogenic effects</b>	No known significant effects or critical hazards.
<b>Mutagenic effects</b>	No known significant effects or critical hazards.
<b>Reproductive toxicity</b>	Ethanol has been shown to cause fetotoxicity.
<b>Sensitization</b>	No known significant effects or critical hazards.
<b>Target Organ Effects</b>	Eyes, Liver, Kidneys, Central Nervous System.

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity effects</b>	No known significant effects or critical hazards.
<b>Mobility</b>	No known significant effects or critical hazards. If acetone enters soil, it will be mobile and may contaminate groundwater. Dissolves in water.
<b>Biodegradation</b>	No known significant effects or critical hazards.
<b>Bioaccumulation</b>	No known significant effects or critical hazards.

## 13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with local, regional, or federal regulations. Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification. Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.

## 14. TRANSPORT INFORMATION

**Proper shipping name** None  
**US DOT** Non-hazardous for transport  
**IATA** Non-hazardous for air transport

## 15. REGULATORY INFORMATION

### International Inventories

Chemical Name	TSCA	PICCS	ENCS	DSL	NDSL	AICS
Titanium Dioxide	Yes	Yes	Yes	Yes	No	Yes
Water	Yes	Yes	Yes	Yes	No	Yes
Ethanol	Yes	Yes	Yes	Yes	No	Yes

### **International Agency for Research on Cancer**

None of the ingredients has been listed

### **National Toxicology Program**

None of the ingredients has been listed

### U.S. Federal Regulations

#### **SARA 313**

This product is not regulated under SARA

#### **Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)**

This product does not contain HAPs

#### **California Proposition 65**

This products contains ethanol, a chemical known to have reproductive and developmental toxicological effects



## 16. OTHER INFORMATION

**For ethanol: R-phrase(s)**

R11 Highly flammable.

**For ethanol: S-phrase(s)**

S-2 Keep out of the reach of children.

S-7 Keep container tightly closed.

S-9 Keep container in a well-ventilated place.

S-16 Keep away from sources of ignition - No Smoking.

**For titanium dioxide: R-phrase(s)**

R49 Suspected carcinogen by inhalation route of exposure.

This material is sold for research and development purposes only. It is not intended for food, drug, household, agricultural, or cosmetic use. An individual technically qualified to handle potentially hazardous chemicals must supervise the use of this material.

This information is based on our present knowledge and is subject to revision.