# SIGMA-ALDRICH

## **Material Safety Data Sheet**

Version 3.5 Revision Date 07/11/2012 Print Date 04/24/2013

1. PRODUCT AND COMPANY IDENTIFICATION				
Product name	:	(−)-Riboflavin		
Product Number Brand	:	R4500 Sigma		
Supplier	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA		
Telephone	:	+1 800-325-5832		
Fax		+1 800-325-5052		
Emergency Phone # (For both supplier and manufacturer)	:	(314) 776-6555		
Preparation Information	:	Sigma-Aldrich Corporation Product Safety - Americas Region 1-800-521-8956		

## 2. HAZARDS IDENTIFICATION

### **Emergency Overview**

#### **OSHA Hazards**

No known OSHA hazards

Not a dangerous substance according to GHS.

Health hazard:	0
Flammability:	0
Physical hazards:	0
NFPA Rating	

Health hazard:	0
Fire:	0
Reactivity Hazard:	0

#### **Potential Health Effects**

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.
Ingestion	May be harmful if swallowed.

## **3. COMPOSITION/INFORMATION ON INGREDIENTS**

:	Lactoflavin Vitamin G Vitamin B2
:	C <sub>17</sub> H <sub>20</sub> N <sub>4</sub> O <sub>6</sub> 376.36 g/mol
	:

No ingredients are hazardous according to OSHA criteria.

## 4. FIRST AID MEASURES

## If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration.

#### In case of skin contact

Wash off with soap and plenty of water.

#### In case of eye contact

Flush eyes with water as a precaution.

#### If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water.

### **5. FIREFIGHTING MEASURES**

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

#### Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

#### Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx)

### 6. ACCIDENTAL RELEASE MEASURES

#### Personal precautions

Avoid dust formation. Avoid breathing vapors, mist or gas.

#### Environmental precautions

Do not let product enter drains.

#### Methods and materials for containment and cleaning up

Sweep up and shovel. Keep in suitable, closed containers for disposal.

## 7. HANDLING AND STORAGE

#### Precautions for safe handling

Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

#### Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

#### Personal protective equipment

#### **Respiratory protection**

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Immersion protection Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: > 480 min Material tested:Dermatril® (Aldrich Z677272, Size M)

Splash protection Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: > 30 min Material tested:Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

#### Eye protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin and body protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Hygiene measures

General industrial hygiene practice.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance

	Form	powder
	Colour	dark yellow
Sa	fety data	
	рН	no data available
	Melting point/freezing point	Melting point/range: 290 °C (554 °F)
	Boiling point	no data available
	Flash point	no data available
	Ignition temperature	no data available
	Autoignition temperature	no data available
	Lower explosion limit	no data available
	Upper explosion limit	no data available
	Vapour pressure	no data available
	Density	no data available
	Water solubility	no data available
	Partition coefficient: n-octanol/water	no data available
	Relative vapour density	no data available
	Odour	no data available
	Odour Threshold	no data available
	Evaporation rate	no data available

## **10. STABILITY AND REACTIVITY**

### Chemical stability

Stable under recommended storage conditions.

#### Possibility of hazardous reactions

no data available

Conditions to avoid no data available

#### Materials to avoid

Strong oxidizing agents, Reducing agents, Bases, Calcium, Metallic salts

#### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx) Other decomposition products - no data available

### **11. TOXICOLOGICAL INFORMATION**

Acute toxicity

**Oral LD50** LD50 Oral - rat - > 10,000 mg/kg

Inhalation LC50 no data available

Dermal LD50 no data available

Other information on acute toxicity no data available

Skin corrosion/irritation no data available

Serious eye damage/eye irritation no data available

Respiratory or skin sensitization no data available

#### Germ cell mutagenicity

no data available

#### Carcinogenicity

- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### **Reproductive toxicity**

no data available

#### Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System) no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System) no data available

## Aspiration hazard no data available

## Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

#### Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

## Synergistic effects no data available

Additional Information RTECS: Not available

### **12. ECOLOGICAL INFORMATION**

#### Toxicity

no data available

Persistence and degradability no data available

**Bioaccumulative potential** no data available

#### Mobility in soil no data available

**PBT and vPvB assessment** no data available

#### Other adverse effects

no data available

#### **13. DISPOSAL CONSIDERATIONS**

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

#### Contaminated packaging

Dispose of as unused product.

## **14. TRANSPORT INFORMATION**

**DOT (US)** Not dangerous goods

IMDG Not dangerous goods

#### IATA Not dangerous o

Not dangerous goods

## **15. REGULATORY INFORMATION**

#### **OSHA Hazards**

No known OSHA hazards

#### SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

#### SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

#### SARA 311/312 Hazards

No SARA Hazards

#### Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components		
Riboflavin	CAS-No. 83-88-5	Revision Date
New Jersey Right To Know Components	CAS-No.	Revision Date
Riboflavin	83-88-5	Revision Date

#### California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

## **16. OTHER INFORMATION**

#### **Further information**

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