

## 1 Identification of the substance/mixture and of the company/undertaking

- **Product identifier**
- **Trade name:** RNA-PLUS™ Solution
- **Article number:** RNAPLUS2
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
MP Biomedicals, LLC  
29525 Fountain Parkway  
Solon, OH 44139  
United States  
www.mpbio.com
- **Information department:** Product safety department
- **Emergency telephone number:** CHEMTREC: 1-800-424-9300 (1-703-527-3887)

## 2 Hazards identification

- **Classification of the substance or mixture**



GHS06 Skull and crossbones

Acute Tox. 3 H311 Toxic in contact with skin.

Acute Tox. 3 H331 Toxic if inhaled.



GHS08 Health hazard

Muta. 2 H341 Suspected of causing genetic defects.

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.



GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

H227 Combustible liquid.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



Toxic

Toxic by inhalation, in contact with skin and if swallowed.



Corrosive

Causes burns.



Harmful

Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. Possible risk of irreversible effects.

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**Dangerous for the environment**

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Contact with acids liberates very toxic gas.

· **Information concerning particular hazards for human and environment:**

The product has to be labelled due to the calculation procedure of international guidelines.

· **Classification system:**

The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

· **Label elements**

· **Labelling according to EU guidelines:**

The product has been classified and marked in accordance with directives on hazardous materials.

· **Code letter and hazard designation of product:**



Toxic

Dangerous for the environment

· **Hazard-determining components of labelling:**

phenol

Guanidine Isothiocyanate

2-mercaptoethanol

· **Risk phrases:**

Toxic by inhalation, in contact with skin and if swallowed.

Contact with acids liberates very toxic gas.

Causes burns.

Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Possible risk of irreversible effects.

· **Safety phrases:**

Keep locked up and out of the reach of children.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point.

Wear suitable protective clothing, gloves and eye/face protection.

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

In case of accident by inhalation: remove casualty to fresh air and keep at rest.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 3

Fire = 2

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = \*3

Fire = 2

Reactivity = 0

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- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

108-95-2	phenol ⚠ Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331; ⚠ Muta. 2, H341; STOT RE 2, H373; ⚠ Skin Corr. 1B, H314
	Guanidine Isothiocyanate ⚠ Acute Tox. 3, H301; Acute Tox. 3, H311; ⚠ Acute Tox. 4, H332
60-24-2	2-mercaptoethanol ⚠ Acute Tox. 3, H301; Acute Tox. 2, H310; ⚠ Skin Corr. 1B, H314; Eye Dam. 1; H227

### 4 First aid measures

- **Description of first aid measures**
- **General information:**  
 Immediately remove any clothing soiled by the product.  
 Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.  
 Remove breathing apparatus only after contaminated clothing have been completely removed.  
 In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**  
 Supply fresh air or oxygen; call for doctor.  
 In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:**  
 Do not induce vomiting; immediately call for medical help.  
 Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
 No further relevant information available.

### 5 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**  
 CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

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## 6 Accidental release measures

### · Personal precautions, protective equipment and emergency procedures

Mount respiratory protective device.

Wear protective equipment. Keep unprotected persons away.

### · Environmental precautions:

Do not allow product to reach sewage system or any water course.

Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to enter sewers/ surface or ground water.

### · Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

### · Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

## 7 Handling and storage

### · Handling:

#### · Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

Open and handle receptacle with care.

Prevent formation of aerosols.

#### · Information about protection against explosions and fires: Keep respiratory protective device available.

#### · Conditions for safe storage, including any incompatibilities

· Storage: 2-8°C

· Requirements to be met by storerooms and receptacles: No special requirements.

· Information about storage in one common storage facility: Do not store together with acids.

· Further information about storage conditions: Keep receptacle tightly sealed.

· Specific end use(s) No further relevant information available.

## 8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see item 7.

### · Control parameters

· Components with limit values that require monitoring at the workplace:

#### 108-95-2 phenol

PEL 19 mg/m<sup>3</sup>, 5 ppm  
Skin

REL Short-term value: C60\* mg/m<sup>3</sup>, C 15.6\* ppm  
Long-term value: 19 mg/m<sup>3</sup>, 5 ppm  
\*15-min; Skin

TLV 19 mg/m<sup>3</sup>, 5 ppm  
Skin; BEI

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### 60-24-2 2-mercaptoethanol

WEEL	0.2 ppm
	Skin

· **Ingredients with biological limit values:**

### 108-95-2 phenol

BEI	250 mg/g creatinine
	urine
	end of shift
	Phenol with hydrolysis (background, nonspecific)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.  
 Immediately remove all soiled and contaminated clothing.  
 Wash hands before breaks and at the end of work.  
 Store protective clothing separately.  
 Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
 Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

**Form:** Fluid

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· <b>Color:</b>	According to product specification
· <b>Odor:</b>	Characteristic
· <b>Odour threshold:</b>	Not determined.
· <b>pH-value:</b>	Not determined.
· <b>Change in condition</b>	
<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	157°C (315 °F)
· <b>Flash point:</b>	68°C (154 °F)
· <b>Flammability (solid, gaseous):</b>	Not applicable.
· <b>Ignition temperature:</b>	595°C (1103 °F)
· <b>Decomposition temperature:</b>	Not determined.
· <b>Auto igniting:</b>	Product is not selfigniting.
· <b>Danger of explosion:</b>	Product does not present an explosion hazard.
· <b>Explosion limits:</b>	
<b>Lower:</b>	1.3 Vol %
<b>Upper:</b>	9.5 Vol %
· <b>Vapor pressure at 20°C (68 °F):</b>	3.6 hPa (3 mm Hg)
· <b>Density:</b>	Not determined.
· <b>Relative density</b>	Not determined.
· <b>Vapour density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with</b>	
<b>Water:</b>	Not miscible or difficult to mix.
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
· <b>Other information</b>	No further relevant information available.

## 10 Stability and reactivity

- **Reactivity**
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

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## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

### 108-95-2 phenol

Oral	LD50	317 mg/kg (rat)
Dermal	LD50	850 mg/kg (rabbit)

### 60-24-2 2-mercaptoethanol

Oral	LD50	244 mg/kg (rat)
Dermal	LD50	150 mg/kg (rabbit)

- **Primary irritant effect:**
- **on the skin:** Caustic effect on skin and mucous membranes.
- **on the eye:** Strong caustic effect.
- **Sensitization:** No sensitizing effects known.

- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Toxic

Corrosive

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

108-95-2	phenol	3
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- **NTP (National Toxicology Program)**

None of the ingredients is listed.

## 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.

- **Ecotoxicological effects:**

- **Remark:** Toxic for fish

- **Additional ecological information:**

- **General notes:**

Water hazard class 3 (Self-assessment): extremely hazardous for water

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Toxic for aquatic organisms

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

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· **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>· <b>UN-Number</b></li> <li>· <b>DOT, ADR, IMDG, IATA</b></li> </ul>   | UN2810   |
| <ul style="list-style-type: none"> <li>· <b>UN proper shipping name</b></li> <li>· <b>DOT, IATA</b></li> <li>· <b>ADR</b></li> <li>· <b>IMDG</b></li> </ul> | TOXIC LIQUID, ORGANIC, N.O.S. (PHENOL, THIOGLYCOL)<br>2810 TOXIC LIQUID, ORGANIC, N.O.S. (PHENOL,<br>THIOGLYCOL), ENVIRONMENTALLY HAZARDOUS<br>TOXIC LIQUID, ORGANIC, N.O.S. (PHENOL, THIOGLYCOL),<br>MARINE POLLUTANT |
| <ul style="list-style-type: none"> <li>· <b>Transport hazard class(es)</b></li> <li>· <b>DOT</b></li> </ul>   |   |
| <ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul>  | 6.1 Toxic substances.<br>6.1   |
| <ul style="list-style-type: none"> <li>· <b>ADR, IMDG</b></li> </ul>  |   |
| <ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul>  | 6.1 Toxic substances<br>6.1  |
| <ul style="list-style-type: none"> <li>· <b>IATA</b></li> </ul>   |   |
| <ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul>  | 6.1 Toxic substances.<br>6.1   |
| <ul style="list-style-type: none"> <li>· <b>Packing group</b></li> <li>· <b>DOT, ADR, IMDG, IATA</b></li> </ul>   | II   |

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· <b>Environmental hazards:</b>	Product contains environmentally hazardous substances: 2-mercaptoethanol
· <b>Marine pollutant:</b>	Yes
· <b>Special marking (ADR):</b>	Symbol (fish and tree)
· <b>Special precautions for user</b>	Warning: Toxic substances
· <b>Danger code (Kemler):</b>	60
· <b>EMS Number:</b>	F-A,S-A
· <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
· <b>UN "Model Regulation":</b>	UN2810, TOXIC LIQUID, ORGANIC, N.O.S. (PHENOL, THIOGLYCOL), ENVIRONMENTALLY HAZARDOUS, 6.1, II

## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **Sara**

· **Section 355 (extremely hazardous substances):**

108-95-2 phenol

· **Section 313 (Specific toxic chemical listings):**

108-95-2 phenol

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

108-95-2 phenol

I

· **TLV (Threshold Limit Value established by ACGIH)**

108-95-2 phenol

A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

· **Product related hazard informations:**

The product has been classified and marked in accordance with directives on hazardous materials.

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· **Hazard symbols:**



Toxic  
Dangerous for the environment

· **Hazard-determining components of labelling:**

phenol  
Guanidine Isothiocyanate  
2-mercaptoethanol

· **Risk phrases:**

Toxic by inhalation, in contact with skin and if swallowed.  
Contact with acids liberates very toxic gas.  
Causes burns.  
Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.  
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
Possible risk of irreversible effects.

· **Safety phrases:**

Keep locked up and out of the reach of children.  
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point.  
Wear suitable protective clothing, gloves and eye/face protection.  
In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
In case of accident by inhalation: remove casualty to fresh air and keep at rest.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:** Product safety department

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
ACGIH: American Conference of Governmental Industrial Hygienists  
NFPA: National Fire Protection Association (USA)  
HMIS: Hazardous Materials Identification System (USA)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent