Scientific Documentation

RI914, Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED ™

Not appropriate for regulatory submission. Please visit www.spectrumchemical.com or contact Tech Services for the most up-to-date information contained in this information package.

Spectrum Chemical Mfg Corp
769 Jersey Avenue
New Brunswick, NJ 08901
Phone 732.214.1300

Ver4.06 27.December.2022

RI914, Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED ™

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CERTIFICATE OF ANALYSIS

PRODUCT SPECIFICATION

Printed: 12/21/2022

Catalog : RI914 Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED (TM)

CAS# : 6184-17-4

Formula : C17H20N4NaO9P[2H2O

Formula Weight : 514.36

Test	Limit Min. Max.
APPEARANCE	
IDENTIFICATION A	PALE GREENISH-YELLOW WITH YELLOWISH GREEN FLUORESCENCE
IDENTIFICATION B	POSITIVE FOR SODIUM AND PHOSPHATE
ASSAY (DRIED BASIS)	73.0 -- 79.0 %
SPECIFIC ROTATION, [a]D25	+37.0° to +42.0°
pH OF A 1% SOLUTION	5.0 -- 6.5
LOSS ON DRYING	-- 7.5 %
RESIDUE ON IGNITION	-- 25.0 %
FREE PHOSPHATE (asPO_4)	-- 1 %
LUMIFLAVIN	-- 0.025
RIBOFLAVIN DIPHOSPHATES, AS RIBOFLAVIN:	-- 6.0% on the dried basis
FREE RIBOFLAVIN:	-- 6.0% on the dried basis
ELEMENTAL IMPURITIES	AS REPORTED
EXPIRATION DATE	
DATE OF MANUFACTURE	
MONOGRAPH EDITION	
RESIDUAL SOLVENTS	AS REPORTED

spectrum® CHEMICAL MFG CORP
Trusted Since 1971
AN ISO 9001:2015 REGISTERED COMPANY

Corporate Office:
755-769 Jersey Ave.
New Brunswick, NJ 08901
(732) 214-1300
Fax: (732) 246-7132

West Coast Plant:
14422 S. San Pedro St.
Gardena, CA 90248
(310) 516-8000
Fax: (310) 516-9843

Certificate Of Analysis

Item Number	RI914	Lot Number	4LA0015
Item	Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED (TM)	Manufacturer Lot	CA0100477
CAS Number	6184-17-4	Manufacturer Code	9855
Molecular Formula	$C_{17}H_{20}N_4NaO_9P \cdot 2H_2O$	Molecular Weight	514.36

TEST	SPECIFICATION		RESULT
	MIN	MAX	
APPEARANCE			BRIGHT YELLOWISH ORANGE POWDER
IDENTIFICATION A	PALE GREENISH-YELLOW WITH YELLOWISH GREEN FLUORESCENCE		PALE GREENISH-YELLOW WITH YELLOWISH GREEN FLUORESCENCE
IDENTIFICATION B	POSITIVE FOR SODIUM AND PHOSPHATE		POSITIVE FOR SODIUM AND PHOSPHATE
ASSAY (DRIED BASIS)	73.0	79.0 %	76.8%
SPECIFIC ROTATION, [a]D25	+37.0° to +42.0°		+38.53°
pH OF A 1% SOLUTION	5.0	6.5	5.7
LOSS ON DRYING		7.5 %	4.4%
RESIDUE ON IGNITION		25.0 %	19.6%
FREE PHOSPHATE (as PO_4)		1 %	0.8%
LUMIFLAVIN		0.025	0.011
RIBOFLAVIN DIPHOSPHATES, AS RIBOFLAVIN:		6.0% on the dried basis	4.6%
FREE RIBOFLAVIN:		6.0% on the dried basis	3.0%
ELEMENTAL IMPURITIES	AS REPORTED		COMPLIES WITH STANDARD
EXPIRATION DATE			31-OCT-2023
DATE OF MANUFACTURE			01-NOV-2021
MONOGRAPH EDITION			USP 2021
RESIDUAL SOLVENTS	AS REPORTED		.

TEST	SPECIFICATION		RESULT
	MIN	MAX	
CLASS 2 (SOLVENT) / METHANOL			<3000PPM
CLASS 2 (solvent) / ACETONITRILE			<410 PPM
CLASS 2 (solvent) / PYRIDINE			<200 PPM

Certificate of Analysis Results Entered By:

BPATEL
Bhargavi Patel
24-FEB-22 08:36:16

Spectrum Chemical Mfg Corp
777 Jersey Avenue
New Brunswick 08901 NJ

Certificate of Analysis Results Approved By:

BPATEL
Bhargavi Patel
24-FEB-22 08:37:02

All pharmaceutical ingredients are tested using current edition of applicable pharmacopeia.

Read and understand label and SDS before handling any chemicals. All Spectrum's chemicals are for manufacturing, processing, repacking or research purposes by experienced personnel only. It is the customer's responsibility to provide adequate hazardous material training and ensure that appropriate Personal Protective Equipment (PPE) is used before handling any chemical.

Spectrum Chemical Mfg. Corp. repackages Active Pharmaceutical Ingredient chemicals provided by other manufacturers and suppliers. For traceability purposes, Spectrum's Certificate of Analysis contains an identifier code unique to each manufacturer or supplier, as well as the chemical's lot number provided on the original manufacturer Certificate of Analysis. This material is manufactured by HARMAN FINOCHEM LIMITED at Plot No. E-7, E-8 & E-9 M.I.D.C. Industrial Area Chikalthana, Aurangabad, Maharashtra 431006, India (IND). Copies of the original Certificate of Analysis are available upon request from your Spectrum Sales Representative or by calling Spectrum's Quality Department at 1-800-772-8786.

SAFETY DATA SHEET

Revision date 20-December-2022 **Revision Number** 4

1. Identification

Product identifier

Product Name RIBOFLAVIN 5'-PHOSPHATE SODIUM, USP, bioCERTIFIED™

Other means of identification

Product Code(s) RI914

Synonyms None

Other information Riboflavin 5'-Phosphate Sodium, Dihydrate, CAS # 6184-17-4. Anhydrous CAS # 130-40-5.

Recommended use of the chemical and restrictions on use

Recommended use No information available

Restrictions on use No information available

Details of the supplier of the safety data sheet

Supplier Address
Spectrum Chemical Mfg. Corp.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Emergency telephone number

Emergency Telephone Chemtrec 1-800-424-9300

2. Hazard(s) identification

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Hazard statements
This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

The product contains no substances which at their given concentration, are considered to be hazardous to health.

Appearance Crystalline powder	**Physical state** Solid	**Odor** Odorless

Other information
No information available.

3. Composition/information on ingredients

Substance

Chemical name	CAS No	Weight-%
Riboflavin 5'-Phosphate Sodium, dihydrate	6184-17-4	100

4. First-aid measures

Description of first aid measures

Inhalation Remove to fresh air.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact Wash skin with soap and water.

Ingestion Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Large Fire CAUTION: Use of water spray when fighting fire may be inefficient.

Unsuitable extinguishing media Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the chemical No information available.

Hazardous combustion products Carbon Monoxide, Carbon Dioxide. Sodium oxides. Phosphorus oxides. Nitrogen oxides (NOx).

Explosion data

Sensitivity to mechanical impact none.

Sensitivity to static discharge none.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Sensitive to light. Store in light-resistant containers. Keep container tightly closed in a dry and well-ventilated place. Flushed with nitrogen.

8. Exposure controls/personal protection

Control parameters

Exposure Limits The following ingredients are the only ingredients of the product above the cut-off level (or level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure limits from the sources listed here.

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection No special protective equipment required.

Skin and body protection No special protective equipment required.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Appearance	Crystalline powder
Color	Yellow-orange
Odor	Odorless
Odor threshold	No information available

Property	**Values**	**Remarks • Method**
pH	5.0-6.5 (for a 1% solution)	None known
Melting point / freezing point	no data available	None known
Boiling point / boiling range	no data available	None known
Flash point	no data available	None known
Evaporation rate	no data available	None known
Flammability (solid, gas)	no data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Vapor density	no data available	None known
Relative density	no data available	None known
Water solubility	Soluble in water	None known
Solubility(ies)	no data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	no data available	None known
Decomposition temperature		None known
Kinematic viscosity	no data available	None known
Dynamic viscosity	No data available	None known

Other information

Explosive properties	No information available
Oxidizing properties	No information available
Softening point	No information available
Molecular weight	514.36 g/mol
VOC Content (%)	No information available
Liquid Density	No information available
Bulk density	No information available

10. Stability and reactivity

Reactivity	No information available.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	None under normal processing.
Conditions to avoid	None known based on information supplied.
Incompatible materials	None known based on information supplied.
Hazardous decomposition products	None known based on information supplied.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Specific test data for the substance or mixture is not available.
Eye contact	Specific test data for the substance or mixture is not available.
Skin contact	Specific test data for the substance or mixture is not available.

Ingestion Specific test data for the substance or mixture is not available.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Acute toxicity

Numerical measures of toxicity
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.
Serious eye damage/eye irritation No information available.
Respiratory or skin sensitization No information available.
Germ cell mutagenicity No information available.

Reproductive toxicity No information available.

STOT - single exposure No information available.
STOT - repeated exposure No information available.
Aspiration hazard No information available.

Other adverse effects No information available.

Interactive effects No information available.

12. Ecological information

Ecotoxicity The environmental impact of this product has not been fully investigated.

Persistence and degradability No information available.
Bioaccumulation Inherently biodegradable.

Other adverse effects No information available.

13. Disposal considerations

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

14. Transport information

DOT not regulated

TDG not regulated

MEX not regulated

ICAO (air) not regulated

IATA	not regulated
IMDG	not regulated
RID	not regulated
ADR	not regulated
ADN	not regulated

15. Regulatory information

International Inventories

TSCA	Not listed
Note	*Contact supplier for details. One or more substances in this product are either not listed on the US TSCA inventory, listed on the confidential US TSCA inventory or are otherwise exempted from inventory listing requirements

DSL/NDSL	Does not Comply
EINECS/ELINCS	Does not Comply
ENCS	This product complies with ENCS:
IECSC	This product complies with China:
KECL	Does not Comply
PICCS	Does not Comply
AICS	This product does not comply with AICS

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations
This product does not contain any substances regulated under applicable state right-to-know regulations

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA
Health hazards 0
Flammability 0
Instability 0
Physical and chemical properties -
HMIS
Health hazards 0
Flammability 0
Physical hazards 0
Personal protection X

Key or legend to abbreviations and acronyms used in the safety data sheet
Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value		

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Revision date 20-December-2022
Revision Note No information available.
Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

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Certification of Compliance with current Good Manufacturing Practices

Dear Valued Customer:

Spectrum Chemical Mfg Corp certifies that the following product(s) is produced, processed, packaged and held in compliance with current Good Manufacturing Practices (cGMP) in accordance with the applicable parts of 21 CFR, parts 210 and 211 of the Code of Federal Regulations.

Catalog Number	Product Name
RI914	Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED ™

Spectrum is an FDA registered and inspected Drug Establishment. Our United States Food and Drug Administration (USFDA) Registration numbers are as follows:

Spectrum-Gardena, CA: 2020632
Spectrum-New Brunswick, NJ: 2246824

Thank you for your interest in Spectrum products. If we may be of further assistance, please feel free to contact the Quality Assurance department at 310-516-8000 or via email at qualityassurance@spectrumchemical.com

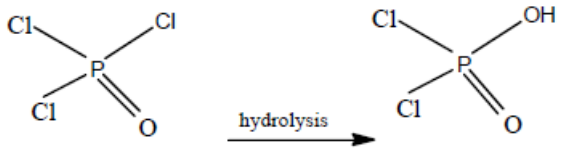
Sincerely,

Oralia Chavez
Quality Assurance Specialist

Manufacturing Process Flowchart

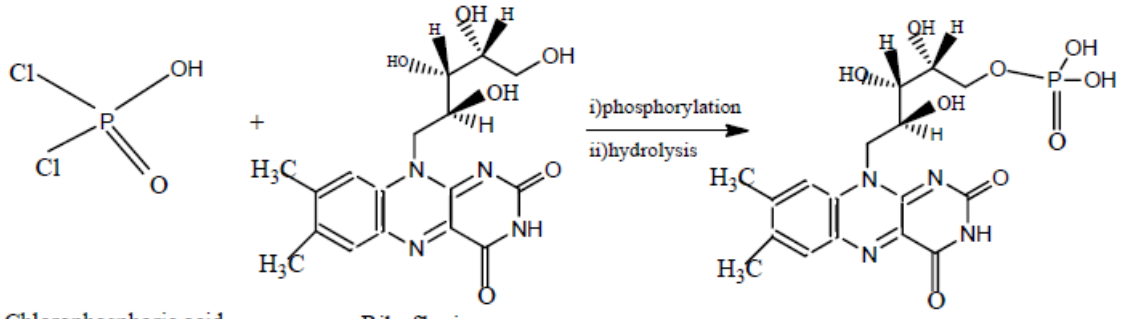
Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED(TM)

(Cat# RI914)



Phosphorus oxychloride
M.W.:153.32
M.F.:$POCl_3$
CAS no.10025-87-3

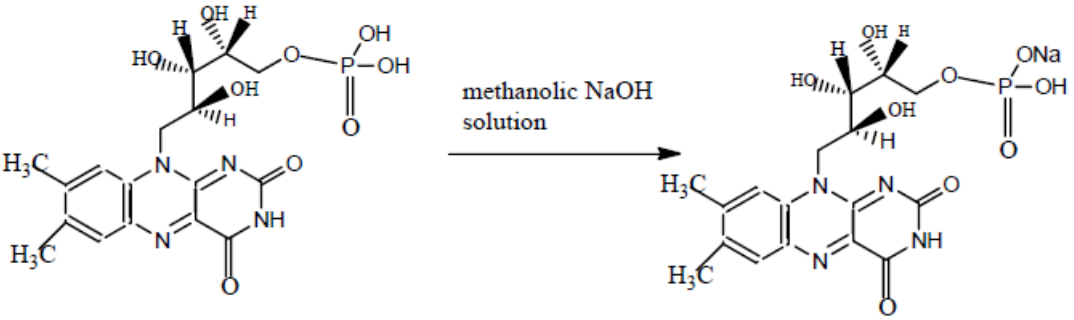
Chlorophosphoric acid
M.W.:116.44
M.F.:ClH_2O_3P
CAS no.13779-42-5



Chlorophosphoric acid
M.W.:116.44
M.F.:ClH_2O_3P
CAS no.13779-42-5

Riboflavin
M.W.:376.4
M.F.:$C_{17}H_{20}N_4O_6$
CAS no.83-88-5

Riboflavin hydrogen phosphate
M.W.:456.34
M.F.:$C_{17}H_{21}N_4O_9P$
CAS no.146-17-8



Riboflavin hydrogen phosphate
M.W.:456.34
M.F.:$C_{17}H_{21}N_4O_9P$
CAS no.146-17-8

Riboflavin sodium phosphate
M.W.:478.3
M.F.:$C_{17}H_{20}N_4NaO_9P$
CAS no.130-40-5

CORPORATE HEADQUARTERS
769 Jersey Avenue
New Brunswick, NJ 08901
PHONE 732.214.1300
FAX 732.246.7132

WEST COAST FACILITY
14422 South San Pedro Street
Gardena, California 90248
PHONE 310.516.8000
FAX 310.516.9843

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RI914, Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED ™

Source Statement

The above mentioned catalog item is manufactured by chemical synthesis. No animal or plant derived products are used in the manufacturing process.

BSE/TSE Statement

The above mentioned catalog item does not contain nor is manufactured using any animal derived products and is therefore, BSE/TSE free.

Allergen Statement

The above mentioned catalog item does not contain any of the following:

- Milk
- Egg
- Fish
- Shellfish
- Tree Nuts
- Wheat
- Peanuts
- Soy
- Cereals containing Gluten
- Celery
- Mustard
- Sesame Seed
- Corn
- Latex
- Sulfites > 10 ppm

EU Fragrance Allergen Statement

The above mentioned catalog item does not contain any of the 26 EU fragrance allergens listed in Annex III lines 67-92. These substances are not intentionally added to the following chemical and therefore are not expected to be present.

GMO Statement

The above mentioned catalog item is manufactured without the use of genetically modified organisms and is therefore GMO free.

Melamine Statement

The above mentioned catalog does not use or add melamine to the manufacturing process and is considered melamine-free.

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Nitrosamine Statement

Based on knowledge of the manufacturing process, nitrosamine impurities are not known or suspected to be present in this material.

Animal Testing Statement

The above mentioned catalog item has not been tested on animals.

Organic Compliance Statement

The above mentioned catalog item has not been produced using GMOs, irradiation, ethylene oxide (EtO) or sewage sludge.

Shelf Life Statement

The above mentioned catalog item is typically assigned a shelf life of 24 months from the date of manufacture. The actual assigned shelf life for any specific lot should be referenced on the Certificate of Analysis.

Other Chemicals Statement

Spectrum does not have any reason to suspect the above mentioned catalog item contains any of the following chemicals. This product does not come into contact with these chemicals during packaging or storage:

- Aflatoxins
- Antibiotics
- Bisphenol A (BPA)
- CMR Substances
- Parabens
- Pesticides
- Phthalates
- Preservatives

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RE: Elemental Impurities - Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED(TM) (Cat# RI914)

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

The above material complies with the USP<232>, <233> Elemental Impurities and the ICH Q3D Elemental Impurities Guideline. The following elemental impurities are likely to be present:

Elemental Impurity		Class	Expected Concentration
Nickel	Ni	2A	< 0.5 ppm
Copper	Cu	3	< 7.5 ppm

Other elemental impurities considered by USP <232>, <233> and ICH Q3D which are not addressed in the above mentioned table are not likely to be present. These substances are not used in the production process, are not intentionally added or known to be present in the above mentioned material.

This information is subject to change and is intended for risk assessment only. It is responsibility of the end user to evaluate suitability of any chemical for the intended use as well as to assess compound-specific limits of daily intake of metal impurities. For lot-specific information, please refer to the respective Certificate of Analysis.

If you have any further questions, please contact us by telephone at 1(800)772-8786 Option 2, or by email at TechServices@spectrumchemical.com.

Sincerely,

Technical Services
Spectrum Chemical Mfg. Corp.

This document has been produced electronically and is valid without a signature.

CORPORATE HEADQUARTERS
769 Jersey Avenue
New Brunswick, NJ 08901
PHONE 732.214.1300
FAX 732.246.7132

WEST COAST FACILITY
14422 South San Pedro Street
Gardena, California 90248
PHONE 310.516.8000
FAX 310.516.9843

spectrum®

RE: Residual Solvents - Riboflavin 5'-Phosphate Sodium, USP, bioCERTIFIED(TM) (Cat# RI914)

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

The above mentioned catalog item complies with the requirements of USP <467> Residual Solvents and ICH Q3C Residual Solvents Guideline. The following solvents are likely to be present:

Residual Solvent	Class	Expected Concentration
Acetonitrile	2	< 410 ppm
Pyridine	2	< 200 ppm
Methanol	2	< 3000 ppm

No Class 1, Class 3, or other solvents are used or produced in the manufacturing process of this material.

For lot-specific information, please refer to the respective Certificate of Analysis.

If you have any further questions, please contact us by telephone at 1(800)772-8786 Option 2, or by email at TechServices@spectrumchemical.com.

Sincerely,

Technical Services
Spectrum Chemical Mfg. Corp.

This document has been produced electronically and is valid without a signature.

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New Brunswick, NJ 08901
PHONE 732.214.1300
FAX 732.246.7132

WEST COAST FACILITY
14422 South San Pedro Street
Gardena, California 90248
PHONE 310.516.8000
FAX 310.516.9843

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Label Information

The Spectrum label presents technical and safety information in an easily understood format. Our technical specialists stay abreast of the latest requirements of the Globally Harmonized System for Classification and Labelling of Chemicals (GHS), as well as the Occupational Safety and Health Administration (OSHA), the Food and Drug Administration (FDA) and other government regulatory agencies in order to ensure compliance, accuracy and concise hazard communication. Below you will find a typical label example for this catalog item.

Exp. Date: 00-00-0000

4945 2R1914

USE CARE: This material has been evaluated per GHS/OSHA criteria and is not classified as hazardous. All chemicals may pose unknown hazards and must be used with caution. Use personal protection and safe handling methods consistent with proper workplace safety practices. Consult SDS for additional properties and precautions. If adverse reaction occurs seek medical attention.

KEEP FROM CHILDREN

WARNING:
Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

RI914 **SIZ SY**

Riboflavin 5´-Phosphate Sodium

USP, bioCERTIFIED™

CAS 6184-17-4

CAS 130-40-5

CAUTION: For manufacturing, processing or repacking. Rx only. Further processing and testing required for use in parenteral applications.
Read and understand the label and Safety Data Sheet (SDS) prior to use.

Chemical Emergency: (800)424-9300

www.SpectrumChemical.com

$C_{17}H_{20}N_4NaO_9P \bullet 2H_2O$

F.W. 514.36

Manufacturer/Supplier Code	?
Manufacturer Lot Number	?
Assay (Dried Basis)	73.0-79.0%
Specific Rotation, $[\alpha]_D^{25}$	+37.0° to +42.0°
pH of a 1% Solution	5.0-6.5
MAXIMUM LIMITS	
Loss on Drying	7.5%
Residue on Ignition	25.0%
Free Phosphate (as PO_4)	1%
Free Riboflavin and Riboflavin Diphosphates	To pass test
Lumiflavin	To pass test
Elemental Impurities	As reported
Residual Solvents	To pass test
Microbial Limits:	
TAMC	1000 CFU/g
TYMC	100 CFU/g
Endotoxins	10 IU/g

LIGHT SENSITIVE: Keep tightly closed in light-resistant containers.

FLUSHED WITH NITROGEN, VACUUM SEALED

Repackaged by Spectrum as:

G 1/J10GHS-A ? Lot No. XQ####

Spectrum Chemical Mfg Corp

Corporate Headquarters:
769 Jersey Ave.
New Brunswick, NJ 08901
732.214.1300

West Coast Facility:
14422 S. San Pedro St.
Gardena, CA 90248
310.516.8000

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RE: Lot Numbering System

Dear Valued Customer:

This letter is to inform you of Spectrum Chemicals and Laboratory Products' Lot Numbering System. The system is based on an alpha-numerical sequence which provides the month, year and location of production.

The lot numbering system utilized until 2010 is a sequence of **six characters**, two letters followed by four numbers. The first letter represents the year, for example, Y denotes 2009 and Z denotes 2010. The second letter represents the month and site, for example, A-L denotes January through December at Spectrum's Gardena, CA facility, while M-X denotes January through December at the New Brunswick, NJ facility. The following four numbers are sequentially assigned.

Example: ZI0928 = The 928th material produced in California in September 2010

The lot numbering system utilized for 2011 and forward, is a sequence of **seven characters**. The first character, a number, represents the production facility:

1 = Gardena, CA Facility
2 = New Brunswick, NJ Facility
3 = China Facility
4 = Pharmacy, NJ Facility

The second character, a letter, represents the year. For example, A denotes 2011 and B denotes 2012. The third character, a letter, represents the month, with A denoting January and L denoting December. The following four numbers are sequentially assigned.

Example: 2AA0706 = The 706th material produced in New Jersey in January 2011

Thank you for your interest with Spectrum products. Please feel free to contact us at 310-516-8000 or via email at quality_assurance@spectrumchemical.com if we may be of further assistance.

Sincerely,

Oralia Chavez,
Quality Assurance Specialist

CORPORATE HEADQUARTERS
769 Jersey Avenue
New Brunswick, NJ 08901
PHONE 732.214.1300
FAX 732.246.7132

WEST COAST FACILITY
14422 South San Pedro Street
Gardena, California 90248
PHONE 310.516.8000
FAX 310.516.9843