TECHNICAL DATA SHEET

Vitamin B2 (Riboflavin)

Fermentation-derived | USP 2024 | Food Grade

This Technical Data Sheet is issued by KEEP INGREDIENTS CO. LTD for the evaluation of the product described herein. The supplier and the customer undertake to maintain the CONFIDENTIAL information contained or enclosed in this document.

1. TECHNICAL DATA SHEET

Product Description

Vitamin B2 (Riboflavin) is a water-soluble vitamin of the B-complex group supplied as a yellow or orange-yellow crystalline powder. It is produced by a microbial fermentation process (fermentation-derived) and is derived from glucose; it contains no animal or animal by-products and is a vegan product .

The manufacturing route covers master-microorganism preparation, sub-culturing, inoculation and fermentation, followed by membrane filtration, crystallization and re-crystallization, centrifugal separation, dispersion and grinding, liquid mixing, and spray drying, sieving and packing (see Section 3 – Process Chart).

Product Information

Item	Information
Product name	Vitamin B2 (Riboflavin)
Synonyms	Lactoflavin; Vitamin B2
CAS No.	83-88-5
Molecular formula	$C_{17}H_{20}N_4O_6$
Molecular weight	376.36
Appearance	Yellow or orange-yellow crystalline powder
Production method	Microbial fermentation (derived from glucose)
Reference standard	USP 2024; GB 14752-2010 (food additive)
Grade	Food Grade (food additive)
Countries of origin	China
Packing	25 kg/drum
Shelf life	3 years
Transport	Keep dry; non-dangerous cargo
Storage	Tightly sealed, keep in a dry place

2. PRODUCT SPECIFICATION

The specifications below are compiled from the supplied Technical Data Sheet and Certificate of Analysis, referenced to USP 2024. The product also conforms to the Chinese food-additive standard GB 14752-2010.

2.1 Specification (USP 2024)

Item	Specification	Method
Description	Yellow or orange-yellow crystalline powder	Visual
Identification	Intense yellowish-green fluorescence that disappears upon the addition of mineral acids or alkalies	USP<197>
Lumiflavin	≤ 0.025	USP<857>
Specific rotation	−115° to −135°	USP<781S>
Assay	98.0–102.0%	USP<853>
Loss on drying	≤ 1.5%	USP<731>
Residue on ignition	≤ 0.3%	USP<281>
Lead (Pb)	≤ 1 ppm	USP<251>
Arsenic (As)	≤ 1 ppm	USP<211>
Mercury (Hg)	≤ 0.1 ppm	USP<231>
Cadmium (Cd)	≤ 1 ppm	USP<261>
Heavy metals (as Pb)	≤ 10 ppm	USP<231>
Primary aromatic amines	≤ 100 ppm	GC-MS
Bulk density	≥ 0.30 g/ml	USP<616>
Particle size	100% passes through 60 mesh	USP<786>
Aerobic plate count	≤ 1,000 CFU/g	USP<2024>
Yeast & moulds	≤ 100 CFU/g	USP<2024>
E. coli	Negative	USP<2024>

2.2 Contaminants & Other Controls

• Heavy metals: less than 10 ppm (per Directive 1881/2006/EC as amended) – all raw materials and auxiliary materials.

• Mycotoxins – Regulation (EC) No 1881/2006 and subsequent amendments: Aflatoxin B1 < 5 ppb; Aflatoxins B1+B2+G1+G2 < 10 ppb; Ochratoxin A < 15 ppb; Melamine.

• Polycyclic aromatic hydrocarbons – Regulation (EU) 2015/1933 amending Regulation (EC) No 1881/2006: max. 10µg/kg benzo(a)pyrene; 50 µg/kg for the sum of PAH4 (benzo[a]pyrene, chrysene,benz[a]anthracene, benzo[b]fluoranthene) in food supplements.

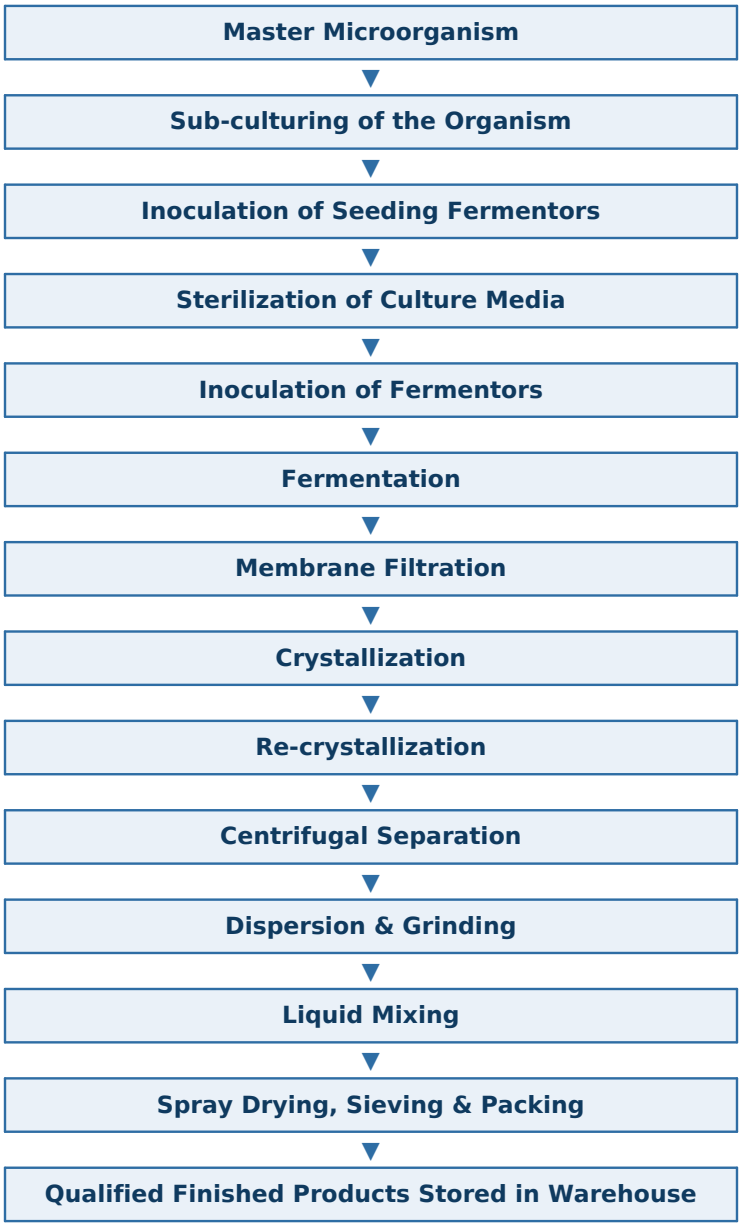
• Pesticides – comply with Regulation (EC) No 396/2005, EP 07/2008:20813 and USP<561>.

• Residual solvents – not manufactured with the extraction solvents listed under Directive 2009/32/EC and Directive 2010/59/EC; complies with EP 5.4, USP<476> and ICH Q3C(R7).

• Radioactivity / general declaration: the product is a general chemical, non-flammable, non-explosive, non-corrosive, non-toxic and non-hazardous, non-oxidizer, non-narcotic, non-psychotropic, non-radioactive, and is not a raw material for chemical weapons; non-dangerous for maritime transport.

3. PROCESS CHART

Vitamin B2 (Riboflavin) is produced by a microbial fermentation process. The process is shown below as supplied by KEEP INGREDIENTS CO. LTD.



4. CERTIFICATE OF ANALYSIS

Item	Data
Product name	Vitamin B2 (Riboflavin)
Batch No.	KYVB22026070501
Manufacturing date	2026.07.05
Expiry date	2029.07.04
Packing	25 kg/drum
Quantity	500 kg
Reference standard	USP 2024

Test Results (Batch KYVB22025070501)

Test item	Specification (USP 2024)	Result	Method
Description	Yellow or orange-yellow crystalline powder	Conforms	Visual
Identification	Intense yellowish-green fluorescence that disappears upon addition of mineral acids or alkalies	Conforms	USP<197>
Lumiflavin	≤ 0.025	0.006	USP<857>
Specific rotation	−115° to −135°	−129.9°	USP<781S>
Assay	98.0–102.0%	99.9%	USP<853>
Loss on drying	≤ 1.5%	0.21%	USP<731>
Residue on ignition	≤ 0.3%	0.05%	USP<281>
Lead (Pb)	≤ 1 ppm	< 1 ppm	USP<251>
Arsenic (As)	≤ 1 ppm	< 1 ppm	USP<211>
Mercury (Hg)	≤ 0.1 ppm	< 0.1 ppm	USP<231>
Cadmium (Cd)	≤ 1 ppm	< 1 ppm	USP<261>
Heavy metals (as Pb)	≤ 10 ppm	< 10 ppm	USP<231>
Primary aromatic amines	≤ 100 ppm	< 100 ppm	GC-MS
Bulk density	≥ 0.30 g/ml	0.48 g/ml	USP<616>
Particle size	100% passes through 60 mesh	Conforms	USP<786>
Aerobic plate count	≤ 1,000 CFU/g	< 1,000 CFU/g	USP<2024>
Yeast & moulds	≤ 100 CFU/g	< 100 CFU/g	USP<2024>
E. coli	Negative	Conforms	USP<2024>

Conclusion: Conforms to USP 2024.

5. PRODUCT STATEMENTS

5.1 Non-Irradiation / Non-Ionized Statement

NON-IRRADIATION / NON-IONIZED STATEMENT

We hereby certify that the product has not been sterilized by ionizing radiation at any point during the entire manufacturing process and therefore is in full compliance with the relevant legislated regulations, Directives 1999/2/EC & 1999/3/EC, concerning foods and food ingredients treated with ionizing radiation.

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5.2 BSE/TSE Statement

BSE/TSE STATEMENT

Vitamin B2 (Riboflavin) is produced by a fermentation process. It contains no ingredients of ruminant origin and no materials derived from, or exposed to, ruminants affected by or under quarantine for transmissible spongiform encephalopathy (TSE) / bovine spongiform encephalopathy (BSE), and it conforms to EU legislation 999/2001. No animal material is contained during the whole production process, and no raw materials generated from animals are used during production.

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5.3 Packaging (Food Contact) Statement

PACKAGING STATEMENT

We hereby certify that the packaging used is in compliance with Commission Regulation (EC) No 1935/2004 and Regulation (EU) No 10/2011 regarding packaging materials and articles intended to come into contact with food.

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5.4 Pesticide Statement

PESTICIDE STATEMENT

Based on our actual knowledge of the production process, raw materials and equipment used, potential pesticide residues in the above-mentioned product comply with the following rules and regulations: Regulation (EC) No 396/2005; EP 07/2008:20813; USP<561>.

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5.5 Residual Solvent Statement

RESIDUAL SOLVENT / SOLVENT USE STATEMENT

We hereby declare that Riboflavin (Vitamin B2), in accordance with Directive 2009/32/EC, Directive 2010/59/EC and amendments, is not manufactured with the listed extraction solvents. The product meets Directive 2010/59/EU amending Directive 2009/32/EC on extraction solvents used in the production of foodstuffs and food ingredients, EP 5.4, USP<476> and ICH Q3C(R7).

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5.6 Contaminant Statement

CONTAMINANT STATEMENT

This is to certify that the product meets the requirements of Regulation (EC) No 1881/2006 and subsequent amendments concerning the maximum levels of contaminants: Aflatoxin B1 < 5 ppb; Aflatoxins B1 + B2 + G1 + G2 < 10 ppb; Ochratoxin A < 15 ppb; Melamine. It also meets Regulation (EU) 2015/1933 amending Regulation (EC) No 1881/2006 as regards maximum levels for polycyclic aromatic hydrocarbons: maximum level of 10 µg/kg of benzo(a)pyrene and 50 µg/kg for the sum of PAH4 in food supplements.

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5.7 Nanomaterial Statement

NANOMATERIAL STATEMENT

According to the definition of “nanomaterials” in EU Regulation (EU) No 1169/2011 on the provision of food information to consumers, we hereby attest that no nanomaterials are used in the formulation or in the packaging material of the product.

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5.8 Anti-Doping Statement

ANTI-DOPING STATEMENT

As per the list of 2017 and subsequent amendments of the World Anti-Doping Agency, the ingredient is not a doping substance and not a combination of doping substances. The ingredient does not contain any doping substance and does not result from a doping substance.

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5.9 GMO / Non-GMO Statement

GMO / NON-GMO STATEMENT

Vitamin B2 (Riboflavin) is neither a genetically modified organism nor does it contain or consist of GMOs, nor is it produced from, or contains ingredients produced from, GMOs. It is not derived from genetically modified organisms, according to Regulations 1829/2003/EC and 1830/2003/EC concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms, and any amending legislation. During the manufacture of the product there is no possibility of cross-contamination.

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5.10 Allergen Statement

The above-mentioned product conforms to Regulation (EC) No 1169/2011 and the amending Directives 2003/89/EC, 2005/68/EC and 2007/68/EC. The allergens below are neither present in the product nor on the production line, production workshop or production factory, and there is no cross-contamination (N = absent / not applicable).

Allergen	Production line	Production workshop	Production factory	Cross-contamination
Cereals containing gluten and products thereof	N	N	N	N
Crustaceans and products thereof	N	N	N	N
Eggs and products thereof	N	N	N	N
Fish and products thereof	N	N	N	N
Peanuts and products thereof	N	N	N	N
Soybeans and products thereof	N	N	N	N
Milk and products thereof (including lactose)	N	N	N	N
Nuts or products thereof	N	N	N	N
Celery and products thereof	N	N	N	N
Mustard and products thereof	N	N	N	N
Sesame seeds and products thereof	N	N	N	N
Sulphur dioxide and sulphites at concentrations of more than 10 mg/kg or 10 mg/l expressed as SO_2	N	N	N	N
Lupines and products thereof	N	N	N	N
Molluscs and products thereof	N	N	N	N

Exclusions as per the Directive footnotes (wheat-based glucose syrups and maltodextrins, barley-based glucose syrups, fish gelatine used as carrier for vitamin or carotenoid preparations, fully refined soybean oil, etc.) do not affect the above declaration for this product.

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5.11 Gluten-Free Statement

GLUTEN-FREE STATEMENT

The product above does not contain gluten. During the production process there is no chance for cross-contamination with gluten. We hereby state that the product complies with Regulation (EC) No 828/2014.

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5.12 Vegan Statement

VEGAN STATEMENT

We hereby declare that the above-mentioned product, which we produced, is derived from glucose and does not contain any animal or animal by-products. It is a vegan product.

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5.13 Heavy Metals Statement

HEAVY METALS STATEMENT

According to Directive 1881/2006/EC as amended, we hereby state that the above-mentioned product and its components (all raw materials and auxiliary materials) present less than 10 ppm of heavy metals.

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5.14 Expected Usage

EXPECTED USAGE

The expected usage of this product is its incorporation as an ingredient in the food industry or the pharmaceutical industry.

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6. STABILITY DATA

Long-term stability data for Vitamin B2 products (batches sampled on 2025.03.24/25/26 and re-tested on 2025.06.24/25/26), supplied by KEEP INGREDIENTS CO. LTD:

Sampling date	Batch	Character	Identification	Lumiflavin (≤0.025)	Specific rotation (−115°~−135°)	Assay (98.0–102.0%)	Loss on drying (≤1.5%)	Residue on ignition (≤0.3%)	Heavy metals (≤10 ppm)
2025.03.24	KYVB-20250324	Orange-yellow crystalline powder	Conforms	0.01	−125°	99.80%	0.29	0.1	<10 ppm
2025.06.24	KYVB-20250324	Orange-yellow crystalline powder	Conforms	0.01	−125°	99.80%	0.33	0.1	<10 ppm
2025.03.25	KYVB-20250325	Orange-yellow crystalline powder	Conforms	0.011	−132°	99.90%	0.35	0.12	<10 ppm
2025.06.25	KYVB-20250325	Orange-yellow crystalline powder	Conforms	0.011	−132°	99.90%	0.36	0.12	<10 ppm
2025.03.26	KYVB-20250326	Orange-yellow crystalline powder	Conforms	0.009	−123.9°	99.50%	0.28	0.13	<10 ppm
2025.06.26	KYVB-20250326	Orange-yellow crystalline powder	Conforms	0.009	−123.9°	99.50%	0.30	0.13	<10 ppm

All batches remained within specification throughout the stability testing period.

7. HANDLING, STORAGE & TRANSPORT

Item	Information
Storage	Tightly sealed, keep in a dry place. Store away from oxidizing agents; keep container tightly closed in a dry and well-ventilated place.
Handling	Provide appropriate exhaust ventilation where dust is formed; follow safe industrial hygiene practices and wear proper protective equipment.
Transport	Keep dry. Non-dangerous cargo. Non-dangerous for DOT (US), IATA and IMDG transport.
Conditions to avoid	Exposure to light; exposure to moisture (moisture sensitive).
Incompatible materials	Reducing agents, strong bases, strong oxidizing agents.
Shelf life	3 years

This Technical Data Sheet is issued by KEEP INGREDIENTS CO. LTD and is valid together with the supplied Certificate of Analysis. The information given is based on our knowledge of the product at the time of publication and is given in good faith; it does not exempt the user from applying the regulations governing the use, storage and labelling of the product in their own country.