TECHNICAL DATA SHEET

Spermidine (Wheat Germ Extract)

Botanical Source: Triticum aestivum (wheat) Germ | Grades: Spermidine 0.1% / 0.2% / 1.0% |

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. PRODUCT DESCRIPTION & INFORMATION

Product Description

Spermidine is a natural polyamine present in wheat germ. The product is a wheat germ extract standardised by its spermidine content, obtained from the germ of Triticum aestivum (wheat) through extraction, concentration and crystallisation. It is a light yellow powder with a characteristic odour and taste, offered in three grades standardised to spermidine contents of 0.1%, 0.2% and 1.0%. The product is suitable as an ingredient for food, pharmaceutical and cosmetic applications.

Product Information

Item	Information
Product name	Spermidine (Wheat Germ Extract)
Botanical source	Triticum aestivum (wheat)
Plant part used	Germ
Grades	Spermidine 0.1% / 0.2% / 1.0%
Product form	Light yellow powder
CAS No. (spermidine)	124-20-9
Synonyms	Triticum aestivum extract; wheat germ extract
Molecular formula (spermidine)	$C_7H_{19}N_3$
Molecular weight (spermidine)	145.2 g/mol
Country of origin	China
Supplier	KEEP INGREDIENTS CO. LTD, Xi'an, Shaanxi, China
Shelf life	24 months in the original package under stated conditions

2. PRODUCT GRADES & SPECIFICATION

2.1 Available Grades

Grade	Spermidine (GC)	Typical batch result
Spermidine 0.1%	≥ 0.1%	0.12%
Spermidine 0.2%	≥ 0.2%	0.23%
Spermidine 1.0%	≥ 1.0%	1.12%

2.2 Product Specification

Item	Specification	Test Method
Spermidine	Per grade (0.1% / 0.2% / 1.0%)	GC
Spermine	0.4-1.2 mg/g	GC
Spermidine trichloride	< 0.1 μg/g	GC
Putrescine	< 0.3 mg/g	GC
Cadaverine	≤ 16.0 μg/g	GC
Appearance	Light yellow powder	Visual
Odour & taste	Characteristic	Organoleptic
Particle size	100% pass 80 mesh	USP <786>
Loss on drying	≤ 7.0%	USP <731>
Ash	≤ 5.0%	USP <281>
Bulk density	0.4-0.6 g/cm³	USP <616>
Tapped density	0.7-0.9 g/cm³	USP <616>
Arsenic (As)	≤ 2.0 ppm	ICP-MS
Lead (Pb)	≤ 2.0 ppm	ICP-MS
Cadmium (Cd)	≤ 1.0 ppm	ICP-MS
Mercury (Hg)	≤ 0.1 ppm	ICP-MS
Total plate count	≤ 1,000 CFU/g	USP <61>
Yeast & mould	≤ 100 CFU/g	USP <61>
E. coli	Negative	USP <62>
Salmonella	Negative	USP <62>
Staphylococcus aureus	Negative	USP <62>
Aflatoxins	< 0.4 μg/kg	USP <62>
Listeria monocytogenes	Negative	USP <62>



Packing: 25 kg per drum, inner by plastic bag. Storage: store in cool and dry places, keep away from strong light and heat. Shelf life: 24 months in the original package under the above conditions.

3. PRODUCT COMPOSITION

No.	Ingredient	Content (% w/w)
1	Spermidine	NLT 1.0%
2	Wheat germ extract	NMT 92.0%
3	Moisture	NMT 7.0%

The above composition is declared in the Composition Statement issued for this product (corresponding to the Spermidine 1.0% grade).



4. PRODUCTION FLOW CHART

Spermidine (Wheat Germ Extract) is produced by the following manufacturing process:

Step	Process
1	Wheat germ
2	Smashing
3	Extraction
4	Concentration
5	Crystallisation
6	Desiccation
7	Smashing
8	Sieving
9	QA / QC
10	Packing
11	Finished product

The flow chart is as declared in the Flow Chart of Wheat Germ Extract issued for this product.

5. CERTIFICATES OF ANALYSIS

5.1 Batch Information

Item	Spermidine 0.1%	Spermidine 0.2%	Spermidine 1.0%
Batch No.	KYSDP2025041501	KYSDP2025121301	KYSDP2025091001
Batch quantity	1200 kg	1000 kg	1200 kg
Manufacturing date	Apr 15, 2025	Dec 13, 2025	Sep 10, 2025
Analysis date	Apr 22, 2025	Dec 20, 2025	Sep 17, 2025
Expiry date	Apr 14, 2027	Dec 12, 2027	Sep 09, 2027

5.2 Active & Biogenic Amine Results

Item	Standard	0.1% Result	0.2% Result	1.0% Result	Method
Spermidine	Per grade	0.12%	0.23%	1.12%	GC
Spermine	0.4-1.2 mg/g	0.60 mg/g	0.61 mg/g	0.63 mg/g	GC
Spermidine trichloride	< 0.1 µg/g	Not detected	Not detected	Not detected	GC
Putrescine	< 0.3 mg/g	0.03 mg/g	0.04 mg/g	0.04 mg/g	GC
Cadaverine	≤ 16.0 µg/g	Not detected	Not detected	Not detected	GC



5.3 Common COA Results (physical, chemical, heavy metal, microbiological)

Item	Specification	Result	Test Method
Appearance	Light yellow powder	Complies	Visual
Odour & taste	Characteristic	Complies	Organoleptic
Particle size	100% pass 80 mesh	Complies	USP <786>
Loss on drying	≤ 7.0%	2.26-2.45%	USP <731>
Ash	≤ 5.0%	3.23-3.42%	USP <281>
Bulk density	0.4-0.6 g/cm³	0.51-0.53 g/cm³	USP <616>
Tapped density	0.7-0.9 g/cm³	0.81-0.83 g/cm³	USP <616>
Arsenic (As)	≤ 2.0 ppm	0.0357-0.0392 ppm	ICP-MS
Lead (Pb)	≤ 2.0 ppm	Not detected	ICP-MS
Cadmium (Cd)	≤ 1.0 ppm	0.0561-0.0585 ppm	ICP-MS
Mercury (Hg)	≤ 0.1 ppm	< 0.003-0.004 ppm	ICP-MS
Total plate count	≤ 1,000 CFU/g	< 10 CFU/g	USP <61>
Yeast & mould	≤ 100 CFU/g	< 10 CFU/g	USP <61>
E. coli	Negative	Negative	USP <62>
Salmonella	Negative	Negative	USP <62>
Staphylococcus aureus	Negative	Negative	USP <62>
Aflatoxins	< 0.4 µg/kg	Complies	USP <62>
Listeria monocytogenes	Negative	Negative	USP <62>

Conclusion (each grade): the product conforms with specification; Non-GMO, BSE/TSE Free.



6. NUTRITIONAL INFORMATION

6.1 Nutritional Data (average quantity per 100 g)

Nutrient	Amount	NRV (%)
Energy (kcal)	365 kcal	18%
Protein	26.6 g	44%
Total fat	0.28 g	0%
Total carbohydrate	62.6 g	21%
Sodium	0 mg	0%



7. STABILITY DATA

7.1 Stability Study Conditions

Item	Information
Test objective	To evaluate the stability of Wheat Germ Extract at room temperature, normal humidity and light avoidance.
Test period	March 14, 2021 to March 13, 2023 (24 months)
Storage conditions	Original packaging; temperature 25°C; humidity RH 55%; protected from light.
Sampling times	0, 3, 6, 9, 12, 18 and 24 months

7.2 Stability Results (Spermidine 1.0% grade)

Sampling time	Appearance	Assay (%)
0 months	Light yellow powder, no lumps, no peculiar smell, no insects	1.10-1.12
3 months	Light yellow powder, no lumps, no peculiar smell, no insects	1.11-1.12
6 months	Light yellow powder, no lumps, no peculiar smell, no insects	1.09-1.10
9 months	Light yellow powder, no lumps, no peculiar smell, no insects	1.10-1.11
12 months	Light yellow powder, no lumps, no peculiar smell, no insects	1.09-1.10
18 months	Light yellow powder, no lumps, no peculiar smell, no insects	1.11-1.12
24 months	Light yellow powder, no lumps, no peculiar smell, no insects	1.10-1.12

Conclusion: According to the experimental data, the Wheat Germ Extract was stable for 24 months at room temperature and humidity.

8. ANALYTICAL METHOD (GC)

8.1 Detection Conditions

Parameter	Condition
Column	HP-5 (30 m × 0.32 mm × 0.25 µm)
Injector temperature	270°C
Detector temperature	280°C
Column temperature program	100°C (3 min) → 5°C/min → 150°C (3 min) → 10°C/min → 250°C (3 min)
Split ratio	30:1
Injection volume	1.0 µL
Total flow	39.988 mL/min
Column flow	1.21 mL/min
Carrier gas (Hydrogen : Air : Nitrogen)	30 : 400 : 15

8.2 Preparation of Reference Solution

Precisely weigh 50 mg of spermidine standard into a 50 ml volumetric flask, add 10 ml of methanol, ultrasonicate for 10 min, add 0.5 ml of 50% NaOH solution (while hot), ultrasonicate for 5 min, dilute to volume with methanol to 50 ml, shake well, allow to stand at room temperature, and filter the sample.

8.3 Preparation of Test Solution

Precisely weigh 2000 mg of spermidine sample into a 50 ml volumetric flask, add 10 ml of methanol, ultrasonicate for 10 min, add 0.5 ml of 50% NaOH solution (while hot), ultrasonicate for 5 min, dilute to volume with methanol to 50 ml, shake well, allow to stand at room temperature, filter and inject the sample.

8.4 Calculation

Content (%) = (A2 × M1 × P1) / (A1 × M2) × 100%, where A1 = peak area of the reference solution; A2 = peak area of the test solution; M1 = weighing amount of the reference sample (mg); M2 = weighing amount of the test sample (mg); P1 = content of the reference substance (%).

9. PRODUCT STATEMENTS

9.1 Product Composition Statement

PRODUCT COMPOSITION

Spermidine NLT 1.0%; wheat germ extract NMT 92.0%; moisture NMT 7.0% (% w/w), as declared in the Composition Statement.

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9.2 Country of Origin

COUNTRY OF ORIGIN

The product originates from China. Country of origin: China.

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9.3 Non-GMO Statement

NON-GMO

The product is Non-GMO, as stated on the Certificate of Analysis and Specification Sheet.

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9.4 BSE/TSE Free Statement

BSE / TSE FREE

The product is BSE/TSE Free, as stated on the Certificate of Analysis and Specification Sheet.

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9.5 Non-Irradiation Statement

NON-IRRADIATION

The product is Non-irradiation, as stated on the Specification Sheet.

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10. SAFETY DATA SHEET

The following safety information is provided for the product Spermidine (Wheat Germ Extract). Supplier: KEEP INGREDIENTS CO. LTD, Xi'an, Shaanxi, China.

10.1. Chemical Product and Company Identification

Item	Information
Product name	Spermidine (Wheat Germ Extract)
Manufacturer / Supplier	KEEP INGREDIENTS CO. LTD, No. 2019, Unit 1, Building 10, Yuexiucheng Phase 1, Guodu Xuefu Street, Chang'an District, Xi'an, Shaanxi, 710119, China

10.2. Composition / Information on Ingredients

Item	Information
Ingredient	Spermidine (wheat germ extract)
CAS Number	124-20-9
Synonyms	Triticum aestivum (wheat germ) extract
Molecular formula	$C_7H_{19}N_3$
Molecular weight	145.2 g/mol
Assay	1.0% (spermidine)
Hazardous components	None



10.3. Hazard Identification

Item	Information
GHS classification	Not classified as hazardous according to GHS criteria.
Hazards not otherwise classified (HNOC)	None.

10.4. First Aid Measures

Item	Information
Ingestion	If swallowed, seek medical advice immediately. Do not induce vomiting unless directed to do so by medical personnel.
Inhalation	If inhaled, move to fresh air. If symptoms persist, seek medical attention.
Skin contact	In case of skin contact, wash the affected area with soap and water.
Eye contact	If in eyes, rinse immediately with plenty of water and seek medical attention if irritation persists.

10.5. Fire Fighting Measures

Item	Information
Flash point	Not applicable.
Autoignition temperature	Not applicable.
Extinguishing media	Use appropriate extinguishing media for the surrounding fire.
Protective equipment for firefighters	Wear appropriate protective clothing and equipment.

10.6. Accidental Release Measures

Item	Information
Personal precautions	Avoid direct contact with skin, eyes or clothing. Use personal protective equipment as necessary.
Environmental precautions	Contain spillage; prevent runoff into waterways or drainage systems.
Containment and clean-up	Absorb spill with inert material (e.g. sand, vermiculite) and dispose of in accordance with local regulations.

10.7. Handling and Storage

Item	Information
Handling precautions	Handle with care to avoid spillage or contamination.
Storage conditions	Store in a cool, dry place; storage at 2-8°C.
Specific hazards	May decompose if exposed to heat or moisture.

10.8. Exposure Controls / Personal Protection

Item	Information
Engineering controls	Use in a well-ventilated area.
Eyes	Wear chemical safety goggles.
Skin	Wear protective clothing.
Respiratory	Use a respirator if necessary, based on exposure levels.

10.9. Physical and Chemical Properties

Item	Information
Appearance	Light yellow powder.
Melting point	22-25°C.
Boiling point	128-130°C.
Solubility	Soluble in solvents such as water, alcohols and ethers.

10.10. Stability and Reactivity

Item	Information
Stability	Stable under normal conditions.
Incompatibility	Incompatible with strong oxidising agents.
Hazardous decomposition products	May form harmful decomposition products under fire or high-temperature conditions.

10.11. Toxicological Information

Item	Information
Acute toxicity	Low toxicity based on available data.
Chronic toxicity	Long-term effects are not fully known.
Carcinogenicity	Not classified as carcinogenic.
Mutagenicity	Not classified as mutagenic.
Reproductive toxicity	No specific data available.

10.12. Ecological Information

Item	Information
Environmental fate	May biodegrade slowly in the environment.
Persistence and degradability	Moderate persistence.
Bioaccumulative potential	Low bioaccumulative potential.
Mobility in soil	Moderate mobility.

10.13. Disposal Considerations

Item	Information
Waste disposal methods	Dispose of according to local, state and federal regulations. Do not dispose of in drains or waterways.
Additional information	Consult a qualified waste disposal company for specific recommendations.

10.14. Transport Information

Item	Information
UN number	Not applicable.
Packing group	Not applicable.
Transport hazard class	Not classified as dangerous goods for transport.

10.15. Regulatory Information

Item	Information
Safety	Keep out of the reach of children.

10.16. Additional Information

Item	Information
Intended use	For food additive, pharmaceutical and cosmetic industry use.
Company policy / disclaimer	This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.



11. STORAGE & TRANSPORT

Item	Information
Shelf life	24 months in the original package under the stated conditions (confirmed by stability study).
Storage	Store in cool and dry places, keep away from strong light and heat. MSDS recommends storage at 2-8°C in a cool, dry place.
Packing	25 kg per drum, inner by plastic bag.
Transport	Not classified as dangerous goods for transport. Keep the package sealed and dry during transport.

Safety notes: This product is an ingredient material and is not a medicine. Keep out of reach of children.

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Authorized signature & company stamp



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