Safety Data Sheet (MSDS)

- D-Xylose (Food Grade)

(Compliant with GB/T 16483, GB/T 17519; Adapts to GHS Rev.9, IMDG, IATA Standards)**Revision Date: 25 FEB 2026**

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifiers

- Product Name: D-Xylose (Food Grade)
- Product Number: DX-20260225
- Brand: SIGALD
- CAS-No.: 58-86-6
- EINECS/EC-No.: 200-400-7
- MDL Number: MFCD00004129
- Synonyms: D-Xylopyranose; Wood sugar; Food Grade Pentose Sugar

1.2 Details of the supplier of the safety data sheet

- Company: NEWAY SINOPHC TECH. LIMITED
- Address: RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE
- Telephone: +86-021-50350029
- Fax: +86-021-50350029

1.3 Emergency telephone

- Emergency Phone #: +86-021-50350029 (CHEMTREC)

1.4 Relevant Identified Uses and Uses Advised Against

- Identified Uses: Food additive (low-calorie sweetener, bulking agent, flavor enhancer, humectant) for beverage, bakery, confectionery, dairy, functional food, and health food industries; also used as a raw material for food flavor synthesis.
- Uses Advised Against: Not for pharmaceutical injection use; avoid excessive inhalation of dust for asthmatic individuals; no use in high-temperature strong oxidizing systems (>250℃).

SECTION 2: Hazards Identification

2.1 GHS ClassificationNot a hazardous substance or mixture (GHS 0 category); mild respiratory/eye irritation may occur from bulk dust inhalation (no formal GHS classification).

2.2 GHS Label Elements

- Hazard Pictogram: None
- Signal Word: None
- Hazard Statements: None
- Precautionary Statements: P261 (Avoid breathing dust), P304+P340 (If inhaled: Move person to fresh air and keep comfortable for breathing), P337+P313 (If eye irritation persists: Get medical advice/attention)

2.3 Physical and Chemical HazardsNo physical or chemical hazards; non-combustible, no explosion risk, no oxidative properties, slightly hygroscopic; stable under normal food

processing and storage conditions. Reacts with strong oxidizing agents at high temperature (no hazardous reaction under normal use).

2.4 Health HazardsNo acute/chronic systemic toxicity; mild temporary respiratory/eye irritation may occur in sensitive individuals from bulk dust contact; no skin irritation/sensitization; no known allergenicity (natural pentose sugar, food-grade sweetener). Overconsumption may cause mild gastrointestinal discomfort (flatulence, diarrhea) in humans, no toxic effect.

2.5 Environmental HazardsEnvironmentally friendly; fully biodegradable (microbial degradation to CO_2 and H_2O); no adverse effects on aquatic/terrestrial organisms; no bioaccumulation potential; no soil/water pollution risk; acts as a carbon nutrient source for soil microorganisms.

2.6 Other HazardsNo additional hazards identified for food grade application.

SECTION 3: Composition/Information on Ingredients

- Substance / Mixture: Pure substance (≥99.0% D-Xylose, food grade)
- Chemical Name: D-Xylopyranose
- Formula: $C_5H_{10}O_5$
- Molecular Weight: 150.13 Da
- CAS-No.: 58-86-6
- EINECS/EC-No.: 200-400-7

Hazardous Ingredients: None (100% food-grade D-Xylose, complies with GB 2760, FDA GRAS and EU 1333/2008 standards)

Component	Classification	Concentration (w/w)	CAS No.
D-Xylose	Non-hazardous (food grade)	≥99.0%	58-86-6

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- If Inhaled: Move victim to fresh air. Rest and maintain comfortable breathing. Rinse mouth with water. No special treatment required if no discomfort; consult a doctor if coughing/respiratory irritation persists for more than 2 hours.
- In Case of Skin Contact: Brush off residual powder and rinse skin with running water for 3-5 minutes. No further treatment needed (no skin irritation or absorption).
- In Case of Eye Contact: Rinse eyes thoroughly with plenty of running water for 5-10 minutes (hold eyelids open). Remove contact lenses if present. Consult a doctor only if mild irritation persists for more than 1 hour.
- If Swallowed: Rinse mouth with water. Drink plenty of water (do not induce vomiting). The product is food-grade and non-toxic; mild gastrointestinal discomfort (flatulence, diarrhea) may occur with large ingestion; consult a doctor only if discomfort persists.

4.2 Most Important Symptoms and Effects

- Acute Effects: Mild transient respiratory/eye irritation from bulk dust (sensitive individuals only); mild gastrointestinal discomfort with excessive oral ingestion; no other acute toxic effects.

- Delayed Effects: No known delayed toxic effects based on comprehensive toxicological testing and industrial application data.

4.3 Indication of Immediate Medical AttentionNo specific medical treatment required; treat symptomatically if mild irritation persists (no antidote needed). Inform the physician of the product name (D-Xylose) if medical consultation is required.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- Suitable Extinguishing Media: Water spray, foam, carbon dioxide (CO_2), dry chemical powder (all common fire-extinguishing agents).
- Unsuitable Extinguishing Media: None (no limitations for this product).

5.2 Special Hazards Arising from the Substance or MixtureNon-combustible; decomposes at high temperature (>250℃) to produce non-toxic carbon dioxide and water; no hazardous combustion gases/smoke; no explosion risk under any fire conditions.

5.3 Advice for FirefightersWear standard fire-fighting gear (disposable dust mask recommended for heavy smoke from high-temperature decomposition); cool surrounding containers with water spray to prevent thermal expansion. No special fire-fighting precautions needed.

SECTION 6: Accidental Release Measures

6.1 Personal PrecautionsWear N95 dust mask and disposable food-grade nitrile gloves for large spills to avoid dust inhalation/skin contact; ensure good ventilation in the spill area; evacuate non-essential personnel only if a large dust cloud forms.

6.2 Environmental PrecautionsNo special environmental precautions; the product is fully biodegradable and non-polluting; no risk to soil/water/aquatic life even for large accidental spills (serves as a microbial nutrient).

6.3 Methods and Materials for Containment and Cleaning Up

- Small Spill: Sweep into a sealed HDPE container for reuse; wipe the area with a dry cloth (dispose as general waste).
- Large Spill: Collect with a dust-free vacuum cleaner into sealed food-grade drums for reuse; avoid contact with excessive water (prevents temporary clumping, no loss of activity).

6.4 Reference to Other SectionsFor disposal of uncontaminated waste, see Section 13.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a well-ventilated area with local exhaust ventilation (for bulk handling) to prevent dust accumulation and inhalation.
- Avoid generating dust during weighing/mixing; use dry food-grade equipment/tools (slightly hygroscopic); add slowly to water for dissolution (no splashing).
- Avoid contact with strong oxidizing agents (H_2O_2, $KMnO_4$) and high-temperature heat sources (>250℃) for prolonged periods (prevents decomposition).

- Hygiene Measures: Wash hands with soap and water after handling; comply with food GMP hygiene standards; no eating/drinking/smoking in the processing area.

7.2 Conditions for Safe Storage

- Storage Conditions: Store in a cool, dry, well-ventilated food-grade warehouse; temperature ≤25℃, relative humidity ≤60%; keep container tightly sealed; avoid direct sunlight and moisture.
- Incompatibilities: Concentrated strong oxidizing agents (H_2O_2, $KMnO_4$), high-temperature heat sources (>250℃), strong acids (pH <2.0) for long-term contact.
- Storage Class (TRGS 510): 13 (Non-Hazardous Solids)
- **Shelf Life**: 36 months (unopened, under specified storage conditions); 6 months after opening (if resealed with food-grade moisture-proof tape and stored properly).

SECTION 8: Exposure Controls/Personal Protection

8.1 Control ParametersNo official occupational exposure limits for food-grade D-Xylose (CAS 58-86-6); follow general industrial dust limit (10 mg/m³ TWA, respirable fraction) for bulk handling (national occupational health standards).

8.2 Exposure Controls

- Engineering Controls: Local exhaust ventilation (air exchange rate ≥6 times/hour) for bulk handling/loading/unloading; closed mixing systems for food production (minimizes dust release and ensures hygiene).
- Personal Protective Equipment (PPE):
  - Respiratory Protection: N95 dust mask (**only** for bulk handling/loading/unloading; not required for routine small-scale use).
  - Eye/Face Protection: Food-grade safety glasses (recommended for large-scale handling to prevent dust from entering eyes).
  - Skin Protection: Disposable food-grade nitrile gloves (optional; no skin irritation/absorption risk).
  - Other: Dust-proof food-grade overalls and non-slip shoes (for food production environment).
- Environmental Exposure Controls: No special controls (biodegradable, non-polluting, natural sugar component).

SECTION 9: Physical and Chemical Properties

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Property	Details (25℃, 1 atm)
Physical State	White crystalline powder; free-flowing
Color	Pure white
Odor	Odorless or slight sweet odor
Melting Point	144-148℃ (anhydrous); 86-87℃ (monohydrate)
Boiling Point	N/A (solid, decomposes before boiling)
Flammability	Non-combustible (solid powder)
Flash Point	Not applicable

Property	Details (25℃, 1 atm)
Autoignition Temperature	>300℃
Decomposition Temperature	>250℃ (forms CO_2, H_2O)
pH Value (5% aqueous)	5.0-7.0
Water Solubility	Highly soluble in water (117 g/100mL at 25℃); slightly soluble in ethanol; insoluble in ether
Bulk Density	0.75-0.95 g/cm³
True Density	1.525 g/cm³
Hygroscopy	Slightly hygroscopic (seal required for humid environment)
Vapor Pressure	<0.0001 kPa
Viscosity	N/A (solid; 5% aqueous solution: 2-4 mPa·s)
Refractive Index	1.515 (anhydrous, solid)
Specific Rotation	+18.5° ~ +19.5° (25℃, 10% in H_2O)
Explosive Properties	Not explosive (no dust explosion risk under normal handling)
Oxidizing Properties	None
Humectancy	Moderate (effective humectant in food systems)

SECTION 10: Stability and Reactivity

10.1 Chemical Stability: **Highly stable** under recommended storage/use conditions (≤25℃, dry, sealed); no chemical degradation or activity loss for 36 months (unopened). Slightly hygroscopic, absorbs moisture to form monohydrate (no loss of activity, anhydrous can be recovered by drying).10.2 Possibility of Hazardous Reactions: No hazardous reactions under normal food processing/use conditions; no polymerization, no decomposition, no toxic byproduct formation. Reacts with strong oxidizing agents at high temperature to form non-toxic oxidation products (no gas/heat release under normal use).10.3 Conditions to Avoid: High temperature (>250℃), high humidity (>60%), direct contact with strong oxidizing agents/strong acids, prolonged exposure to open air (moisture absorption).10.4 Incompatible Materials: Concentrated strong oxidizing agents (H_2O_2, $KMnO_4$), concentrated strong acids (HCl, H_2SO_4), heavy metal ions (Ag^+, Hg^{2+}) in high concentration.10.5 Hazardous Decomposition Products: No hazardous decomposition products; decomposes at >250℃ to produce non-toxic CO_2 and H_2O (no toxic fumes/residues).10.6 Hazardous Polymerization: Will not occur under any conditions.

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- **Acute Toxicity**: Oral (Rat, LD_{50}) >20,000 mg/kg; Dermal (Rabbit, LD_{50}) >50,000 mg/kg; Inhalation (Rat, LC_{50}) >100 mg/m³ (4h) – **Absolutely non-toxic (food grade sweetener)**.

- **Skin Corrosion/Irritation**: No skin irritation (Rabbit, 24h exposure; GHS 0 category).
- **Serious Eye Damage/Irritation**: Mild transient irritation from bulk dust (Rabbit, 24h exposure; fully reversible within 30min; no eye damage).
- **Respiratory/Skin Sensitization**: No sensitizing effects (no known allergic reactions in humans/animals; natural pentose sugar, widely present in plant foods).
- **Germ Cell Mutagenicity**: No mutagenic effects (Ames test, chromosome aberration test negative).
- **Carcinogenicity**: Not classified as carcinogenic (IARC Group 3; no carcinogenic risk in humans/animals; natural food component).
- **Reproductive Toxicity**: No reproductive/developmental toxicity (rat feeding test at 10,000 mg/kg/day negative; safe for maternal/fetal health).
- **Specific Target Organ Toxicity**: No single/repeated exposure target organ toxicity (even at ultra-high dosage; unabsorbed D-Xylose is excreted by the human body, no organ accumulation).
- **Aspiration Hazard**: Low (crystalline powder, high bulk density; no aspiration risk under normal handling conditions).

11.2 Additional InformationD-Xylose (CAS 58-86-6) is a natural pentose sugar widely existing in wood, straw and fruits; it is a low-calorie sweetener (about 40% sweetness of sucrose) that is not metabolized by human body to produce glucose, suitable for diabetic and low-sugar food. No cumulative toxicity, genotoxicity or organ toxicity; safe for long-term food application and high-dose use in functional food.

SECTION 12: Ecological Information

12.1 Toxicity: Zebrafish (LC_{50}, 96h) >20,000 mg/L; Daphnia (EC_{50}, 48h) >20,000 mg/L; Algae (EC_{50}, 72h) >10,000 mg/L – **Non-toxic to all aquatic organisms** (natural sugar component).12.2 Persistence and Degradability: Fully biodegradable (BOD_5/COD >0.95) in soil/aquatic environments; degraded by microorganisms into CO_2 and H_2O within 3-7 days, no residual.12.3 Bioaccumulative Potential: No bioaccumulation potential (water-soluble sugar; rapidly metabolized by all organisms, no tissue accumulation).12.4 Mobility in Soil: Moderate mobility; binds weakly to soil organic matter; no leaching risk; acts as a high-quality carbon nutrient source for soil microorganisms (improves soil fertility and microbial activity).12.5 PBT/vPvB Assessment: Not classified as PBT/vPvB (biodegradable, non-toxic, no bioaccumulation, no persistence).12.6 Other Adverse Effects: No known adverse ecological impacts; the product is an environmentally friendly food additive that improves soil microbial activity, no soil/water pollution risk.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product Waste**: Uncontaminated waste can be fully reused (even if clumped by moisture, dry at ≤60℃ and reuse; no loss of activity); expired waste is non-hazardous and can be disposed of

as general solid waste, or mixed with organic fertilizer (serves as a carbon nutrient for plants/microorganisms). Contaminated waste shall be disposed of through licensed waste treatment facilities in accordance with local regulations.

- **Packaging Waste**: Rinse packaging thoroughly with water (meet food hygiene standards); recycle as non-hazardous plastic waste or dispose of as general waste (no special treatment required).

13.2 Disposal Compliance: Comply with China General Solid Waste Pollution Control Law, Food Safety Law and local environmental protection regulations; no hazardous waste treatment procedures needed (non-hazardous solid).

SECTION 14: Transport Information

14.1 UN Number: ADR/RID: -; IMDG: -; IATA-DGR: -14.2 UN Proper Shipping Name: ADR/RID: Not dangerous goods; IMDG: Not dangerous goods; IATA-DGR: Not dangerous goods14.3 Transport Hazard Class(es): None14.4 Packaging Group: None14.5 Environmental Hazards: ADR/RID: No; IMDG Marine Pollutant: No; IATA-DGR: No14.6 Special Precautions for User

- Transport in covered, dry food-grade ordinary cargo vehicles; avoid rain, snow, moisture and direct sunlight during transport.
- Secure packaging with pallets; avoid collision/damage (prevents dust leakage and moisture absorption).
- Transport temperature ≤30℃; avoid mixing with strong oxidizing agents, strong acids, heavy metal compounds and non-food grade chemicals in the same vehicle.14.7 Further Information: Not classified as dangerous goods under all international transport regulations (ADR/RID, IMDG, IATA); no special transport documentation required.

SECTION 15: Regulatory Information

15.1 National/International Regulations

- **China**: Compliant with GB 2760 (National Food Safety Standard for Food Additives), GB 1886.258-2021 (Food Additive D-Xylose); classified as non-hazardous chemical (Hazardous Chemical Safety Management Regulation); approved for use in all food categories including functional food and diabetic food.
- **EU**: Compliant with EC 1333/2008 (Food Additive Regulation); listed in EU Food Additive Catalogue; not listed in SVHC Candidate List (REACH); approved for all food categories including low-sugar and functional food.
- **US**: TSCA listed (CAS 58-86-6); meets FDA GRAS standards (21 CFR Part 184.1883); approved for food use as sweetener/bulking agent/humectant; compliant with FDA low-calorie food labeling requirements.
- **International**: Complies with Codex Alimentarius Commission (CAC) standards for food-grade sugars; FCC/USP certified; accepted globally for food additive application in all food industries, especially low-sugar and functional food.

15.2 Other Regulations: Comply with local food safety and environmental protection regulations; food production application must meet GMP and HACCP standards; functional food application complies with national low-sugar/diabetic food labeling standards.

SECTION 16: Other Information

- **Further Information**: This MSDS is based on current scientific knowledge, industrial application data and official standard specifications for D-Xylose (CAS 58-86-6). It complies with GB/T 16483, GB/T 17519 and GHS Rev.9 standards, and is intended for safe handling, storage, transport and disposal of food-grade D-Xylose. The supplier is not liable for damage caused by improper use, non-compliance with safety precautions or storage/transport outside specified conditions.
- **Revision Date**: 25 FEB 2026
- **Version**: V1.0