

## Safety Data Sheet (MSDS)

### - Treemoss Extracts

**According to:** GB/T 16483, GB/T 17519; GHS (Rev.9), IMDG, IATA Standards **Product Name:** Treemoss Extracts (*Pseudevernia furfuracea*) **CAS Number:** 90028-67-4 **Product Number:** TME-20260222 **Brand:** SIGALD **Revision Date:** 22 February 2026 **Supplier:** NEWAY SINOPHC TECH. LIMITED **Address:** RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE. **Tel/Fax:** +86-021-50350029 **Emergency Phone:** +86-021-50350029 (CHEMTREC)

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

#### 1.1 Product Identifiers

- Product Name: Treemoss Extracts
- Synonyms: Pseudevernia furfuracea Extract; Lichen Extract; Moss Extract
- CAS-No.: 90028-67-4
- Main Components: Usnic acid (125-46-2,  $\geq 2.0\%$ ), Atranorin (472-30-2,  $\geq 1.5\%$ )
- Product Number: TME-20260222
- Brand: SIGALD

#### 1.4 Relevant Identified Uses and Uses Advised Against

- **Identified Uses:** Fragrance ingredient/fixative for perfumery; natural antioxidant/soothing ingredient for cosmetics/personal care; household fragrance raw material.
- **Uses Advised Against:** Not for undiluted direct skin application (sensitive individuals); not for oral consumption (human/animal); not for use as a pharmaceutical raw material; not for heating above 60°C (causes active ingredient degradation and discoloration).

### SECTION 2: Hazards Identification

#### 2.1 GHS Classification

- Skin irritation (Category 2): H315 - Causes skin irritation (undiluted contact)
- Serious eye irritation (Category 2): H319 - Causes serious eye irritation
- Skin sensitization (Category 1): H317 - May cause an allergic skin reaction (susceptible individuals)

#### 2.2 GHS Label Elements

- **Hazard Pictogram:** (Exclamation Mark)
- **Signal Word:** WARNING
- **Hazard Statements:**
  - H315: Causes skin irritation
  - H317: May cause an allergic skin reaction
  - H319: Causes serious eye irritation
- **Precautionary Statements:**
  - P264: Wash skin thoroughly after handling
  - P280: Wear protective gloves/eye protection
  - P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
  - P333+P313: If skin irritation or rash occurs: Get medical advice/attention
  - P362+P364: Take off contaminated clothing and wash it before reuse
  - P403+P233: Store in a well-ventilated place. Keep container tightly closed

#### 2.3-2.6 Hazards Summary

- **Physical/Chemical Hazards:** Non-flammable (flash point  $\geq 90^\circ\text{C}$ ); no explosion risk; slight viscosity increase on long-term air contact (no hazardous products); non-corrosive, no polymerization risk; discolors under direct sunlight (no toxicity).
- **Health Hazards:** Undiluted extract causes mild skin irritation and serious eye irritation; may cause allergic skin reactions in genetically susceptible individuals; no acute toxic effects at formulated dosage ( $\leq 8\%$ ); no carcinogenic/mutagenic/reproductive toxicity.
- **Environmental Hazards:** Slightly toxic to aquatic organisms; fully biodegradable in natural aerobic environment; no bioaccumulation potential in aquatic food chain; sustainable sourcing with no environmental harm.
- **Other Hazards:** No additional hazards identified; diluted extract ( $\leq 2\%$  for cosmetics,  $\leq 8\%$  for perfumery) has no irritation risk for normal use.

### SECTION 3: Composition/Information on Ingredients

- **Substance/Mixture:** Natural lichen extract mixture (solvent-extracted)
- **Main Active Components (w/w):**

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Component	CAS No.	Concentration	Hazard Classification
Usnic Acid	125-46-2	2.0-3.0%	Mild skin/eye irritation
Atranorin	472-30-2	1.5-2.0%	Mild eye irritation
Lichenin/Polysaccharides	-	60.0-70.0%	Non-hazardous
Volatile Lichen Oils	-	5.0-8.0%	Non-hazardous
Other Lichen Secondary Metabolites	-	15.0-25.0%	Non-hazardous

- **EC-No.:** N/A (natural lichen extract mixture)
- **Hazardous Ingredients:** None (all components non-hazardous at formulated dosage)

## SECTION 4: First Aid Measures

### 4.1 Description of First-Aid Measures

- **If Inhaled:** Move the victim to fresh air and keep the respiratory tract unobstructed. Rest in a position comfortable for breathing; no special treatment needed if no discomfort; consult a doctor if coughing or chest tightness persists.
- **In Case of Skin Contact:** Remove contaminated clothing and shoes immediately; rinse the affected area with plenty of soap and running water for 5-10 minutes (do not use organic solvents). If rash or irritation occurs, apply a mild emollient and consult a doctor.
- **In Case of Eye Contact:** Rinse eyes thoroughly with plenty of running water for 10-15 minutes, holding the eyelids open to ensure complete flushing. Remove contact lenses if present and easy to do. Consult a doctor immediately if redness, tearing, or blurred vision persists for more than 24 hours.
- **If Swallowed:** Rinse mouth with clean water **do not induce vomiting**. Drink a small amount of water if conscious and alert; seek immediate medical attention and provide the product COA/MSDS to the physician (no specific antidote).

### 4.2 Most Important Symptoms and Effects, Both Acute and Delayed

- **Acute Effects:** Mild skin redness/itching/rash (undiluted contact); eye redness/tearing/burning; allergic skin reaction (in susceptible individuals, delayed 24-48 hours).
- **Delayed Effects:** No known delayed toxic effects based on current scientific data and industrial use experience; allergic skin reactions may appear 1-2 days after contact.

### 4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

- No specific medical treatment required; treat symptomatically according to the actual condition (e.g., antihistamines for allergic reactions).
- Seek immediate medical attention if eye irritation persists for more than 24 hours or allergic skin reaction is severe (blistering, swelling).

### 4.4 Notes to Physician

- Inform the physician of the product name, CAS number and main components (usnic acid, atranorin); no specific antidote is available, symptomatic treatment is recommended.
- Advise patch testing for future contact in patients with allergic skin reactions.

## SECTION 5: Firefighting Measures

### 5.1 Extinguishing Media

- **Suitable Extinguishing Media:** Water spray (fog), dry powder, carbon dioxide (CO<sub>2</sub>), foam.
- **Unsuitable Extinguishing Media:** High-pressure water jet (unnecessary; product is non-flammable).

### 5.2 Special Hazards Arising from the Substance or Mixture

- Non-flammable liquid; no combustion risk under normal storage and use conditions; heating above 200°C may produce non-hazardous carbon oxides (CO, CO<sub>2</sub>) and faint lichen-scented smoke; no toxic, explosive or corrosive combustion products.

### 5.3 Advice for Firefighters

- No special fire-fighting gear required for small fires; wear standard fire-fighting gear (helmet, fire suit) for large fires involving adjacent flammable materials.
- Cool exposed containers with water spray continuously if involved in a fire to prevent thermal degradation; continue cooling after the fire is extinguished.
- Fight the fire from the upwind direction and a safe distance; avoid contact with the heated extract and combustion residues.

## SECTION 6: Accidental Release Measures

### 6.1 Personal Precautions, Protective Equipment and Emergency Procedures

- Wear nitrile rubber gloves, safety glasses and a protective lab coat for all spill handling; wear a face shield if splashing is possible (viscous liquid).
- Ensure good natural or mechanical ventilation in the spill area; no inhalation risk under normal conditions.
- Evacuate non-essential personnel from the spill area only for large leaks ( $\geq 10$  L) to prevent accidental skin/eye contact.

### 6.2 Environmental Precautions

- Prevent the spilled extract from entering sewers, rivers, lakes, soil or other water bodies; use sand, vermiculite or diatomaceous earth to contain and absorb the spilled liquid immediately (viscous liquid requires more absorbent).
- Do not discharge contaminated absorbents or wastewater directly into the natural environment; collect and treat according to local environmental protection regulations.

### 6.3 Methods and Materials for Containment and Cleaning Up

- **Small Spill (<1 L):** Absorb the spilled extract with inert materials (sand, vermiculite); place the contaminated absorbents in sealed plastic drums for incineration or professional disposal. Wipe the spill area with 95% ethanol and ventilate fully until no odor remains.
- **Large Spill ( $\geq 1$  L):** Contain the spilled extract with dikes to prevent spread; scrape the viscous liquid with a plastic spatula and transfer to sealed amber glass/stainless steel drums for recycling or professional disposal. Flush the contaminated area with water (collect the wastewater for biological treatment).

### 6.4 Reference to Other Sections

- For waste disposal, see **Section 13**; for personal protective equipment, see **Section 8**.

## SECTION 7: Handling and Storage

### 7.1 Precautions for Safe Handling

- Operate in a well-ventilated area; avoid breathing vapor and direct contact with undiluted extract (skin, eyes, mucous membranes).
- Use dedicated glass/stainless steel dispensing equipment; avoid mixing with strong acids, strong bases, oxidizing agents and excessive water.
- Dilute the extract with ethanol/propylene glycol/fixed oil before use in fragrance/cosmetic formulations; **do not use undiluted extract directly**.
- Wash hands thoroughly with soap and water after handling; do not eat, drink or smoke in the work area to avoid accidental ingestion.
- Avoid high temperature ( $>40^{\circ}\text{C}$ ) during handling to prevent active ingredient degradation and discoloration.
- Perform patch testing on a small area of skin before large-scale cosmetic application (for sensitive individuals).

### 7.2 Conditions for Safe Storage, Including Any Incompatibilities

- **Storage Conditions:** Store in a cool, dark, well-ventilated warehouse at **5-25 $^{\circ}\text{C}$** ; use amber glass or stainless steel containers and keep tightly sealed to prevent oxidation, discoloration and viscosity increase. Avoid direct sunlight, high temperature ( $>40^{\circ}\text{C}$ ), and long-term contact with air.
- **Incompatibilities:** Strong acids (pH  $<3$ ), strong bases (pH  $>9$ ), oxidizing agents (e.g., hydrogen peroxide, chlorine), heavy metal salts, excessive water-based materials.
- **Storage Class (TRGS 510):** 13 (Non-Hazardous Liquids)
- **Shelf Life:** 24 months (unopened, under specified storage conditions); 6 months after opening (sealed and refrigerated at 5-10 $^{\circ}\text{C}$ ).
- **Storage Note:** If the extract darkens slightly during storage (due to mild oxidation), it does not affect the aroma and basic performance for general use (excluding high-end fine perfumery).

## SECTION 8: Exposure Controls/Personal Protection

### 8.1 Control Parameters

- **Usnic Acid (main component):** No official national/international occupational exposure limits (OEL); recommended TWA (Time-Weighted Average) 10 mg/m<sup>3</sup> (air).
- **Treemoss Extracts mixture:** No official OEL for occupational exposure.
- **Biological Exposure Indices:** No relevant data available for treemoss extracts.

### 8.2 Exposure Controls

- **Engineering Controls:** Local exhaust ventilation (for large-scale dispensing and heating operations); general ventilation for routine handling to maintain low vapor concentration in the air.
- **Personal Protective Equipment (PPE):**
  - Eye/Face Protection: Safety glasses (routine handling); face shield (large-scale spill/dispensing).
  - Skin Protection: Nitrile rubber gloves (thickness  $\geq 0.1$  mm), protective lab coat and anti-slip shoes; avoid latex gloves (poor compatibility with natural extracts).
  - Respiratory Protection: No respirator required for normal handling; half-face respirator with organic vapor cartridge for high concentration vapor (heating  $>60^{\circ}\text{C}$ ) or poor ventilation.
  - Hand Protection: Disposable nitrile gloves for short-term handling; reusable nitrile gloves for prolonged contact.
- **Hygiene Measures:** Install a dedicated hand washing station with soap and running water near the work area; provide emergency eye wash and shower facilities for large-scale operation areas ( $\geq 50$  kg handling).
- **Control of Environmental Exposure:** No special environmental exposure controls required; prevent accidental discharge to the natural environment.

## SECTION 9: Physical and Chemical Properties

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Property	Value (25°C)	Unit
Physical State	Viscous liquid/paste	-
Color	Olive green to brownish	-
Odor	Earthy, mossy, woody, slightly sweet	-
Melting Point	$\geq 20^{\circ}\text{C}$ (partial solidification at low temp)	$^{\circ}\text{C}$
Boiling Point	$> 200^{\circ}\text{C}$ (decomposition)	$^{\circ}\text{C}$
Flash Point (Closed Cup)	$\geq 90$	$^{\circ}\text{C}$
Autoignition Temperature	$> 350$	$^{\circ}\text{C}$
Relative Density (20/20°C)	1.05-1.15	$\text{g}/\text{cm}^3$
Refractive Index (20°C)	1.4900-1.5100	-
Viscosity	200-500	$\text{mPa}\cdot\text{s}$
Water Solubility	Partially soluble ( $< 5$ g/100 mL)	-
Solubility	Miscible with 95% ethanol, propylene glycol, fixed oils/essential oils; 1:5 soluble in 95% ethanol	-
Vapor Pressure	$< 0.001$	$\text{hPa}$
Flammability	Non-flammable liquid	-
Explosive Properties	Not explosive	-
Oxidizing Properties	None	-
Decomposition Temperature	$\geq 60$	$^{\circ}\text{C}$
pH Value (1% in 95% ethanol)	4.0-6.0	-
Ash Content	$\leq 2.0$	%

## SECTION 10: Stability and Reactivity

### 10.1 Chemical Stability

- The product is chemically stable under recommended storage and use conditions ( $5-25^{\circ}\text{C}$ , sealed, away from light); mild oxidation may occur on long-term contact with air (darkening, viscosity increase), with no hazardous products generated.
- No decomposition or chemical change under normal use conditions (diluted, room temperature).

### 10.2 Possibility of Hazardous Reactions

- No hazardous reactions under normal storage and use conditions; no polymerization risk under any industrial use conditions.

### 10.3 Conditions to Avoid

- High temperature (>60°C), direct strong sunlight, long-term contact with air, contact with incompatible materials (strong acids/alkalis/oxidizing agents).

#### 10.4 Incompatible Materials

- Strong mineral acids (sulfuric acid, hydrochloric acid), strong alkalis (sodium hydroxide, potassium hydroxide), oxidizing agents (hydrogen peroxide, chlorine dioxide), heavy metal salts (lead acetate, copper sulfate), chlorine-containing compounds.

#### 10.5 Hazardous Decomposition Products

- Thermal decomposition at >200°C produces non-hazardous carbon oxides (CO, CO<sub>2</sub>) and natural lichen acid vapors (usnic acid, atranorin); no toxic, corrosive or explosive decomposition products.

### SECTION 11: Toxicological Information

#### 11.1 Information on Toxicological Effects (based on treemoss extracts and main components usnic acid/atranorin)

- **Acute Toxicity:**
  - Oral (Rat, LD<sub>50</sub>): > 5000 mg/kg
  - Dermal (Rabbit, LD<sub>50</sub>): > 5000 mg/kg
  - Inhalation (Rat, LC<sub>50</sub>): > 500 mg/m<sup>3</sup> (4-hour exposure)
- **Skin Corrosion/Irritation:** Mild irritation (Rabbit, 4-hour undiluted exposure) – reversible redness, no corrosion or blistering; no irritation for diluted extract (≤2%).
- **Serious Eye Damage/Eye Irritation:** Moderate eye irritation (Rabbit, 24-hour exposure) – redness/tearing, reversible within 72 hours; no permanent eye damage.
- **Respiratory or Skin Sensitization:** Skin sensitization (Guinea pig test) – may cause allergic skin reactions in 5-10% of genetically susceptible individuals; no respiratory sensitization.
- **Germ Cell Mutagenicity:** No mutagenic effect (Ames test); no genetic toxicity for usnic acid/atranorin at normal dosage.
- **Carcinogenicity:** Not classified as carcinogenic by IARC, EPA or NTP; no carcinogenic effect in long-term industrial use.
- **Reproductive Toxicity:** No reproductive/developmental toxicity (Rat test) at normal diluted dosage; no adverse effect on fertility (usnic acid at ≤10 mg/kg).
- **Specific Target Organ Toxicity (Single/Repeated Exposure):** No target organ toxicity for single/repeated diluted use; high dosage undiluted contact may cause local skin/eye irritation only.
- **Aspiration Hazard:** Very low (high viscosity, low vapor pressure, non-volatile; no aspiration risk for normal industrial and daily use).

#### 11.2 Additional Information

- The toxicological properties of treemoss extracts have been sufficiently studied; the product is safe for fragrance, cosmetic and household use when diluted according to the recommended dosage and safety precautions.
- Patch testing is recommended for sensitive individuals before cosmetic use to avoid allergic skin reactions.

### SECTION 12: Ecological Information

#### 12.1 Toxicity

- Fish (Zebrafish, LC<sub>50</sub>): 850 mg/L (96-hour exposure)
- Daphnia (EC<sub>50</sub>): 650 mg/L (48-hour exposure)
- Algae (EC<sub>50</sub>): 900 mg/L (72-hour exposure)
- **Conclusion:** Slightly toxic to aquatic organisms; no acute aquatic toxicity at normal discharge levels (diluted ≤1%).

#### 12.2 Persistence and Degradability

- Fully biodegradable (BOD<sub>5</sub>/COD = 0.68) in 28 days under aerobic aquatic conditions; no persistent residues in the natural environment, can be completely degraded by microorganisms.

#### 12.3 Bioaccumulative Potential

- Low bioaccumulation potential (log Kow = 3.2 for usnic acid); no bioaccumulation in the aquatic food chain, no biomagnification effect.

#### 12.4 Mobility in Soil

- Low mobility in soil; the product binds to soil organic matter, no leaching risk to groundwater or underground water sources.

## 12.5 Results of PBT and vPvB Assessment

- Not classified as PBT (Persistent, Bioaccumulative, Toxic) or vPvB (very Persistent, very Bioaccumulative) according to GHS and EU REACH regulations.

## 12.6 Endocrine Disrupting Properties

- No data available; no known endocrine disrupting effect based on current industrial use experience and scientific studies of lichen acids.

## 12.7 Other Adverse Effects

- No long-term adverse effects on terrestrial and aquatic ecosystems at normal use and discharge levels; the product is a natural lichen extract and has no environmental pollution risk after biodegradation. Sustainable sourcing ensures no negative impact on forest ecosystems.

## SECTION 13: Disposal Considerations

### 13.1 Waste Treatment Methods

- **Product Waste:** Unused/expired treemoss extracts – incinerate in a licensed waste incineration plant (complete combustion to avoid smoke); or recycle for industrial fragrance use if the quality is qualified (excluding discolored extract).
- **Contaminated Waste:** Spill absorbents (sand, vermiculite) – incinerate as non-hazardous waste or dispose of through professional waste treatment facilities in accordance with local regulations.
- **Wastewater:** Contaminated wastewater (from cleaning) – treat by biological wastewater treatment system (biodegradation) before discharge; comply with local effluent quality standards.
- **Packaging Waste:** Rinse the packaging with 95% ethanol (recycle the rinse liquid for industrial use); amber glass/stainless steel packaging – recycle and reuse; contaminated plastic packaging – dispose of as non-hazardous waste in a licensed facility.

### 13.2 Disposal Notes

- Comply with local, national and international waste disposal regulations; do not dump waste extract, contaminated absorbents or wastewater directly into the environment, soil or water bodies.
- Fragrance grade treemoss extracts waste shall be disposed separately from cosmetic grade waste if required by local regulations (due to different dosage requirements).

## 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 goods

### 14.3 Transport Hazard Class(es)

ADR/RID: -; IMDG: -; IATA-DGR: -

### 14.4 Packaging Group

ADR/RID: -; IMDG: -; IATA-DGR: -

### 14.5 Environmental Hazards

ADR/RID: No; IMDG Marine Pollutant: No; IATA-DGR: No

### 14.6 Special Precautions for User

- Classified as **non-hazardous goods** for transport; transport by ordinary closed vehicles.
- Transport at 5-30°C; avoid direct sunlight, high temperature (>40°C), low temperature (≤0°C), and collision during transit (viscous liquid may solidify at low temp).
- Use sealed amber glass/stainless steel drums for packaging; ensure no leakage and mark the package with **Keep Away from Light/Heat** and **Non-Flammable**.
- Load and unload the package gently to prevent breakage and leakage; thaw naturally at room temperature if solidified (do not heat).

### 14.7 Incompatible Materials

- Do not transport with strong acids, strong bases, oxidizing agents, food, pharmaceutical raw materials and chlorine-containing compounds.

**Further Information:** Not classified as dangerous goods under international and national transport regulations.

## SECTION 15: Regulatory Information



## NEWAY SINOPHC TECH. LIMITED

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### 15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

- **National Regulations (China):**

- Hazardous Chemical Safety Management Regulation (Non-hazardous classification)
- Cosmetic Safety Technical Specifications (2021) (cosmetic grade)
- Environmental Protection Law of the People's Republic of China

- **International Regulations:**

- GHS Classification (Rev. 9): Classification as per Section 2.1 (Skin Irritation/Sensitization, Eye Irritation)
- EU REACH: Registered in ECHA; not listed in SVHC Candidate List; complies with CLP regulation
- US TSCA: Listed on the TSCA Inventory; FDA compliant (cosmetic/fragrance grade)
- IFRA (International Fragrance Association): Complies with fragrance ingredient use standards and fixative specifications
- ISO 4720: Complies with natural essential oil/extract quality standards

### 15.2 Other Regulations

- Comply with local fragrance, cosmetic and industrial chemical raw material regulations; industrial use shall meet occupational health and safety standards.
- Perfumery grade treemoss extracts shall comply with international fine fragrance formulation standards (IFRA); cosmetic grade shall meet skin safety and sensitization testing requirements.
- Indoor use (fragrance/household) shall meet indoor air quality standards (e.g., EPA, EU Indoor Air Quality Directive).

## SECTION 16: Other Information

### 16.1 Further Information

This MSDS is based on current scientific knowledge and industrial use experience, and complies with GB/T 16483, GB/T 17519 and GHS (Rev.9) standards. It is intended for the safe handling, storage, transport and disposal of treemoss extracts. The data in this MSDS is for reference only and does not constitute a product quality guarantee.

### 16.2 Liability Note

The supplier (NEWAY SINOPHC TECH. LIMITED) is not liable for any damage or loss caused by improper use (e.g., undiluted direct contact, overheating), non-compliance with safety precautions or use beyond the product's intended scope.

### 16.3 Update Note

This MSDS will be updated in a timely manner if new scientific safety data or regulatory requirements become available. The latest version will be provided by the supplier upon request.

### 16.4 Sensitization Note

Treemoss extracts may cause allergic skin reactions in susceptible individuals; patch testing is mandatory for cosmetic use on sensitive skin and large-scale industrial application.

### 16.5 Contact Information

For further information about the product, please contact the supplier at +86-021-50350029 (Tel/Fax) or the official email address (provided by the supplier upon request).

**Revision Date:** 22 February 2026