



GREENSPRING

# Xi'an Green Spring Technology Co.,Ltd.

Floor 14 Suite B, HuiXin IBC, No.1 Zhang Ba 1 Road, Hi-tech Development Zone, Xi'an. China.

• Te 029-88313578 • Fax.029-88328052 • Web.www.greenspringshop.com

## CERTIFICATE OF ANALYSIS

**Product Name:** Alpha lipoic acid  
**CAS No:** 1077-28-7  
**Analysis Date:** July, 27th, 2023  
**Identification:** Passes all criteria tests

**Batch No.:** GS230720  
**Batch quantity:** 1000KG  
**Manufacture Date:** July, 20th, 2023  
**Expiry Date:** July, 19th, 2025

| Item                         | Specification                                | Method       | Result                 |
|------------------------------|--|--------------|------------------------|
| Assay                        | 99.0%-101.0%((calculated on the dried basis) | HPLC         | 99.3%                  |
| Identification               | Meet the requirements                        | HPLC         | Conform                |
|                              | Meet the requirements                        | IR           | Conform                |
| <b>Physical&amp;Chemical</b> |  |              |                        |
| Appearance & Color           | Slightly yellow granules                     | Visual       | Conform                |
| Odor & Taste                 | Characteristic                               | Organoleptic | Conform                |
| Tapped Density               | 0.50~0.6g/cm <sup>3</sup>                    | USP          | 0.51 g/cm <sup>3</sup> |
| Loose Density                | 0.45~0.55g/cm <sup>3</sup>                   | USP          | 0.45g/cm <sup>3</sup>  |
| Residue on Ignition          | ≤0.1%  | USP          | 0.06%                  |
| Specific Rotation            | -1.0°~+1.0°                                  | USP          | 0°                     |
| Melting point                | 60°C-62°C                                    | USP          | 60.7°C-61.5°C          |
| Loss on drying               | ≤0.2%  | USP          | 0.06%                  |
| Related Substances           | 6,8-epitrithiooctanoic acid NMT 0.1%         | HPLC         | conform                |
|                              | Total Impurity NMT 0.5%                      | HPLC         | 0.08%                  |
|                              | Max Individual Impurity: NMT 0.1%            | HPLC         | 0.08%                  |
| Polymeric Lipoic acid        | NMT 1.0%                                     | TLC          | conform                |
|                              | Cyclohexane NMT 5ppm                         | GC           | Not detected           |
|                              | Ethyl Acetate NMT 5ppm                       | GC           | Not detected           |
| Residual Solvent             | Toluene≤5ppm                                 | GC           | Not detected           |
|                              | Ethanol≤2000ppm                              | GC           | Not detected           |
|                              |  |              |                        |
| Heavy Metals                 | ≤10ppm                                       | USP          | <10ppm                 |
| Cd (cadmium)                 | ≤1ppm  | USP          | <1ppm                  |
| As (Arsenic)                 | ≤1ppm  | USP          | <1ppm                  |
| Pb (lead)                    | ≤3ppm  | USP          | <3ppm                  |



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|              |         |     |         |
|--------------|---------|-----|---------|
| Hg (Mercury) | ≤0.1ppm | USP | <0.1ppm |
|--------------|---------|-----|---------|

## Microbiological Control

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|                       |              |     |              |
|-----------------------|--------------|-----|--------------|
| Total Plate Count     | ≤1,000 cfu/g | USP | <10 cfu/g    |
| Yeast & Mold          | ≤100 cfu/g   | USP | <10 cfu/g    |
| E.Coli.               | Negative     | USP | Not detected |
| Salmonella            | Negative     | USP | Not detected |
| Staphylococcus Aureus | Negative     | USP | Not detected |

**Storage** Cool & dry place, Do not freeze. Keep away from strong light and heat.

**Shelf** 2 year when properly stored.

**Approved by :**  
**(Quality Assurance)**