

**Safety Data Sheet**

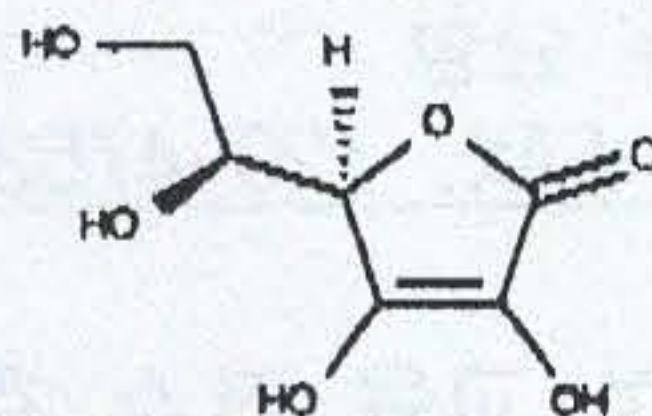
# Ascorbic Acid

## 1. Product and Company Identification

|                     |                             |                       |
|---------------------|-----------------------------|-----------------------|
| Product name        | Ascorbic Acid               |                       |
| Product code        | 04 0805 0                   |                       |
| Company Information | Manufacturer:               | Local representation: |
|                     | DSM Nutritional Products AG | LV0000                |
|                     | Wurmisweg 576               | LV1111                |
|                     | CH-4303 Kaiseraugst         | LV2222                |
|                     | Switzerland                 | LV3333                |
|                     |                             | LV4444                |
|                     | Phone                       | +41-62 866 23 14      |
|                     | Fax                         | +41-62 866 26 10      |
|                     |                             | LV5555                |
|                     |                             | LV6666                |
|                     |                             | LV7777                |

## 2. Composition/Information on Ingredients

|                   |   |
|-------------------|---|
| Characterization  | water soluble vitamin   |
| Chemical name     | - L(+)-Ascorbic acid  |
| Synonyms          | - 3-Oxo-L-gulofuranolactone (enol form)<br>- 3-Keto-L-gulofuranolactone<br>- Vitamin C<br>- L-Ascorbic acid |
| CAS number        | 50-81-7   |
| EINECS number     | 200 066 2   |
| Ro number         | Ro 01-3001/000  |
| Empirical formula | C <sub>6</sub> H <sub>8</sub> O <sub>6</sub>  |
| Molecular mass    | 176.13 g/mol  |



## 3. Hazards Identification

|                        |                                |
|------------------------|--------------------------------|
| Most important hazards | - No particular hazards known. |
|------------------------|--------------------------------|



**4. First-aid measures**

- |                   |   |
|-------------------|---|
| Eye contact       | - rinse immediately with tap water for 10 minutes - open eyelids forcibly                       |
| Skin contact      | - remove contaminated clothes, wash affected skin with water and soap - do not use any solvents |
| Inhalation        | - remove the casualty to fresh air and keep him/her calm<br>- consult physician                 |
| Note to physician | - treat symptomatically   |

**5. Fire-fighting measures**

- |                              |   |
|------------------------------|---|
| Suitable extinguishing media | - water spray jet, dry powder, foam, carbon dioxide |
| Specific hazards             | - consider dust explosion hazard                    |
| Protection of fire-fighters  | - precipitate gases/vapours/mists with water spray  |

**6. Accidental release measures**

- |                         |  |
|-------------------------|--|
| Methods for cleaning up | - collect solids (avoid dust formation) and hand over to waste removal<br>- rinse with plenty of water |
|-------------------------|--|

**7. Handling and storage****Handling**

- |                    |  |
|--------------------|--|
| Technical measures | - processing in closed systems, if possible superposed by inert gas (e.g. nitrogen)<br>- local exhaust ventilation necessary<br>- take precautionary measures against electrostatic charging<br>- avoid dust formation; consider dust explosion hazard |
|--------------------|--|

- |                    |  |
|--------------------|--|
| Suitable materials | - stainless steel, coated steel (protective lacquer), glass, polyethylene, polypropylene, enamel |
|--------------------|--|

- |                      |                           |
|----------------------|---------------------------|
| Unsuitable materials | - aluminium, copper, zinc |
|----------------------|---------------------------|

**Storage**

- |                    |   |
|--------------------|---|
| Storage conditions | - protected from humidity<br>- room temperature |
|--------------------|---|

- |          |  |
|----------|--|
| Validity | - 24 months, < 25 °C, in the unopened original container, see "best use before" date stated on the label |
|----------|--|

- |                     |   |
|---------------------|---|
| Packaging materials | - tightly closing; material: coated steel (protective lacquer), glass, polyethylene, polypropylene, PVC |
|---------------------|---|



## 8. Exposure controls/Personal protection

**Engineering Measures** - see 7.

### Monitoring

**Threshold value (Roche) air** - IOEL: 10 mg/m<sup>3</sup> (defined as 8-hour time-weighted average)

**Analytics** - sampling on glass fibre filter and gravimetric or chemical determination

### Personal protective equipment

**Respiratory protection** - respiratory protection not necessary during normal operations  
- in case of open handling or accidental release: particle mask or respirator with independent air supply

**Hand protection** - protective gloves (eg made of neoprene, nitrile or butyl rubber)

**Eye protection** - safety glasses

## 9. Physical and chemical properties

**Colour** white to yellowish

**Form** crystalline powder

**Odour** almost odourless, with sharp acidic, pleasant taste

**Density** 1.65 g/cm<sup>3</sup>

**Sieve analysis**

|      |           |                                       |
|------|-----------|---------------------------------------|
| 100  | % through | USP standard sieve no. 20 (Ø 850 µm)  |
| ≤ 70 | % through | USP standard sieve no. 100 (Ø 150 µm) |
| ≤ 20 | % through | USP standard sieve no. 200 (Ø 75 µm)  |

**Solubility**

- ~ 300'000 mg/l, water (20 °C)
- ~ 400'000 mg/l, water (40 °C)
- ~ 50'000 mg/l, propylene glycol
- ~ 20'000 mg/l, ethanol absolute (20 °C)
- ~ 10'000 mg/l, glycerine
- > 1'000 mg/l, acetone (23 °C)
- virtually insoluble, diethyl ether
- virtually insoluble, chloroform
- virtually insoluble, petroleum ether
- virtually insoluble, oils and fats
- virtually insoluble, benzene

**Partition coefficient** log P<sub>ow</sub> -2.15 (octanol/water 23 °C)

**pH value** 3 (0.5 % aqueous solution)  
2 (5 % aqueous solution)

**Dissociation constant** pK<sub>1</sub> = 4.17  
pK<sub>2</sub> = 11.57 (water)

**Melting temperature** 190 to 192 °C (with partial decomposition)



## 10. Stability and reactivity

|                     |  |
|---------------------|--|
| Stability           | <ul style="list-style-type: none"><li>- stable at room temperature under exclusion of humidity</li></ul>           |
| Conditions to avoid | <ul style="list-style-type: none"><li>- humidity</li><li>- light</li><li>- warming</li></ul>                       |
| Materials to avoid  | <ul style="list-style-type: none"><li>- oxidizing agents, atmospheric oxygen, bases, metals, metal salts</li></ul> |

## 11. Toxicological Information

|                       |   |
|-----------------------|---|
| Acute toxicity        | <ul style="list-style-type: none"><li>- LD<sub>50</sub> 11'900 mg/kg (oral, rat)</li><li>- LD<sub>50</sub> 8'000 mg/kg (oral, mouse)</li><li>- LD<sub>50</sub> 518 mg/kg (i.v., mouse)</li></ul>  |
| Local effects         | <ul style="list-style-type: none"><li>- eye: may cause irritations</li><li>- mucous membranes: may cause irritations</li><li>- skin: may cause irritations; particularly in conjunction with humidity (perspiration)</li></ul>  |
| Chronic toxicity      | <ul style="list-style-type: none"><li>- in predisposed individuals 4-12 g/d may cause urinary calculus</li></ul>  |
| Mutagenicity          | <ul style="list-style-type: none"><li>- no suspicion of human mutagenicity</li></ul>  |
| Carcinogenicity       | <ul style="list-style-type: none"><li>- not carcinogenic (several species)</li></ul>  |
| Reproduction toxicity | <ul style="list-style-type: none"><li>- not teratogenic, not embryotoxic</li></ul>  |
| Note                  | <ul style="list-style-type: none"><li>- oral uptake of up to 9 g per day does not produce any serious toxic effects, however, even lesser quantities may cause diarrhoea</li><li>- RDA (recommended daily allowance): 60 mg</li><li>- GRAS (generally recognized as safe for human consumption)</li></ul> |

## 12. Ecological Information

|                           |  |
|---------------------------|--|
| Inherent biodegradability | <ul style="list-style-type: none"><li>- well inherently biodegradable</li><li>97 %, 5 d</li><li>100 %, 15 d</li><li>(Zahn-Wellens test, OECD No. 302 B)</li></ul>  |
| Ecotoxicity               | <ul style="list-style-type: none"><li>- barely toxic for fish (rainbow trout)</li><li>LC<sub>50</sub> (96 h) 1020 mg/l</li><li>(OECD No. 203)</li><li>- the inhibitory concentration relates to re-attachment to substrate (<i>Dreissena polymorpha</i>)</li><li>MIC (48 h) &gt; 50 mg/l (nominal concentration)</li></ul> |
| Air pollution             | <ul style="list-style-type: none"><li>- observe local/national regulations</li></ul>   |

## 13. Disposal considerations

|                     |  |
|---------------------|--|
| Waste from residues | <ul style="list-style-type: none"><li>- incinerate in qualified installation with flue gas scrubbing</li><li>- drain very small quantities into wastewater treatment plant</li><li>- observe local/national regulations regarding waste disposal</li></ul> |
|---------------------|--|



## 14. Transport Information

Note - not classified by transport regulations

## 15. Regulatory Information

Note - no classification and labelling according to EU directives

Water hazard class (Germany) 1: weakly hazardous for water (according to annex 1 or 2 of directive VwVwS of 17.05.1999)

## 16. Other Information

Use - for prophylactic and therapeutic use in pharmaceutical specialities, for vitamin C enrichment in food and feed industries as well as for antioxidant properties (E300) in food technology

Biological activity - 1 I.U. (international unit) of vitamin C corresponds to the activity of 50 µg of pure ascorbic acid

Safety-lab number - BS-3827

Edition documentation - changes from previous version in sections 1

## Important Notice

DSM N.V., headquartered in Heerlen, The Netherlands, has acquired the vitamins, carotenoids, enzymes, food and feed ingredients, cosmetics ingredients and fine chemicals business (VFC Business)

of the Roche group of companies, headquartered in Basel, Switzerland. Within the United States, DSM Nutritional Products, Inc. has purchased certain assets and assumed certain liabilities of the VFC Business formally conducted by Roche Vitamins Inc. Please note that corporate names, trade names, trade and service marks and domain names containing the word "Roche" and the "Roche" logo will continue to appear on our business documentation during our transition. We appreciate your understanding and cooperation as we complete our rebranding program. Should you have any questions, or if DSM can be of further assistance to you, please do not hesitate to contact your Account Manager or our Account Management Center at: +41-62 866 23 14.