SAFETY DATA SHEET

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

Issue Date 17-01-2008 **Revision Date** 05-Aug-2024 **Version** 4.4

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Code(s) LCW532-1

Product Name LCW 532 Mangan/ Manganese/Manganèse, LCW 532 A; 1/3

Synonyms (2R)-2-[(1S)-1,2-dihydroxyethyl]-3,4-dihydroxy-2H-furan-5-one

EC No (EU Index No) 200-066-2

Formula $C_6H_8O_6$

Molecular weight 176.13 g/mole

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Laboratory Use.

Uses advised against Consumer use

1.3. Details of the supplier of the safety data sheet

Supplier
HACH LANGE GmbH
Willstätterstr. 11
D-40549 Düsseldorf
Tel: +49 (0)211 5288-383
sds@hach.com

Responsible country contact:

HACH UK
Laser House
Ground Floor, Suite B
Waterfront Quay, Salford Quays
GB - Manchester, M50 3XW
Tel. +44 (0) 161 872 1487
info-uk@hach.com

HACH Ireland
Unit 34 GB Business Park
Little Island
IRL-Co. Cork
T45 H681
Tel. +353 (0)146 02 522
info-ie@hach.com

1.4. Emergency telephone number

UK: Chemtrec: +44 20 3807 3798
IE: National Poisons Information Centre (NPIC) 01 809 2566 (24/7)

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

2.2. Label elements

Classification according to Regulation (EC) No. 1272/2008 [CLP]

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

Hazard statements
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

Precautionary statements

2.3. Other hazards

No information available.

PBT & vPvB
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII

Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Chemical name	CAS No. EC No. Index No.	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
L-Ascorbic acid	50-81-7 200-066-2 -	100%	Not classified		-	-

Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate *No information available*

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapour - mg/L	Inhalation LC50 - 4 hour - gas - ppm
L-Ascorbic acid 50-81-7	11900 mg/kg	None reported	None reported	None reported	None reported

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a doctor.

Skin contact Wash skin with soap and water. In the case of skin irritation or allergic reactions see a doctor.

Ingestion Rinse mouth.

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8). Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors Treat symptomatically.

Section 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical Thermal decomposition can lead to release of irritating and toxic gases and vapours.

Hazardous combustion products May emit acrid smoke and fumes. carbon monoxide, carbon dioxide.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

Additional information Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Evacuate personnel to safe areas.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Should not be released into the environment. See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling Ensure adequate ventilation.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place.

7.3. Specific end use(s)

Specific use(s) Laboratory Reagent.
Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Derived No Effect Level (DNEL) No information available

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering controls	Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Personal protective equipment **Eye/face protection**	Wear safety glasses with side shields (or goggles).
Hand protection	Barrier creams may help to protect the exposed areas of skin. Wear suitable gloves. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374-1:2016 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III acco.
Skin and body protection	Avoid contact with eyes, skin and clothing. Wash contaminated clothing before reuse. Long sleeved clothing.
Respiratory protection	Ensure adequate ventilation. No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. Wear breathing apparatus if exposed to vapours/dusts/aerosols.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.
Environmental exposure controls	Do not allow into any sewer, on the ground or into any body of water.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state Solid

Colour white **Odour** Odourless

Odour threshold Not applicable

Property	Values	Remarks • Method
Molecular weight	176.13 g/mole	
pH	2.3	5% Solution
Melting point / freezing point	192 °C / 377.6 °F	
Initial boiling point and boiling range	No data available	

Evaporation rate	Not applicable	
Vapour pressure	Not applicable	
Relative vapor density	No data available	
Partition coefficient	log K_{ow} = -1.85	
Soil Organic Carbon-Water Partition Coefficient	log K_{oc} = -0.99	Estimation through KOCWIN v2.00 part of the Estimation Programs Interface (EPI) Suite™
Autoignition temperature	380 °C / 716 °F	
Decomposition temperature	192.22 °C / 377.996 °F	
Dynamic viscosity	Not applicable	
Kinematic viscosity	Not applicable	
Relative density	1.65 g/cm^3	@ 20 °C

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Completely soluble	333000 mg/L	20 °C / 68 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acids	Soluble	> 1000 mg/L	25 °C / 77 °F
Ethyl alcohol	Soluble	> 1000 mg/L	25 °C / 77 °F
glycerol	Soluble	> 1000 mg/L	25 °C / 77 °F

Metal Corrosivity

Steel Corrosion Rate	Not applicable
Aluminum Corrosion Rate	Not applicable

Explosive properties

Upper explosion limit	No data available
Lower explosion limit	No data available

Flammable properties

Flash point	Not applicable

Flammability

Upper flammability limit:	No data available
Lower flammability limit	No data available

Oxidising properties	No data available.
Bulk density	No data available

9.2. Other information

No information available.

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

Hazardous polymerisation Hazardous polymerisation does not occur.

10.4. Conditions to avoid

Conditions to avoid None known based on information supplied.

10.5. Incompatible materials

Incompatible materials None known based on information supplied.

10.6. Hazardous decomposition products

Hazardous Decomposition Products Heating to decomposition releases toxic fumes of carbon monoxide and carbon dioxide.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity
Based on available data, the classification criteria are not met

Mixture If available, see ingredient data below.

Substance No data available.

Acute Toxicity Estimate (ATE) Not applicable

Skin corrosion/irritation
Based on available data, the classification criteria are not met.

Mixture If available, see ingredient data below.

Substance No data available.

Serious eye damage/eye irritation
Based on available data, the classification criteria are not met.

Mixture If available, see ingredient data below.

Substance No data available.

Respiratory or skin sensitisation
Based on available data, the classification criteria are not met.

Mixture If available, see ingredient data below.

Substance No data available.

STOT - single exposure
Based on available data, the classification criteria are not met.

Mixture If available, see ingredient data below.

Substance No data available.

STOT - repeated exposure
Based on available data, the classification criteria are not met.

Mixture If available, see ingredient data below.

Substance No data available.

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Mixture invitro **Data** If available, see ingredient data below.

Substance invitro **Data** Test data reported below.

Chemical name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
L-Ascorbic acid	DNA damage	Human fibroblast	0.2 mmol/L	None reported	Positive test result for mutagenicity	RTECS

Mixture invivo **Data** If available, see ingredient data below.

Substance invivo **Data** No data available.

Carcinogenicity
Based on available data, the classification criteria are not met.

Mixture If available, see ingredient data below.

Substance No data available.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Mixture No data available.

Substance Test data reported below.

Oral Exposure Route:

Chemical name	Endpoint	Reported	Exposure	Toxicological effects	Key literature references and

	type	dose	time		sources for data
L-Ascorbic acid	Guinea pig TD_{Lo}	19500 mg/kg	28 days	None reported	RTECS

Aspiration hazard
Based on available data, the classification criteria are not met.

11.2. Information on other hazards
Other dangerous properties can not be excluded. Handle in accordance with good industrial hygiene and safety practice.

11.2.1. Endocrine disrupting properties
Endocrine disrupting properties This product does not contain any known or suspected endocrine disruptors.

11.2.2. Other information
Other adverse effects No information available.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity Based on available data, the classification criteria are not met.

Mixture

Acute aquatic toxicity: If available, see ingredient data below.

Aquatic Chronic Toxicity: If available, see ingredient data below.

Substance

Acute aquatic toxicity: Test data reported below.

Fish:

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
L-Ascorbic acid	96 hours	None reported	LC_{50}	44200 mg/L	ECOSARS

Crustacea:

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
L-Ascorbic acid	48 Hours	None reported	LC_{50}	17500 mg/L	ECOSARS

Algae:

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
L-Ascorbic acid	96 hours	None reported	EC_{50}	29675 mg/L	ECOSARS

Aquatic Chronic Toxicity: No data available.

12.2. Persistence and degradability

Mixture No data available.

12.3. Bioaccumulative potential

Mixture: No data available.

Partition coefficient log K_{ow} = -1.85

12.4. Mobility in soil

Soil Organic Carbon-Water Partition Coefficient log K_{oc} = -0.99

12.5. Results of PBT and vPvB assessment

The components in this formulation do not meet the criteria for classification as PBT or vPvB.

12.6. Endocrine disrupting properties

Endocrine Disruptor Information: This product does not contain any known or suspected endocrine disruptors

12.7. Other adverse effects

No information available.

Ozone: Not applicable

Ozone depletion potential (ODP): No information available

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Advice on Disposal

Waste from residues/unused products Dispose of waste in accordance with environmental legislation. Dispose of in accordance with local regulations.

Waste disposal number (residues/unused products)

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste.

Waste disposal number (used product)

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste.

Contaminated packaging Dispose of contents/containers in accordance with local regulations.

Other Information Do not reuse empty containers.

Section 14: TRANSPORT INFORMATION

ADR

14.1 UN number or ID number 3316
14.2 UN proper shipping name CHEMICAL KIT
14.3 Transport hazard class(es) 9
14.4 Packing Group Not regulated

14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	251, 340, 671
Classification code	M11
Tunnel restriction code	(E)

IATA

14.1 UN number or ID number	UN3316
14.2 UN proper shipping name	& &
14.3 Transport hazard class(es)	9
14.4 Packing group	II
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	A163, A44

IMDG

14.1 UN number or ID number	UN3316
14.2 UN proper shipping name	& &
14.3 Transport hazard class(es)	9
14.4 Packing Group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	
Special Provisions	251, 340
EmS-No	F-A, S-P
14.7 Maritime transport in bulk according to IMO instruments	No information available

Additional information
If the item is part of a reagent set or kit the classification would change to the following:
UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

Section 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

European Union

Persistent Organic Pollutants Not applicable

Dangerous substance category per Seveso Directive (2012/18/EU)
• Non-controlled

Ozone-depleting substances (ODS) regulation (EC) 1005/2009
Not applicable

Germany

Water hazard class (WGK) slightly hazardous to water (WGK 1)

France

Occupational Illnesses (R-463-3, France)

Chemical name	French RG number	Title
L-Ascorbic acid 50-81-7	RG 12	-

International Inventories

EINECS/ELINCS	Complies
TSCA	Complies
DSL/NDSL	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

15.2. Chemical safety assessment

Chemical Safety Report Chemical safety assessments for substances in this mixture were not carried out.

Section 16: OTHER INFORMATION

Issue Date 17-01-2008

Revision Date 05-Aug-2024

Revision Note updated SDS sections:
3
9
11
12

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend

**	Hazard Designation
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieure
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate

CAS	Chemical Abstracts Service Number
Ceiling	Maximum limit value
CLP	Classification, Labelling and Packaging of substances and mixtures [Regulation (EC) No. 1272/2008]
DNEL	Derived No Effect Level (DNEL)
EC	European Community
ECHA	ECHA (The European Chemicals Agency)
EC50	Effective Concentration to 50% of a test population
EEC	European Economic Community
EN	European Standard
IMDG	International Maritime Dangerous Goods (IMDG)
IATA	International Air Transport Association (IATA)
IATA-DGR	International Air Transport Association - Dangerous Goods Regulations
ICAO	International Civil Aviation Organization
ICAO-TI	International Civil Aviation Organization - Technical Instructions
IUCLID	IUCLID (The International Uniform Chemical Information Database)
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
LOAEL	Lowest observed adverse effect level
LOAEC	Lowest observed adverse effect concentration
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
LOLI	LOLI (List of Lists - An International Chemical Regulatory Database)
MAK	Maximale Arbeitsplatz-Konzentration, a German expression corresponding to threshold limit value, which relates to safe daily exposure levels to chemical substances
NOAEL	NOAEL (No observed adverse effect level)
NOAEC	No observed adverse effect concentration
OSHA	OSHA (Occupational Safety and Health Administration of the US Department of Labour)
PEC	Predicted Effect Concentration
PNEC	Predicted No Effect Concentration (PNEC)
PBT	Persistent, Bioaccumulative, and Toxic (PBT) Chemicals
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals [Regulation (EC) No. 1907/2006])
RTECS	RTECS (Registry of Toxic Effects of Chemical Substances)
TWA	TWA (time-weighted average)
SKN*	Skin designation
SKN+	Skin sensitisation
STEL	STEL (Short Term Exposure Limit)
STOT	Specific Target Organ Toxicity
STOT RE	Specific target organ toxicity — repeated exposure
STOT SE	Specific target organ toxicity — single exposure
SVHC	Substances of Very High Concern
TLV	Threshold Limit Value
TRGS	Technical rules for hazardous substances, Germany
TSCA	Toxic Substances Control Act
UN	United Nations
vPvB	very persistent and very bioaccumulative
VOC	Volatile organic compounds
AwSV	Administrative regulation of water polluting substances, Germany

Key literature references and sources for data
See Section 11: TOXICOLOGICAL INFORMATION
See Section 12: ECOLOGICAL INFORMATION

Classification procedure

Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method

Acute inhalation toxicity - Vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration toxicity	Calculation method
Ozone	Calculation method

Training Advice Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Prepared By Hach Product Compliance Department

Restrictions on use For Laboratory Use Only.

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

End of Safety Data Sheet