

SAFETY DATA SHEET

according to US Regulation 29 CFR 1910.1200 and the Canadian HPA

POWERFEED A POWDER W/O FE CITRATE

Version 7.0

Revision Date 2024.08.19

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SECTION 1. IDENTIFICATION

Product name : POWERFEED A POWDER W/O FE CITRATE
Material number : VPW-095F

Manufacturer or supplier's details

Company : **Lonza Ltd**
Muenchensteinerstrasse 38
CH-4002 Basel
Switzerland
Business Telephone +41 61 316 81 11

Lonza Rockland Inc.
191 Thomaston Street
Rockland, ME 04841-2994
USA
Business Telephone: 1-207-594-3400

Lonza Walkersville Inc.
8830 Biggs Ford Road
Walkersville, MD 21793-0127
USA
Business Telephone 1-301-898-7025

E-mail address : sds@lonza.com

Emergency telephone number : +41 61 313 94 94 (24h)

Recommended use of the chemical and restrictions on use

Recommended use : Suitable for GMP manufacturing.

Restrictions on use : Not for human or animal in vivo or diagnostic use.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Combustible dust : Category 1

Eye irritation : Category 2A

Skin sensitisation : Category 1

GHS label elements

Hazard pictograms :



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Signal word	: Warning
Hazard statements	: May form combustible dust concentrations in air. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation.
Precautionary statements	: Prevention: Avoid dust formation. P261 Avoid breathing dust. P264 Wash skin thoroughly after handling. P272 Contaminated work clothing should not be allowed out of the workplace. P280 Wear protective gloves/ eye protection/ face protection. Response: P302 + P352 IF ON SKIN: Wash with plenty of water. 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. P337 + P313 If eye irritation persists: Get medical advice/ attention. P362 + P364 Take off contaminated clothing and wash it before reuse. P381 In case of leakage, eliminate all ignition sources. Disposal: P501 Dispose of contents/container in accordance with local regulation.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name / Synonyms	CAS-No.	Concentration (% w/w)
Sodium pyruvate	113-24-6	2.5181
Tyrosine disodium salt dihydrate	122666-87-9	1.1076
Calcium chloride	10043-52-4	0.7317

SECTION 4. FIRST AID MEASURES

If inhaled	: Move to fresh air. Consult a physician after significant exposure. If unconscious, place in recovery position and seek medical advice. Keep respiratory tract clear. If breathing is irregular or stopped, administer artificial respiration.
In case of skin contact	: After contact with skin, wash immediately with plenty of soap and water. If on clothes, remove clothes.

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		In the case of skin irritation or allergic reactions see a physician.
In case of eye contact	:	Rinse immediately with plenty of lukewarm water, also under the eyelids, for at least 15 minutes. Call a physician immediately. Remove contact lenses. Keep eye wide open while rinsing. Protect unharmed eye.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	:	No information available. May cause an allergic skin reaction. Causes serious eye irritation.
Notes to physician	:	Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray
Specific hazards during firefighting	:	Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Heating or fire can release toxic gas.
Hazardous combustion products	:	Carbon oxides (COx) Nitrogen oxides (NOx) Sulphur oxides (SOx) Sodium oxides Hydrogen chloride (HCl) Potassium oxides
Further information	:	Use a water spray to cool fully closed containers.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Avoid dust formation.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so.
Methods and materials for containment and cleaning up	:	Pick up and arrange disposal without creating dust. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

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SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : During processing, dust may form explosive mixture in air. Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed. Take precautionary measures against static discharges.
- Advice on safe handling : Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Avoid formation of respirable particles. Avoid exposure - obtain special instructions before use. Do not breathe vapours/dust. Avoid contact with skin and eyes. Smoking, eating and drinking should be prohibited in the application area. For personal protection see section 8. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations.
- Conditions for safe storage : Observe label precautions. Keep container tightly closed. Keep in a well-ventilated place. Electrical installations / working materials must comply with the technological safety standards. To maintain product quality, do not store in heat or direct sunlight.
- Further information on storage conditions : Avoid moisture.
- Technical measures/Precautions : Avoid moisture.
- Further information on storage stability : Keep in a dry place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

- Engineering measures** : It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment. Use only appropriately classified electrical equipment and powered industrial trucks. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the

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work area (i.e., there is no leakage from the equipment).

Personal protective equipment

Respiratory protection	:	Half mask with a particle filter P2 (EN 143)
Hand protection		
Material	:	Nitrile rubber
Remarks	:	Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). Impervious gloves Break through time : > 480 min
Eye protection	:	Safety goggles
Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place. Lightweight protective clothing
Hygiene measures	:	Wash hands before breaks and at the end of workday. When using do not eat, drink or smoke. Avoid contact with skin, eyes and clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	powder
Colour	:	white
Odour	:	No data available
Odour Threshold	:	No data available
pH	:	6.7 - 7.0 (68 - 77 °F / 20 - 25 °C) Concentration: 52.80 g/l
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	No data available
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Flammability (liquids)	:	No data available
Upper explosion limit	:	Not applicable
Lower explosion limit	:	Not applicable
Vapour pressure	:	No data available
Relative vapour density	:	Not applicable

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Relative density	:	No data available
Density	:	No data available
Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	Not applicable
Particle size	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Stable under recommended storage conditions. No hazards to be specially mentioned. Dust may form explosive mixture in air.
Conditions to avoid	:	Avoid dust formation. Heat
Incompatible materials	:	Oxidizing agents Strong acids and strong bases
Hazardous decomposition products	:	No decomposition if used as directed. No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Ingestion Eyes
Acute toxicity		
Acute oral toxicity	:	Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	Remarks: No data available
Skin corrosion/irritation		
Remarks	:	No data available

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Serious eye damage/eye irritation

Remarks : No data available

Respiratory or skin sensitisation

Remarks : No data available

Germ cell mutagenicity

Genotoxicity in vitro : Remarks: No data available

Carcinogenicity

Remarks : No data available

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Effects on fertility : Remarks: No data available

STOT - single exposure

Remarks : No data available

STOT - repeated exposure

Remarks : No data available

Aspiration toxicity

No aspiration toxicity classification

Further information

Remarks : No data available

The following toxicological data refer to:

Tyrosine disodium salt dihydrate(CAS-No.: 122666-87-9)

Acute toxicity

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 420

Serious eye damage/eye irritation

Species : Bovine cornea
Result : Causes serious eye damage.
Exposure time : 4 h
Method : OECD Test Guideline 437
Test substance : Information given is based on data obtained from similar sub-

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stances.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxicity to fish : Remarks: No data available

Persistence and degradability

Biodegradability : Remarks: No data available

Bioaccumulative potential

Bioaccumulation : Remarks: No data available

Mobility in soil

Distribution among environmental compartments : Remarks: No data available

Other adverse effects

Ozone-Depletion Potential : Regulation: US. EPA Clean Air Act (CAA) Section 602 Ozone-Depleting Substances (40 CFR 82, Subpt. A, App A & B)
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of contents/container in accordance with local regulation.
Contact waste disposal services.
Do not dispose of waste into sewer.

Contaminated packaging : Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

DOT : Not dangerous goods

UN number : Not applicable

Proper shipping name : Not applicable

Transport hazard class : Not applicable

Packing group : Not applicable

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TDG	:	Not dangerous goods
UN number	:	Not applicable
Proper shipping name	:	Not applicable
Transport hazard class	:	Not applicable
Packing group	:	Not applicable
IATA	:	Not dangerous goods
UN number	:	Not applicable
Proper shipping name	:	Not applicable
Transport hazard class	:	Not applicable
Packing group	:	Not applicable
IMDG	:	Not dangerous goods
UN number	:	Not applicable
Proper shipping name	:	Not applicable
Transport hazard class(es)	:	Not applicable
Packing group	:	Not applicable
ADR	:	Not dangerous goods
UN number	:	Not applicable
Proper shipping name	:	Not applicable
Transport hazard class	:	Not applicable
Packing group	:	Not applicable
RID	:	Not dangerous goods
UN number	:	Not applicable
Proper shipping name	:	Not applicable
Transport hazard class	:	Not applicable
Packing group	:	Not applicable
Special precautions for user	:	none
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	:	Not applicable

SECTION 15. REGULATORY INFORMATION

TSCA SNUR/Export notifications

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ

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			(lbs)
Copper(II) sulfate pentahydrate	7758-99-8	10	

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Sodium selenite	10102-18-8	100	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards

See above: SECTION 2. Hazard Identification-GHS Classification

SARA 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

Components	CAS-No.	Concentration
Cobalt(II) chloride hexahydrate	7791-13-1	>= 0.0001 - < 0.001 %
Manganese(II) sulfate monohydrate	10034-96-5	>= 0.0001 - < 0.001 %
Sodium selenite	10102-18-8	>= 0.0001 - < 0.001 %
Chromium potassium disulfate dodecahydrate	7788-99-0	>= 0 - < 0.0001 %
Nickel(II) nitrate hexahydrate	13478-00-7	>= 0 - < 0.0001 %
Manganese(II) chloride tetrahydrate	13446-34-9	>= 0 - < 0.0001 %
Nickel(II) chloride hexahydrate	7791-20-0	>= 0 - < 0.0001 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Components	CAS-No.	Concentration
Glycine	56-40-6	>= 1 - < 5 %
(S)-Malic acid	97-67-6	>= 0.001 - < 0.01 %
Ethanol	64-17-5	>= 0.001 - < 0.01 %

This product does not contain any VOC exemptions listed under the U.S. Clean Air Act Section 450.

Clean Water Act

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Components	CAS-No.	Component RQ
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		(lbs)
Disodium hydrogenorthophosphate	7558-79-4	5,000
Iron(II) sulfate heptahydrate	7782-63-0	1,000
Zinc sulfate heptahydrate	7446-20-0	1,000
Copper(II) sulfate pentahydrate	7758-99-8	10
Sodium fluoride	7681-49-4	1,000
Sodium selenite	10102-18-8	100
Nickel(II) nitrate hexahydrate	13478-00-7	100
Nickel(II) chloride hexahydrate	7791-20-0	100

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Components	CAS-No.	Concentration
Disodium hydrogenorthophosphate	7558-79-4	>= 0.1 - < 1 %
Iron(II) sulfate heptahydrate	7782-63-0	>= 0.01 - < 0.1 %
Zinc sulfate heptahydrate	7446-20-0	>= 0.01 - < 0.1 %
Copper(II) sulfate pentahydrate	7758-99-8	>= 0.001 - < 0.01 %
Sodium fluoride	7681-49-4	>= 0.001 - < 0.01 %
Sodium selenite	10102-18-8	>= 0.0001 - < 0.001 %
Nickel(II) nitrate hexahydrate	13478-00-7	>= 0 - < 0.0001 %
Nickel(II) chloride hexahydrate	7791-20-0	>= 0 - < 0.0001 %

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

Massachusetts Right To Know

Components	CAS-No.
Sodium selenite	10102-18-8

Pennsylvania Right To Know

Components	CAS-No.
D-Glucose	50-99-7
4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid	7365-45-9
Sodium chloride	7647-14-5
L-Arginine monohydrochloride	1119-34-2
L-Threonine	72-19-5
L-Asparagine monohydrate	5794-13-8
Lysine hydrochloride	657-27-2
1,2-Propanediol polymer with ethylene oxide	9003-11-6
L-Serine	56-45-1
Disodium hydrogenorthophosphate	7558-79-4
Iron(II) sulfate heptahydrate	7782-63-0
Zinc sulfate heptahydrate	7446-20-0
Cyanocobalamin	68-19-9

California Prop. 65



WARNING Cancer - www.P65Warnings.ca.gov.

Components	CAS-No.
Titanium dioxide	13463-67-7

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Nickel(II) nitrate hexahydrate	13478-00-7
Nickel(II) chloride hexahydrate	7791-20-0



WARNING Reproductive Harm - www.P65Warnings.ca.gov.

Components	CAS-No.
Nickel(II) nitrate hexahydrate	13478-00-7
Nickel(II) chloride hexahydrate	7791-20-0

Canadian lists

The following substance(s) is/are subject to a Significant New Activity Notification:

Components	CAS-No.
Germanium dioxide	1310-53-8

NPRI

Components	CAS-No.
Zinc sulfate heptahydrate	7446-20-0
Cyanocobalamin	68-19-9
Ethanol	64-17-5
Copper(II) sulfate pentahydrate	7758-99-8
Sodium fluoride	7681-49-4

The product components have the following inventory status:

TSCA : This product is regulated under the United States Food and Drug Act (FDA).

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation

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(EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 2024.08.19

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Date format : yyyy/mm/dd

US / EN