

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : PALS/FSE STARTER 1

1.2 Relevant identified uses of the substance or mixture and uses advised againstUse of the Sub-
stance/Mixture : Premix for Animal Feeds**1.3 Details of the supplier of the safety data sheet**

Company : DSM Nutritional Products
45 Waterview Blvd
US-07054-1298 Parsippany

Telephone : (908) 475-7373
Telefax : (908) 475-7406
E-mail address Respon-
sible/issuing person : sds.nutritionalproducts@dsm.com

1.4 Emergency telephone number

1-800-424-9300 (24 HR CHEMTREC, CA & US); Outside CA & US +1-703-741-5970
(COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

CAUTION	
Appearance	powder
Odour	No information available.
Hazard Summary	May cause cancer.

GHS Classification

Combustible dust :
Eye irritation : Category 2A
Carcinogenicity : Category 1A
Specific target organ toxicity : Category 2
- repeated exposure

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : May form combustible dust concentrations in air.
H319 Causes serious eye irritation.
H350 May cause cancer.
H373 May cause damage to organs through prolonged or re-
peated exposure.

Precautionary statements : **Prevention:**
 P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
 P264 Wash skin thoroughly after handling.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.
 P337 + P313 If eye irritation persists: Get medical advice/ attention.
Storage:
 P405 Store locked up.
Disposal:
 P501 Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Skin : May cause skin irritation.
 Eyes : Causes eye irritation.
 Ingestion : Harmful if swallowed.
 Harmful or fatal if swallowed.
 Aggravated Medical Condition : Eyes
 Symptoms of Overexposure : No specific symptoms known.

Additional hazards and advice

Risk of dust explosion.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Brief description of the product : Mixture

Hazardous components

Component	CAS-No.	Weight percent
choline chloride	67-48-1	20 - 30
Manganese amino acid complex		1 - 5
iron sulphate monohydrate	17375-41-6	1 - 5
Zinc amino acid complex		1 - 5
nicotinic acid	59-67-6	1 - 5
basic zinc chloride	12167-79-2	1 - 5
silicon dioxide, amorphous	112926-00-8	1 - 5

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Quartz (SiO₂)

14808-60-7

0.1 - 1

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
- If inhaled : Move to fresh air.
Consult a physician after significant exposure.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
If symptoms persist, call a physician.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : No specific symptoms known.
- Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES**Flammable properties**

- Flash point : Not applicable

Fire fighting

- Suitable extinguishing media : Water
Foam
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Consider dust explosion hazard.

Protective equipment and precautions for firefighters

- Specific hazards during fire-fighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Avoid dust formation.
Avoid breathing dust.
- Environmental precautions : Do not flush into surface water or sanitary sewer system.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Pick up and arrange disposal without creating dust.
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Avoid contact with skin and eyes.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.
Smoking, eating and drinking should be prohibited in the application area.
- Advice on protection against fire and explosion : Avoid dust formation.
Provide appropriate exhaust ventilation at places where dust is formed.
Take precautionary measures against static discharges.
- Conditions for safe storage : Store at room temperature.

Keep container tightly closed and dry.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
choline chloride	67-48-1	TWA	10 mg/m ³	DSM Internal Limit
iron sulphate monohydrate	17375-41-6	TWA	1 mg/m ³ (Iron)	ACGIH
	17375-41-6	TWA	1 mg/m ³ (Iron)	OSHA P0
	17375-41-6	TWA	1 mg/m ³ (Iron)	NIOSH REL
silicon dioxide, amorphous	112926-00-8	TWA	6 mg/m ³	OSHA P0
	112926-00-8	TWA (Dust)	80 mg/m ³ / %SiO ₂ (Silica)	OSHA Z-3
quartz (SiO ₂)	14808-60-7	TWA (respirable dust fraction)	0.1 mg/m ³	OSHA P0

Hazardous components without workplace control parameters

Components	CAS-No

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Manganese amino acid complex	
Zinc amino acid complex	
nicotinic acid	59-67-6
basic zinc chloride	12167-79-2

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Hand protection

Remarks : Consider the hazard characteristics of this product and any special workplace conditions when selecting the appropriate type of protective gloves. Glove material: for example nitrile rubber

Eye protection : Safety glasses with side-shields

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties**

Appearance	: powder
Odour	: No information available.
Odour Threshold	: No information available.
pH	: No data available
Melting point/range	: not determined
Boiling point/boiling range	: not determined
Flash point	: Not applicable
Flammability (solid, gas)	: May form combustible dust concentrations in air.
Vapour pressure	: Not applicable
Relative vapour density	: Not applicable
Density	: not determined
Water solubility	: not determined
Partition coefficient: n-octanol/water	: Not applicable
Auto-ignition temperature	: No data available
Thermal decomposition	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

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9.2 Other information

No data available

SECTION 10. STABILITY AND REACTIVITY

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

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: Acute toxicity estimate : 4,057 mg/kg (Calculation method)
Skin irritation	: May cause skin irritation and/or dermatitis.
Eye irritation	: Dust contact with the eyes can lead to mechanical irritation.
Carcinogenicity IARC	Group 1: Carcinogenic to humans quartz (SiO ₂) 14808-60-7
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
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.
STOT - single exposure (Acute exposure)	: The substance or mixture is not classified as specific target organ toxicant, single exposure.
STOT - repeated exposure Manganese amino acid complex	: May cause damage to organs through prolonged or repeated exposure.
Experience with human exposure: nicotinic acid	Skin contact : Skin: temporary redness, temporary itching

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- Experience with human exposure: Ingestion
 iron sulphate monohydrate : Acute overdose produces the following symptoms:
 Stomach/intestinal disorders, Liver disorders
- Further information : May cause irritation of respiratory tract.
- Aspiration toxicity : No aspiration toxicity classification

SECTION 12. ECOLOGICAL INFORMATION**Toxicity**

- Toxicity to fish
 choline chloride : *Oryzias latipes* (Japanese medaka)
 LC50 (96 h) > 100 mg/l
 (OECD Test Guideline 203)

No data is available on the product itself.

Persistence and degradability

No data is available on the product itself.

Bioaccumulative potential

- Bioaccumulation : No data available
- Partition coefficient: n-
 octanol/water : Not applicable

Mobility in soil

- Distribution among environ-
 mental compartments : No data available

Results of PBT and vPvB assessment

- Assessment : Not applicable

Other adverse effects

- Regulation 40 CFR Protection of Environment; Part 82 Protection of
 Stratospheric Ozone - CAA Section 602 Class I Substances
- 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 informa- : Toxic to aquatic organisms, may cause long-term adverse
 tion effects in the aquatic environment.

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

- Waste from residues : Discharge into the environment must be avoided.
 Do not contaminate ponds, waterways or ditches with chemi-
 cal or used container.

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Do not dispose of waste into sewer.
Offer surplus and non-recyclable solutions to a licensed disposal company.

User must determine if any wastes generated exhibit hazardous characteristics as per 40 CFR Part 261 or other national / local legislation.

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

SECTION 14. TRANSPORT INFORMATION**International Regulation****IATA-DGR**

UN/ID No. : UN 3077
 Proper shipping name : Environmentally hazardous substance, solid, n.o.s.
 (Zinc amino acid complex, Manganese amino acid complex)
 Class : 9
 Packing group : III
 Labels : Miscellaneous Dangerous Goods
 Packing instruction (cargo aircraft) : 956
 Packing instruction (passenger aircraft) : 956

IMDG-Code

UN number : UN 3077
 Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,
 N.O.S.
 (Zinc amino acid complex, Manganese amino acid complex)
 Class : 9
 Packing group : III
 Labels : 9
 EmS Code : F-A, S-F
 Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations**49 CFR**

UN/ID/NA number : UN 3077
 Proper shipping name : Environmentally hazardous substance, solid, n.o.s.
 (Zinc amino acid complex, Manganese amino acid complex)
 Class : 9
 Packing group : III
 Labels : CLASS 9
 ERG Code : 171
 Marine pollutant : yes (Zinc amino acid complex, Manganese amino acid complex)

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Special precautions for user

Non bulk shipments by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

SECTION 15. REGULATORY INFORMATION**TSCA list**

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

EPCRA - Emergency Planning and Community Right-to-Know Act**CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
selenium	7782-49-2	100	*
selenium	7782-49-2	10	*

*: Calculated RQ exceeds reasonably attainable upper limit.

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 : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

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

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

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).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMF Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

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

sodium selenite	10102-18-8	0.0043 %
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The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

sodium selenite	10102-18-8	0.0043 %
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This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

Massachusetts Right To Know

silicon dioxide, amorphous	112926-00-8	1 - 5 %
sodium sulphate	7757-82-6	1 - 5 %
quartz (SiO ₂)	14808-60-7	0.1 - 1 %
sodium selenite	10102-18-8	0 - 0.1 %

Pennsylvania Right To Know

choline chloride	67-48-1	20 - 30 %
calcium carbonate	471-34-1	10 - 20 %
rice hulls	Not Assigned	5 - 10 %
iron sulphate monohydrate	17375-41-6	1 - 5 %
silicon dioxide, amorphous	112926-00-8	1 - 5 %
sodium sulphate	7757-82-6	1 - 5 %

New Jersey Right To Know

choline chloride	67-48-1	20 - 30 %
calcium carbonate	471-34-1	10 - 20 %
rice hulls	Not Assigned	5 - 10 %
Manganese Hydroxychloride	39438-40-9	1 - 5 %
Manganese amino acid complex	Not Assigned	1 - 5 %
silicon dioxide, amorphous	112926-00-8	1 - 5 %
quartz (SiO ₂)	14808-60-7	0.1 - 1 %

SECTION 16. OTHER INFORMATION**Full text of other abbreviations**

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; 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; 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; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Cooperation 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance In-

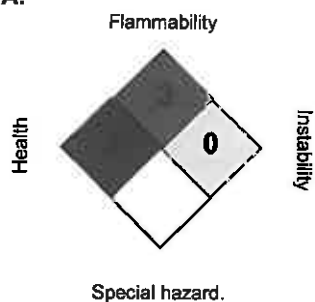
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ventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Further information**NFPA:****HMIS III:**

HEALTH	2*
FLAMMABILITY	3
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

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.

Abbreviations: ACGIH = American Conference of Governmental Industrial Hygienists. CERCLA = Comprehensive Environmental Response, Compensation and Liability Act. CFR = Code of Federal Regulations. CPR = Controlled Products Regulations. DSL = Canadian Domestic Substance List. DOT = Department of Transportation. EINECS = European Inventory of New and Existing Chemical Substances. EPA = Environmental Protection Agency. HCS = Hazardous Communication Standard. HEPA = High Efficiency Particulate Air. HMIS = Hazardous Material Identification System. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IMDG = International Maritime Dangerous Good. NFPA = National Fire Protection Association. NIOSH = National Institute of Occupational Safety and Health. NJTSR = New Jersey Trade Secret Registry. NTP = National Toxicology Program. OSHA = Occupational Safety and Health Administration. SARA = Superfund Amendments and Reauthorization Act. TDG = Transportation of Dangerous Goods. TLV = Threshold Limit Value. TSCA = Toxic Substance Control Act. WHMIS = Workplace Hazardous Materials Information System.

US / EN