SAFETY DATA SHEET
Multivitamin (with Soy Oil) Formulation

Section 1: Identification

Product name : Multivitamin (with Soy Oil) Formulation

Manufacturer or supplier’s details
Company : MSD
Address : 33 Whakatiki Street - Private Bag 908
Upper Hutt - New Zealand
Telephone : +1-908-740-4000
Emergency telephone number : +1-908-423-6000
E-mail address : EHSDATASTEWARD@msd.com

Recommended use of the chemical and restrictions on use
Recommended use : Veterinary product

Section 2: Hazard identification

GHS Classification
Reproductive toxicity : Category 1A
Specific target organ toxicity - repeated exposure : Category 1 (Liver)

GHS label elements
Hazard pictograms : 🚨
Signal word : Danger
Hazard statements : H360D May damage the unborn child.
H372 Causes damage to organs (Liver) through prolonged or repeated 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 mist or vapours.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P308 + P313 IF exposed or concerned: Get medical advice/
SAFETY DATA SHEET

Multivitamin (with Soy Oil) Formulation

Version 2.1 Revision Date: 27.08.2021 SDS Number: 4257974-00007 Date of last issue: 24.06.2021
Date of first issue: 06.05.2019

Storage:
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification
None known.

Section 3: Composition/information on ingredients

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemical name</td>
</tr>
<tr>
<td></td>
<td>Vitamin A Palmitate</td>
</tr>
<tr>
<td></td>
<td>(dl)-a-Tocopheryl acetate</td>
</tr>
<tr>
<td></td>
<td>Colecalciferol</td>
</tr>
</tbody>
</table>

Section 4: First-aid measures

General advice: In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.

If inhaled: If inhaled, remove to fresh air. Get medical attention.

In case of skin contact: In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

In case of eye contact: Flush eyes with water as a precaution. Get medical attention if irritation develops and persists.

If swallowed: If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed: May damage the unborn child. Causes damage to organs through prolonged or repeated exposure.

Protection of first-aiders: First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician: Treat symptomatically and supportively.

Section 5: Fire-fighting measures

Suitable extinguishing media: Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:
- Use personal protective equipment.
- Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

Environmental precautions:
- Avoid release to the environment.
- Prevent further leakage or spillage if safe to do so.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Retain and dispose of contaminated wash water.
- Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up:
- Soak up with inert absorbent material.
- For large spills, provide dyeing or other appropriate containment to keep material from spreading. If dyed material can be pumped, store recovered material in appropriate container.
- Clean up remaining materials from spill with suitable absorbent.
- Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
- Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

Section 7: Handling and storage

Technical measures:
- See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation:
- If sufficient ventilation is unavailable, use with local exhaust ventilation.

Advice on safe handling:
- Do not get on skin or clothing.
- Do not breathe mist or vapours.
- Do not swallow.
- Avoid contact with eyes.
Wash skin thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. Do not eat, drink or smoke when using this product. Take care to prevent spills, waste and minimize release to the environment.

**Hygiene measures**

If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

**Conditions for safe storage**

Keep in properly labelled containers. Store locked up. Keep tightly closed. Store in accordance with the particular national regulations.

**Materials to avoid**

Do not store with the following product types: Strong oxidizing agents

## Section 8: Exposure controls/personal protection

### Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A Palmitate</td>
<td>79-81-2</td>
<td>TWA</td>
<td>&gt;= 1 &lt; 10 ug/m³ (OEB 4)</td>
<td>Internal</td>
</tr>
<tr>
<td>(dl)-a-Tocopheryl acetate</td>
<td>7695-91-2</td>
<td>TWA</td>
<td>5000 ug/m³ (OEB 1)</td>
<td>Internal</td>
</tr>
<tr>
<td>Colecalciferol</td>
<td>67-97-0</td>
<td>TWA</td>
<td>5 µg/m³ (OEB 4)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

| Wipe limit                  | 50 µg/100 cm² | Internal                    |

**Engineering measures**

Minimize workplace exposure concentrations. If sufficient ventilation is unavailable, use with local exhaust ventilation.

**Personal protective equipment**

**Respiratory protection**

If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

- **Filter type**: Organic vapour type

**Hand protection**

Chemical-resistant gloves

**Material**

Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the
Eye protection: Wear the following personal protective equipment: Safety glasses
Skin and body protection: Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential. Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

Section 9: Physical and chemical properties

Appearance: Aqueous solution
Colour: yellow
Odour: characteristic
Odour Threshold: No data available
pH: No data available
Melting point/freezing point: -5 °C
Initial boiling point and boiling range: 194 °C
Flash point: 244 °C
Evaporation rate: No data available
Flammability (solid, gas): Not applicable
Flammability (liquids): Not applicable
Upper explosion limit / Upper flammability limit: No data available
Lower explosion limit / Lower flammability limit: No data available
Vapour pressure: No data available
Relative vapour density: No data available
Relative density: 0.9 - 0.94
Density: No data available
Solubility(ies)
Water solubility: practically insoluble
Solubility in other solvents: slightly soluble
Solvent: Ethanol
Section 10: Stability and reactivity

Reactivity : Not classified as a reactivity hazard.
Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions : Can react with strong oxidizing agents.
Conditions to avoid : None known.
Incompatible materials : Oxidizing agents
Hazardous decomposition products : No hazardous decomposition products are known.

Section 11: Toxicological information

Exposure routes : Inhalation
                Skin contact
                Ingestion
                Eye contact

Acute toxicity
Not classified based on available information.

Product:
Acute oral toxicity : Acute toxicity estimate: > 2,000 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 2,000 mg/kg
Method: Calculation method
Components:

Vitamin A Palmitate:
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg
Remarks: Based on data from similar materials

(dl)-a-Tocopheryl acetate:
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity: LD50 (Rat): > 3,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Colecalciferol:
Acute oral toxicity: LD50 (Rat, male): 35 mg/kg
Acute inhalation toxicity: Acute toxicity estimate: 0.05 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist
  Method: Expert judgement
Acute dermal toxicity: Acute toxicity estimate: 50 mg/kg
  Method: Expert judgement

Skin corrosion/irritation
Not classified based on available information.

Components:

Vitamin A Palmitate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Mild skin irritation

(dl)-a-Tocopheryl acetate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Serious eye damage/eye irritation
Not classified based on available information.

Components:

Vitamin A Palmitate:
Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405

(dl)-a-Tocopheryl acetate:
Species: Rabbit
SAFETY DATA SHEET

Multivitamin (with Soy Oil) Formulation

Result : No eye irritation
Method : OECD Test Guideline 405

Colecalciferol:
Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitisation

Skin sensitisation
Not classified based on available information.

Respiratory sensitisation
Not classified based on available information.

Components:

Vitamin A Palmitate:
Test Type : Maximisation Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative

(dl)-α-Tocopheryl acetate:
Test Type : Draize Test
Exposure routes : Skin contact
Species : Humans
Result : negative

Colecalciferol:
Test Type : Maurer optimisation test
Exposure routes : Skin contact
Species : Guinea pig
Result : negative

Chronic toxicity

Germ cell mutagenicity
Not classified based on available information.

Components:

Vitamin A Palmitate:
Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenic assay)
Species: Mouse
Application Route: Ingestion
Method: OECD Test Guideline 474
Result: negative
**Multivitamin (with Soy Oil) Formulation**

**Components:**

**(dl)-a-Tocopheryl acetate:**

- **(dl)-a-Tocopheryl acetate:**
  - Genotoxicity in vitro:
    - Test Type: Chromosome aberration test in vitro
      Method: OECD Test Guideline 473
      Result: negative
    - Test Type: Bacterial reverse mutation assay (AMES)
      Method: OECD Test Guideline 471
      Result: negative
  - Genotoxicity in vivo:
    - Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
      Species: Mouse
      Application Route: Ingestion
      Result: negative

**Colecalciferol:**

- Genotoxicity in vitro:
  - Test Type: Bacterial reverse mutation assay (AMES)
    Method: OECD Test Guideline 471
    Result: equivocal
  - Test Type: In vitro mammalian cell gene mutation test
    Method: OECD Test Guideline 476
    Result: negative
  - Test Type: Chromosome aberration test in vitro
    Method: OECD Test Guideline 473
    Result: negative

- Genotoxicity in vivo:
  - Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
    Species: Rat
    Application Route: Ingestion
    Result: negative
  - Test Type: In vivo mammalian alkaline comet assay
    Species: Rat
    Application Route: Ingestion
    Result: positive

**Germ cell mutagenicity - Assessment:**

- Weight of evidence does not support classification as a germ cell mutagen.

**Carcinogenicity:**

- Not classified based on available information.
Result: negative

**Reproductive toxicity**
May damage the unborn child.

**Components:**

**Vitamin A Palmitate:**

Effects on foetal development:
- Test Type: Embryo-foetal development
- Species: Monkey
- Application Route: Ingestion
- Result: positive

Reproductive toxicity - Assessment:
- Positive evidence of adverse effects on development from human epidemiological studies.

**(dl)-a-Tocopheryl acetate:**

Effects on fertility:
- Test Type: Reproduction/Developmental toxicity screening test
- Species: Rat
- Application Route: Ingestion
- Result: negative

Effects on foetal development:
- Test Type: Embryo-foetal development
- Species: Rabbit
- Application Route: Ingestion
- Result: negative

**STOT - single exposure**
Not classified based on available information.

**STOT - repeated exposure**
Causes damage to organs (Liver) through prolonged or repeated exposure.

**Components:**

**Vitamin A Palmitate:**

Exposure routes: Ingestion
Target Organs: Liver
Assessment: Causes damage to organs through prolonged or repeated exposure.
Remarks: Based on data from similar materials

**Colecalciferol:**

Exposure routes: Ingestion
Target Organs: Kidney, Blood, Bone
Assessment: Shown to produce significant health effects in animals at concentrations of 10 mg/kg bw or less.
Repeated dose toxicity

**Components:**

**Vitamin A Palmitate:**
- **Species:** Rat
- **LOAEL:** > 1 - 10 mg/kg
- **Application Route:** Ingestion
- **Exposure time:** 3 Months
- **Remarks:** Based on data from similar materials

**(dl)-a-Tocopheryl acetate:**
- **Species:** Rat
- **NOAEL:** 500 mg/kg
- **Application Route:** Ingestion
- **Exposure time:** 90 Days

**Colecalciferol:**
- **Species:** Rat
- **NOAEL:** 0.06 mg/kg
- **LOAEL:** 0.3 mg/kg
- **Application Route:** Ingestion
- **Exposure time:** 90 Days
- **Method:** OECD Test Guideline 408

Aspiration toxicity
Not classified based on available information.

Experience with human exposure

**Components:**

**Vitamin A Palmitate:**
- **Ingestion:** Symptoms: liver impairment
  Remarks: Based on data from similar materials
  Symptoms: Embryo-foetal toxicity
  Remarks: Based on data from similar materials

Section 12: Ecological information

Ecotoxicity

**Components:**

**Vitamin A Palmitate:**
- **Toxicity to fish:** LC50 (Leuciscus idus (Golden orfe)): > 1,000 mg/l
  Exposure time: 96 h
  Method: DIN 38412
  Remarks: Based on data from similar materials
- **Toxicity to daphnia and other aquatic invertebrates:** EC50 (Daphnia magna (Water flea)): > 100 mg/l
  Exposure time: 48 h
  Method: OECD Test Guideline 202
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants:
EC50 (Desmodesmus subspicatus (green algae)): 152.94 mg/l
Exposure time: 72 h

((dl)-a-Tocopheryl acetate:
Toxicity to fish:
LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates:
EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants:
EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): >= 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity):
NOEC (Oncorhynchus mykiss (rainbow trout)): 100 mg/l
Exposure time: 28 d

Toxicity to microorganisms:
EC50: > 927 mg/l
Exposure time: 30 min
Method: ISO 8192

Colecalciferol:
Toxicity to fish:
LL50 (Danio rerio (zebra fish)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates:
EL50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants:
EL50 (Scenedesmus capricornutum (fresh water algae)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201

Persistence and degradability

Components:

Vitamin A Palmitate:
Biodegradability:
Result: Not readily biodegradable.
Biodegradation: 40 - 50 %
Exposure time: 28 d  
Method: OECD Test Guideline 301F

(dl)-a-Tocopheryl acetate:  
Biodegradability: Result: Not readily biodegradable.  
Biodegradation: 21.7 - 31 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301C

Colecalciferol:  
Biodegradability: Result: Not readily biodegradable.  
Biodegradation: <= 7 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301C

Bioaccumulative potential

Components:

Vitamin A Palmitate:  
Partition coefficient: n-octanol/water: log Pow: > 6.2

Colecalciferol:  
Partition coefficient: n-octanol/water: log Pow: > 6.2  
Method: OECD Test Guideline 107

Mobility in soil  
No data available

Other adverse effects  
No data available

Section 13: Disposal considerations

Disposal methods: Dispose of in accordance with local regulations.  
Waste from residues: Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Contaminated packaging: If not otherwise specified: Dispose of as unused product.

Section 14: Transport information

International Regulations

UNRTDG  
UN number: Not applicable  
Proper shipping name: Not applicable  
Class: Not applicable  
Subsidiary risk: Not applicable  
Packing group: Not applicable  
Labels: Not applicable
SAFETY DATA SHEET

Multivitamin (with Soy Oil) Formulation

Version 2.1
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IATA-DGR
UN/ID No.: Not applicable
Proper shipping name: Not applicable
Class: Not applicable
Subsidiary risk: Not applicable
Packing group: Not applicable
Labels: Not applicable
Packing instruction (cargo aircraft): Not applicable
Packing instruction (passenger aircraft): Not applicable

IMDG-Code
UN number: Not applicable
Proper shipping name: Not applicable
Class: Not applicable
Subsidiary risk: Not applicable
Packing group: Not applicable
Labels: Not applicable
EmS Code: Not applicable
Marine pollutant: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

NZS 5433
UN number: Not applicable
Proper shipping name: Not applicable
Class: Not applicable
Subsidiary risk: Not applicable
Packing group: Not applicable
Labels: Not applicable
Hazchem Code: Not applicable

Special precautions for user
Not applicable

Section 15: Regulatory information

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

HSNO Approval Number
HSR100759 Veterinary Medicines Non dispersive Open System Application Group Standard 2017

HSW Controls
Certified handler certificate not required.
Tracking hazardous substance not required.
Refer to the Health and Safety at Work (Hazardous Substances) Regulations 2017, for further information.

The components of this product are reported in the following inventories:
SAFETY DATA SHEET

Multivitamin (with Soy Oil) Formulation

Section 16: Other information

Further information

Date format: dd.mm.yyyy

Full text of other abbreviations

AICS - Australian Inventory of Industrial Chemicals; 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; 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 Standardisation; 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 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; 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 Inventory; TDG - Transportation of Dangerous Goods; 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; WHMIS - Workplace Hazardous Materials Information System

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS mate-
Material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user’s end product, if applicable.

NZ / EN