SAFETY DATA SHEET

Multivitamin (with Sunflower Oil) Formulation

Version 2.0  Revision Date: 2021/04/09  SDS Number: 6599066-00003  Date of last issue: 2020/12/21  Date of first issue: 2020/10/15

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Multivitamin (with Sunflower Oil) Formulation

Manufacturer or supplier’s details

Company : MSD
Address : JL Raya Pandaan KM. 48
          Pandaan, Jawa Timur - Indonesia
Telephone : 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

2. HAZARDS IDENTIFICATION

GHS Classification

Reproductive toxicity : Category 1A
Specific target organ toxicity - repeated exposure : Category 2 (Liver)
Long-term (chronic) aquatic hazard : Category 3

GHS label elements

Signal word : Danger
Hazard pictograms :

Hazard statements : H360D May damage the unborn child.
                   H373 May cause damage to organs (Liver) through prolonged or repeated exposure.
                   H412 Harmful to aquatic life with long lasting effects.

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.
                           P273 Avoid release to the environment.
                           P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P308 + P313 IF exposed or concerned: Get medical advice/attention.

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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Components</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retinyl propionate</td>
<td>7069-42-3</td>
<td>&gt;= 2.5 - &lt; 10</td>
</tr>
<tr>
<td>(dl)-a-Tocopheryl acetate</td>
<td>7695-91-2</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Benzyl alcohol</td>
<td>100-51-6</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
<td>128-37-0</td>
<td>&gt;= 0.25 - &lt; 2.5</td>
</tr>
<tr>
<td>Colecalciferol</td>
<td>67-97-0</td>
<td>&gt;= 0.025 - &lt; 0.25</td>
</tr>
</tbody>
</table>

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 soap and 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. May cause 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.
5. FIREFIGHTING MEASURES

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

Unsuitable extinguishing media: None known.

Specific hazards during firefighting: Exposure to combustion products may be a hazard to health.

Hazardous combustion products: Carbon oxides

Specific extinguishing methods: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

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 dyking or other appropriate containment to keep material from spreading. If dyked 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.

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
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.

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

### 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>(dl)-a-Tocopheryl acetate</td>
<td>7695-91-2</td>
<td>TWA</td>
<td>5000 µg/m³ (OEB 1)</td>
<td>Internal</td>
</tr>
<tr>
<td>2,6-Di-tert-butyl-p-cresol</td>
<td>128-37-0</td>
<td>TWA (Inhalable fraction and vapor)</td>
<td>2 mg/m³</td>
<td>ACGIH</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>
<tr>
<td></td>
<td></td>
<td>Wipe limit</td>
<td>50 µg/100 cm²</td>
<td>Internal</td>
</tr>
</tbody>
</table>

**Engineering measures**: All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment. Essentially no open handling permitted. Use closed processing systems or containment technologies. If handled in a laboratory, use a properly designed biosafety cabinet, fume hood, or other containment device if the potential exists for aerosolization. If this potential does not exist, handle over lined trays or benchtops.

**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
SAFETY DATA SHEET

Multivitamin (with Sunflower Oil) Formulation

Remarks: Consider double gloving.
Eye protection: Wear safety glasses with side shields or goggles. If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.
Skin and body protection: Work uniform or laboratory coat. Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces. Use appropriate degowning techniques to remove potentially contaminated clothing.
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. The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid
Colour: transparent
Odour: No data available
Odour Threshold: No data available
pH: No data available
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): Not applicable
Flammability (liquids): No data available
Upper explosion limit / Upper flammability limit: No data available
Lower explosion limit / Lower: No data available
SAFETY DATA SHEET
Multivitamin (with Sunflower Oil) Formulation

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>2021/04/09</td>
<td>6599066-00003</td>
<td>2020/12/21</td>
<td>2020/10/15</td>
</tr>
</tbody>
</table>

- flammability limit
- Vapour pressure: No data available
- Relative vapour density: No data available
- Relative density: No data available
- Density: 0.925 g/cm³
- Solubility(ies)
  - Water solubility: No data available
- Partition coefficient: n-octanol/water: Not applicable
- Auto-ignition temperature: No data available
- Decomposition temperature: No data available
- Viscosity
  - Viscosity, kinematic: No data available
- Explosive properties: Not explosive
- Oxidizing properties: The substance or mixture is not classified as oxidizing.
- Molecular weight: No data available
- Particle size: Not applicable

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.

11. TOXICOLOGICAL INFORMATION
- Information on likely routes of exposure: 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
SAFETY DATA SHEET

Multivitamin (with Sunflower Oil) Formulation

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

Components:

Retinyl propionate:
Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
  Assessment: The substance or mixture has no acute oral toxicity

(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

Benzyl alcohol:
Acute oral toxicity: LD50 (Rat): 1,620 mg/kg
Acute inhalation toxicity: LC50 (Rat): > 4.178 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist
  Method: OECD Test Guideline 403

2,6-Di-tert-butyl-p-cresol:
Acute oral toxicity: LD50 (Rat): > 6,000 mg/kg
  Method: OECD Test Guideline 401
Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
  Method: OECD Test Guideline 402
  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:

**Retinyl propionate:**
- 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

**Benzyl alcohol:**
- Species: Rabbit
- Method: OECD Test Guideline 404
- Result: No skin irritation

**2,6-Di-tert-butyl-p-cresol:**
- Species: Rabbit
- Method: OECD Test Guideline 404
- Result: No skin irritation
- Remarks: Based on data from similar materials

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

Components:

**Retinyl propionate:**
- Species: Rabbit
- Result: No eye irritation
- Method: OECD Test Guideline 405

**(dl)-a-Tocopheryl acetate:**
- Species: Rabbit
- Result: No eye irritation
- Method: OECD Test Guideline 405

**Benzyl alcohol:**
- Species: Rabbit
- Result: Irritation to eyes, reversing within 21 days
- Method: OECD Test Guideline 405

**2,6-Di-tert-butyl-p-cresol:**
- Species: Rabbit
- Result: No eye irritation
- Method: OECD Test Guideline 405
- Remarks: Based on data from similar materials
### 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:

#### Retinyl propionate:
- **Test Type:** Maximisation Test
- **Exposure routes:** Skin contact
- **Species:** Guinea pig
- **Method:** OECD Test Guideline 406
- **Result:** negative

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

#### Benzyl alcohol:
- **Test Type:** Maximisation Test
- **Exposure routes:** Skin contact
- **Species:** Guinea pig
- **Method:** OECD Test Guideline 406
- **Result:** negative

#### 2,6-Di-tert-butyl-p-cresol:
- **Test Type:** Human repeat insult patch test (HRiPT)
- **Exposure routes:** Skin contact
- **Species:** Humans
- **Result:** negative

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

### Germ cell mutagenicity
Not classified based on available information.

### Components:

#### Retinyl propionate:
<table>
<thead>
<tr>
<th>Compound</th>
<th>Genotoxicity in vitro</th>
<th>Genotoxicity in vivo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test Type: Bacterial reverse mutation assay (AMES)</td>
<td>Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 471</td>
<td>Species: Mouse</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
<td>Application Route: Ingestion</td>
</tr>
<tr>
<td></td>
<td>Remarks: Based on data from similar materials</td>
<td>Method: OECD Test Guideline 474</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remarks: Based on data from similar materials</td>
</tr>
<tr>
<td>(dl)-a-Tocopheryl acetate:</td>
<td>Test Type: Chromosome aberration test in vitro</td>
<td>Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 473</td>
<td>Species: Mouse</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
<td>Application Route: Ingestion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td></td>
<td>Test Type: Bacterial reverse mutation assay (AMES)</td>
<td>Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 471</td>
<td>Species: Mouse</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
<td>Application Route: Ingestion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td>Benzyl alcohol:</td>
<td>Test Type: Bacterial reverse mutation assay (AMES)</td>
<td>Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
<td>Species: Mouse</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Application Route: Intraperitoneal injection</td>
</tr>
<tr>
<td>2,6-Di-tert-butyl-p-cresol:</td>
<td>Test Type: Bacterial reverse mutation assay (AMES)</td>
<td>Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
<td>Species: Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Application Route: Ingestion</td>
</tr>
<tr>
<td></td>
<td>Test Type: In vitro mammalian cell gene mutation test</td>
<td>Result: negative</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
<td>Test Type: Chromosome aberration test in vitro</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result: negative</td>
</tr>
<tr>
<td></td>
<td>Test Type: Mutagenicity (in vivo mammalian bone-marrow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cytogenetic test, chromosomal analysis)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Species: Rat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Application Route: Ingestion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
<td></td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Multivitamin (with Sunflower Oil) Formulation

Version 2.0  Revision Date: 2021/04/09  SDS Number: 6599066-00003  Date of last issue: 2020/12/21  Date of first issue: 2020/10/15

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
  Method: OECD Test Guideline 474
  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.

Components:

(dl)-α-Tocopheryl acetate:
- Species: Rat
- Application Route: Ingestion
- Exposure time: 104 weeks
- Result: negative

Benzyl alcohol:
- Species: Mouse
- Application Route: Ingestion
- Exposure time: 103 weeks
- Method: OECD Test Guideline 451
- Result: negative

2,6-Di-tert-butyl-p-cresol:
- Species: Rat
- Application Route: Ingestion
- Exposure time: 22 Months
- Result: negative
Reproductive toxicity
May damage the unborn child.

Components:

Retinyl propionate:
Effects on foetal development
: Test Type: Embryo-foetal development
Species: Monkey
Application Route: Ingestion
Result: positive
Remarks: Based on data from similar materials

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

Benzyl alcohol:
Effects on fertility
: Test Type: Fertility/early embryonic development
Species: Rat
Application Route: Ingestion
Result: negative
Remarks: Based on data from similar materials

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

2,6-Di-tert-butyl-p-cresol:
Effects on fertility
: Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative

Effects on foetal development
: Test Type: Embryo-foetal development
Species: Rat
Application Route: Ingestion
Result: negative
SAFETY DATA SHEET

Multivitamin (with Sunflower Oil) Formulation

STOT - single exposure
Not classified based on available information.

STOT - repeated exposure
May cause damage to organs (Liver) through prolonged or repeated exposure.

Components:

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

**2,6-Di-tert-butyl-p-cresol:**
- **Assessment:** No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

**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:

**Retinyl propionate:**
- **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

**Benzyl alcohol:**
- **Species:** Rat
- **NOAEL:** 1.072 mg/l
- **Application Route:** inhalation (dust/mist/fume)
- **Exposure time:** 28 Days
- **Method:** OECD Test Guideline 412

**2,6-Di-tert-butyl-p-cresol:**
- **Species:** Rat
SAFETY DATA SHEET

Multivitamin (with Sunflower Oil) Formulation

Version 2.0  Revision Date: 2021/04/09  SDS Number: 6599066-00003  Date of last issue: 2020/12/21
Date of first issue: 2020/10/15

11. TOXICOLOGICAL INFORMATION

NOAEL: 25 mg/kg
Application Route: Ingestion
Exposure time: 22 Months

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:

Retinyl propionate:
Ingestion: Symptoms: liver impairment
Remarks: Based on data from similar materials
Symptoms: Embryo-foetal toxicity
Remarks: Based on data from similar materials

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Retinyl propionate:
Toxicity to fish: LL50 (Leuciscus idus (Golden orfe)): > 10,000 mg/l
Exposure time: 96 h
Method: DIN 38412

Toxicity to microorganisms: EC50 (activated sludge): > 1,000 mg/l
Exposure time: 180 min
Method: OECD Test Guideline 209

(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: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
**SAFETY DATA SHEET**

**Multivitamin (with Sunflower Oil) Formulation**

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date</th>
<th>SDS Number</th>
<th>Date of last issue</th>
<th>Date of first issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>2021/04/09</td>
<td>6599066-00003</td>
<td>2020/12/21</td>
<td>2020/10/15</td>
</tr>
</tbody>
</table>

| **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 |

**Benzyl alcohol**:

| **Toxicity to fish** | LC50 (Pimephales promelas (fathead minnow)): | 460 mg/l |
| Exposure time: 96 h |

| **Toxicity to daphnia and other aquatic invertebrates** | EC50 (Daphnia magna (Water flea)): | 230 mg/l |
| Exposure time: 48 h |
| Method: OECD Test Guideline 202 |

| **Toxicity to algae/aquatic plants** | EC50 (Pseudokirchneriella subcapitata (green algae)): | 770 mg/l |
| Exposure time: 72 h |
| Method: OECD Test Guideline 201 |

| NOEC (Pseudokirchneriella subcapitata (green algae)): | 310 mg/l |
| Exposure time: 72 h |
| Method: OECD Test Guideline 201 |

| **Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)** | NOEC (Daphnia magna (Water flea)): | 51 mg/l |
| Exposure time: 21 d |
| Method: OECD Test Guideline 211 |

**2,6-Di-tert-butyl-p-cresol**:

| **Toxicity to fish** | LC50 (Danio rerio (zebra fish)): | > 0.57 mg/l |
| Exposure time: 96 h |

| **Toxicity to daphnia and other aquatic invertebrates** | EC50 (Daphnia magna (Water flea)): | 0.48 mg/l |
| Exposure time: 48 h |
| Method: OECD Test Guideline 202 |

| **Toxicity to algae/aquatic plants** | ErC50 (Pseudokirchneriella subcapitata (green algae)): | > 0.24 mg/l |
| Exposure time: 72 h |
| Method: OECD Test Guideline 201 |

| NOEC (Pseudokirchneriella subcapitata (green algae)): | 0.24 mg/l |
| Exposure time: 72 h |
| Method: OECD Test Guideline 201 |
M-Factor (Acute aquatic toxicity): 1
Toxicity to fish (Chronic toxicity): NOEC (Oryzias latipes (Japanese medaka)): 0.053 mg/l
Exposure time: 30 d
Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC (Daphnia magna (Water flea)): 0.316 mg/l
Exposure time: 21 d
M-Factor (Chronic aquatic toxicity): 1
Toxicity to microorganisms: EC50: > 10,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

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:

Retinyl propionate:
Biodegradability: Result: Not readily biodegradable. Biodegradation: 40 - 50 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

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

Benzyl alcohol:
Biodegradability: Result: Readily biodegradable. Biodegradation: 92 - 96 %
Exposure time: 14 d

2,6-Di-tert-butyl-p-cresol:
Biodegradability: Result: Not readily biodegradable.
Biodegradation: 4.5 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

**Colecalfcerol:**

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

**Bioaccumulative potential**

**Components:**

**Retinyl propionate:**

Remarks: Calculation

**Benzyl alcohol:**

Partition coefficient: n-octanol/water: log Pow: 1.05

**2,6-Di-tert-butyl-p-cresol:**

Bioaccumulation: Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 330 - 1,800
Partition coefficient: n-octanol/water: log Pow: 5.1

**Colecalfcerol:**

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

13. **DISPOSAL CONSIDERATIONS**

**Disposal methods**

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

14. **TRANSPORT INFORMATION**

**International Regulations**

**UNRTDG**
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

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

15. REGULATORY INFORMATION

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

Minister of Industry Regulation No. 23/M-IND/PER/4/2013 concerning the Revision of Minister of Industry Regulation No. 87/M-IND/PER/9/2009 concerning Globally Harmonized System of Classification and Labelling of Chemicals.

Regulation of the Minister of Health No. 472 of 1996 on the Safeguarding of Substances Hazardous to Health
Hazardous substances that must be registered : Not applicable

Government Regulation No. 74 of 2001 on the Management of Hazardous and Toxic Substances
Hazardous substances approved for use : Not applicable
Prohibited substances : Not applicable
Restricted substances : Not applicable

Regulation of the Minister of Trade No. 44 of 2009 on Procurement, Distribution and Supervision of Hazardous Materials
Type of Hazardous Materials Restricted to Import, Distribution and Supervision : Not applicable

The components of this product are reported in the following inventories:
DSL : not determined
AICS : not determined
IECSC : not determined

16. OTHER INFORMATION

Further information
Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format : yyyy/mm/dd

Full text of other abbreviations
ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH / TWA : 8-hour, time-weighted average

ATIC - 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; 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 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.

ID / EN