SECTION 1. IDENTIFICATION

Product name : ZELBORAF(R) F.C. Tablets (240 mg)

Product code : RO518-5426/F20

Common name(s), synonym(s) of the substance:
- BS11022
- ZELBORAF F.C. Tablets
- ZELBORAF film-coated tablets 240 mg

Manufacturer or supplier's details
Company name of supplier : Genentech, Inc.
Address : 1 DNA Way
South San Francisco, CA 94080
USA
Telephone : 001-(650) 225-1000
E-mail address : info.sds@roche.com
Emergency telephone : US Chemtrec phone (800)-424-9300

Recommended use of the chemical and restrictions on use
Recommended use : Formulated pharmaceutical active substance
Restrictions on use : For professional users only.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)
Carcinogenicity : Category 2

GHS label elements
Hazard pictograms : 

Signal Word : Warning
Hazard Statements : H351 Suspected of causing cancer.
Precautionary Statements : Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
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
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Components</strong></td>
<td></td>
</tr>
<tr>
<td>Chemical name</td>
<td>CAS-No.</td>
</tr>
<tr>
<td>Vemurafenib</td>
<td>918504-65-1</td>
</tr>
<tr>
<td>Hydroxypropyl methylcellulose acetate succinate</td>
<td>71138-97-1</td>
</tr>
<tr>
<td>Croscarmellose sodium</td>
<td>74811-65-7</td>
</tr>
<tr>
<td>Silica</td>
<td>7631-86-9</td>
</tr>
<tr>
<td>Octadecanoic acid, magnesium salt (2:1)</td>
<td>557-04-0</td>
</tr>
<tr>
<td>Titanium oxide (TiO2)</td>
<td>13463-67-7</td>
</tr>
<tr>
<td>Cellulose, 2-hydroxypropyl ether</td>
<td>9004-64-2</td>
</tr>
<tr>
<td>non-hazardous compounds</td>
<td>Not Assigned</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

<table>
<thead>
<tr>
<th>General advice</th>
<th>Do not leave the victim unattended.</th>
</tr>
</thead>
<tbody>
<tr>
<td>If inhaled</td>
<td>Move to fresh air.</td>
</tr>
<tr>
<td></td>
<td>If unconscious, place in recovery position and seek medical advice.</td>
</tr>
<tr>
<td></td>
<td>If symptoms persist, call a physician.</td>
</tr>
<tr>
<td>In case of skin contact</td>
<td>If on skin, rinse well with water.</td>
</tr>
<tr>
<td>In case of eye contact</td>
<td>Immediately flush eye(s) with plenty of water.</td>
</tr>
<tr>
<td></td>
<td>Remove contact lenses.</td>
</tr>
<tr>
<td></td>
<td>Protect unharmed eye.</td>
</tr>
<tr>
<td></td>
<td>Keep eye wide open while rinsing.</td>
</tr>
<tr>
<td></td>
<td>If eye irritation persists, consult a specialist.</td>
</tr>
<tr>
<td>If swallowed</td>
<td>Keep respiratory tract clear.</td>
</tr>
<tr>
<td></td>
<td>Do not give milk or alcoholic beverages.</td>
</tr>
<tr>
<td></td>
<td>Never give anything by mouth to an unconscious person.</td>
</tr>
</tbody>
</table>
If symptoms persist, call a physician. 
Rinse mouth with water.

Most important symptoms and effects, both acute and delayed:

Suspected of causing cancer.

Notes to physician:
The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media:
High volume water jet

Specific hazards during fire fighting:
Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products:
In case of fire hazardous decomposition products may be produced such as:
Gaseous hydrogen chloride (HCl).
Hydrogen fluoride
Nitrogen oxides (NOx)

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.

Special protective equipment for fire-fighters:
Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
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:
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion:
Provide appropriate exhaust ventilation at places where dust is formed.

Advice on safe handling:
For personal protection see section 8. Smoking, eating and drinking should be prohibited in the
application area.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage:
Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage conditions:
See label, package insert or internal guidelines

Storage temperature:
Protected from heat and light
Protect from moisture.

Further information on storage stability:
No decomposition if stored and applied as directed.

Packaging material:
Suitable material: Plastic container of HDPE

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients 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>Vemurafenib</td>
<td>918504-65-1</td>
<td>IOEL</td>
<td>0.015 mg/m³</td>
<td>Roche Industrial Hygiene Committee (RIHC)</td>
</tr>
<tr>
<td>Silica</td>
<td>7631-86-9</td>
<td>TWA (Dust)</td>
<td>20 Million particles per cubic foot (Silica)</td>
<td>OSHA Z-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Dust)</td>
<td>80 mg/m³ / %SiO₂ (Silica)</td>
<td>OSHA Z-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>6 mg/m³ (Silica)</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Respirable dust)</td>
<td>0.05 mg/m³ (Silica)</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td>Titanium oxide (TiO2)</td>
<td>13463-67-7</td>
<td>TWA (total dust)</td>
<td>15 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Total dust)</td>
<td>10 mg/m³</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>10 mg/m³ (Titanium dioxide)</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Octadecanoic acid, magnesium salt (2:1)</td>
<td>557-04-0</td>
<td>TWA (Inhalable)</td>
<td>10 mg/m³</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

ZELBORAF(R) F.C. Tablets (240 mg)

Version 1.2  Revision Date: 07-20-2021  Date of last issue: 02-11-2020
Date of first issue: 06-10-2017

| particle matter | TWA (Respirable  particulate matter) | 3 mg/m3 | ACGIH |

Predicted No Effect Concentration (PNEC):

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vemurafenib</td>
<td>Surface waters</td>
<td>1.71 µg/l</td>
</tr>
</tbody>
</table>

Remarks:
Based on chronic data

Engineering measures : No data available

Personal protective equipment

Hand protection

In case of contact through splashing:

<table>
<thead>
<tr>
<th>Material</th>
<th>Nitrile rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Break through time</td>
<td>&gt; 30 min</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>&gt; 0.11 mm</td>
</tr>
</tbody>
</table>

In case of full contact:

<table>
<thead>
<tr>
<th>Material</th>
<th>butyl-rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Break through time</td>
<td>&gt; 480 min</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>&gt; 0.4 mm</td>
</tr>
</tbody>
</table>

Remarks:
Wear appropriate protective gloves to prevent skin contact.
Replace torn or punctured gloves promptly.

Eye protection

Eye wash bottle with pure water
Tightly fitting safety goggles

Skin and body protection

Dust impervious protective suit
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : tablet

Color : light pink

Odor : Not applicable

Odor Threshold : Not applicable

pH : Not applicable

Melting point/ range : No data available
### SECTION 10. STABILITY AND REACTIVITY

**Reactivity**
- No dangerous reaction known under conditions of normal use.

**Chemical stability**
- Stable under normal conditions.

**Possibility of hazardous reactions**
- No decomposition if stored and applied as directed.

**Conditions to avoid**
- No data available

**Incompatible materials**
- No data available

**Hazardous decomposition**
- No data available
SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity
Not classified based on available information.

**Product:**
Acute oral toxicity: Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

**Components:**

**Vemurafenib:**
Acute oral toxicity: No-observed-effect level (Rat): 1,000 mg/kg
Assessment: The component/mixture is minimally toxic after single ingestion.

**Silica:**
Acute oral toxicity: LD50 Oral (Rat): > 3,300 mg/kg
Acute inhalation toxicity: LC50 (Rat, male and female): > 5.01 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 436
GLP: yes
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity: LD50 Dermal (Rabbit): > 5,000 mg/kg
Method: No information available.
GLP: No information available.

**Titanium oxide (TiO2):**
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401
Remarks: No mortality observed at this dose.

Acute inhalation toxicity: LC50 (Rat): > 6.82 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity: LD50 (Rabbit): > 5,000 mg/kg

**Octadecanoic acid, magnesium salt (2:1):**
Acute oral toxicity: LD50 Oral (Rat): > 2,000 mg/kg

**Skin corrosion/irritation**
Not classified based on available information.
Components:

Vemurafenib:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: yes

Silica:
Species: Rabbit
Exposure time: 4 h
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: No information available.

Titanium oxide (TiO2):
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

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

Components:

Vemurafenib:
Remarks: This information is not available.

Silica:
Species: Rabbit
Result: No eye irritation
Exposure time: 24 h
GLP: no

Titanium oxide (TiO2):
Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization
Not classified based on available information.

Respiratory sensitization
Not classified based on available information.

Components:

Vemurafenib:
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Not a skin sensitizer.
GLP: yes

**Silica:**
- **Test Type:** Maximization Test
- **Species:** Guinea pig
- **Assessment:** Does not cause skin sensitization.
- **Method:** OECD Test Guideline 406
- **Result:** Did not cause sensitization on laboratory animals.
- **GLP:** yes

**Titanium oxide (TiO2):**
- **Species:** Guinea pig
- **Assessment:** Does not cause skin sensitization.
- **Method:** OECD Test Guideline 406

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

**Components:**

**Vemurafenib:**
- **Genotoxicity in vitro**
  - **Test Type:** Ames test
  - **Method:** OECD Test Guideline 471
  - **Result:** negative
  - **GLP:** yes
  - **Test Type:** Chromosome aberration test in vitro
    - **Result:** negative

- **Genotoxicity in vivo**
  - **Test Type:** Micronucleus test
    - **Method:** OECD Test Guideline 474
    - **Result:** negative
    - **GLP:** yes

**Silica:**
- **Genotoxicity in vitro**
  - **Test Type:** Microbial mutagenesis assay (Ames test)
    - **Test system:** Salmonella typhimurium
    - **Metabolic activation:** with and without metabolic activation
      - **Method:** OECD Test Guideline 471
      - **Result:** negative
      - **GLP:** yes
  - **Test Type:** Microbial mutagenesis assay (Ames test)
    - **Test system:** Escherichia coli
    - **Metabolic activation:** with and without metabolic activation
      - **Method:** OECD Test Guideline 471
      - **Result:** negative
      - **GLP:** yes
  - **Test Type:** In vitro mammalian cell gene mutation test
    - **Test system:** mouse lymphoma cells
    - **Metabolic activation:** with and without metabolic activation
      - **Method:** OECD Test Guideline 490

---

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Genotoxicity in vivo:
Species: Rat (male)
Cell type: Bone marrow
Application Route: Oral
Exposure time: 6, 24, and 48 h
Dose: 1.4, 14, 140, 500, 5000 mg/kg
Method: OECD Test Guideline 475
Result: negative
GLP: yes

Carcinogenicity
Suspected of causing cancer.
IARC: Group 2B: Possibly carcinogenic to humans
Titanium oxide (TiO2) 13463-67-7
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 ingredient 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
Not classified based on available information.

Components:

Vemurafenib:
Effects on fetal development:
Species: Rat
Application Route: Oral
Result: No teratogenic effects.

Species: Rabbit
Application Route: Oral
Teratogenicity: NOAEL: 450 mg/kg bw/day
Result: No teratogenic effects.
GLP: yes

Species: Rabbit, females
Application Route: Oral
Dose: 150 mg/kg bw/day
Duration of Single Treatment: 14 d
Teratogenicity: NOAEL: 150 mg/kg bw/day
Result: No embryotoxic effects.
GLP: no

Silica:
Effects on fertility:
Species: Rat, male and female
Application Route: Oral
Dose: 100, 300, 1000 mg/kg bw/day
General Toxicity Parent: NOAEL: >= 1,000 mg/kg body weight
General Toxicity F1: NOAEL: >= 1,000 mg/kg body weight
Method: OECD Test Guideline 416
Effects on fetal development:
Species: Mouse, female
Application Route: Oral
Dose: 13.4, 62.3, 289, 1340 mg/kg bw/day
Duration of Single Treatment: 6 - 15 d
General Toxicity Maternal: LOAEL: >= 1,340 mg/kg bw/day
Embryo-fetal toxicity.: NOAEL: >= 1,340 µg/kg body weight
Method: No information available.
GLP: No information available.

STOT-single exposure
Not classified based on available information.

Components:
Octadecanoic acid, magnesium salt (2:1):
Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT-repeated exposure
Not classified based on available information.

Components:
Octadecanoic acid, magnesium salt (2:1):
Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:
Vemurafenib:
Species: Rat
NOAEL: 1000 mg/kg bw/day
Application Route: Oral
Exposure time: 28 Days
Remarks: Subacute toxicity

Species: Rat
NOAEL: 450 mg/kg bw/day
Application Route: Oral
Exposure time: 13 Weeks
Remarks: Subchronic toxicity

Aspiration toxicity
Not classified based on available information.

Components:
Octadecanoic acid, magnesium salt (2:1):
No data available
Further information

Components:

Vemurafenib:
Remarks : Phototoxic (in vitro)

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Vemurafenib:
Toxicity to fish : LC50 (Poecilia reticulata (guppy)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
GLP: yes
Remarks: nominal concentration

NOEC (Poecilia reticulata (guppy)): >= 0.27 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
GLP: yes
Remarks: nominal concentration

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

NOEC (Daphnia magna (Water flea)): 0.27 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
GLP: yes
Remarks: nominal concentration

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 21.91 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes
Remarks: nominal concentration

ErC50 (Raphidocelis subcapitata (freshwater green alga)): 2.832 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes
Remarks: average measured concentration

NOEC (Raphidocelis subcapitata (freshwater green alga)): 0.156 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
## Toxicity to fish (Chronic toxicity)

GLP: yes
Remarks: average measured concentration

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOEC (Danio rerio (zebra fish))</td>
<td>1.63 mg/l</td>
</tr>
<tr>
<td>Exposure time</td>
<td>35 d</td>
</tr>
<tr>
<td>Test Type: Fish early-life stage (FELS) toxicity test (OECD 210)</td>
<td></td>
</tr>
<tr>
<td>Analytical monitoring</td>
<td>yes</td>
</tr>
<tr>
<td>Method: OECD Test Guideline 210</td>
<td></td>
</tr>
</tbody>
</table>

## Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

GLP: yes
Remarks: average measured concentration

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOEC (Daphnia magna (Water flea))</td>
<td>0.0171 mg/l</td>
</tr>
<tr>
<td>Exposure time</td>
<td>21 d</td>
</tr>
<tr>
<td>Method: OECD Test Guideline 211</td>
<td></td>
</tr>
</tbody>
</table>

## Toxicity to microorganisms

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOEC (activated sludge)</td>
<td>301 mg/l</td>
</tr>
<tr>
<td>Test Type: Respiration inhibition</td>
<td></td>
</tr>
<tr>
<td>Method: OECD Test Guideline 209</td>
<td></td>
</tr>
</tbody>
</table>

## Silica:

### Toxicity to fish

GLP: no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 (Pimephales promelas (fathead minnow))</td>
<td>&gt; 5,000 mg/l</td>
</tr>
<tr>
<td>End point: mortality</td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td>96 h</td>
</tr>
<tr>
<td>Test Type: static test</td>
<td></td>
</tr>
<tr>
<td>Analytical monitoring</td>
<td>no</td>
</tr>
<tr>
<td>Method: OECD Test Guideline 203</td>
<td></td>
</tr>
</tbody>
</table>

### Toxicity to daphnia and other aquatic invertebrates

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL50 (Daphnia magna (Water flea))</td>
<td>&gt; 10,000 mg/l</td>
</tr>
<tr>
<td>End point: Immobilization</td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td>24 h</td>
</tr>
<tr>
<td>Test Type: static test</td>
<td></td>
</tr>
<tr>
<td>Analytical monitoring</td>
<td>no</td>
</tr>
<tr>
<td>Method: OECD Test Guideline 202</td>
<td></td>
</tr>
</tbody>
</table>

### Toxicity to algae/aquatic plants

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50 (Desmodesmus subspicatus (green algae))</td>
<td>&gt; 173.1 mg/l</td>
</tr>
<tr>
<td>End point: Growth rate</td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td>72 h</td>
</tr>
<tr>
<td>Test Type: static test</td>
<td></td>
</tr>
<tr>
<td>Analytical monitoring</td>
<td>yes</td>
</tr>
<tr>
<td>Method: OECD Test Guideline 201</td>
<td></td>
</tr>
</tbody>
</table>

### Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest Observed Effect Concentration (Daphnia magna (Water flea))</td>
<td>149.2 mg/l</td>
</tr>
<tr>
<td>End point: mortality</td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td>21 d</td>
</tr>
<tr>
<td>Test Type: semi-static test</td>
<td></td>
</tr>
<tr>
<td>Analytical monitoring</td>
<td>yes</td>
</tr>
<tr>
<td>Method: OECD Test Guideline 211</td>
<td></td>
</tr>
</tbody>
</table>
GLP: yes

Toxicity to microorganisms: NOEC (activated sludge): 1,000 mg/l
   End point: Respiration inhibition
   Exposure time: 3 h
   Test Type: static test
   Analytical monitoring: no
   Method: OECD Test Guideline 209
   GLP: yes

Ecotoxicology Assessment
Toxicity Data on Soil: Not expected to adsorb on soil.
Other organisms relevant to the environment: No data available

Titanium oxide (TiO2):
Toxicity to fish: LC50 (Pimephales promelas (fathead minnow)): > 1,000 mg/l
   Exposure time: 96 h
   Test Type: static test

   LC50 (Cyprinodon variegatus (sheepshead minnow)): > 10,000 mg/l
   Exposure time: 96 h
   Test Type: semi-static test
   Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates: LC50 (Daphnia magna (Water flea)): > 1,000 mg/l
   Exposure time: 48 h
   Test Type: static test
   Method: OECD Test Guideline 202

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

   EC50 (Skeletonema costatum (marine diatom)): > 10,000 mg/l
   Exposure time: 72 h
   Method: ISO 10253

   NOEC (Skeletonema costatum (marine diatom)): 5,600 mg/l
   Exposure time: 72 h
   Method: ISO 10253

Ecotoxicology Assessment
Toxicity Data on Soil: Not expected to adsorb on soil.
Other organisms relevant to the environment: No data available
Octadecanoic acid, magnesium salt (2:1):

Ecotoxicology Assessment

Acute aquatic toxicity: This product has no known ecotoxicological effects.

Chronic aquatic toxicity: This product has no known ecotoxicological effects.

Toxicity Data on Soil: Not expected to adsorb on soil.

Other organisms relevant to the environment: No data available

Persistence and degradability

Components:

Vemurafenib:
Biodegradability: Concentration: 31 mg/l
Result: Not inherently biodegradable.
Biodegradation: < 10 %
Exposure time: 28 d
Method: OECD Test Guideline 302C
GLP: yes

Result: very persistent
Method: OECD Test Guideline 308
GLP: yes

Silica:
Biodegradability: Remarks: Not applicable

Titanium oxide (TiO2):
Biodegradability: Remarks: Not applicable

Bioaccumulative potential

Components:

Vemurafenib:
Bioaccumulation: Species: Danio rerio (zebra fish)
Bioconcentration factor (BCF): 62.0 - 133.9
Exposure time: 28 d
Method: OECD Test Guideline 305
GLP: yes

Partition coefficient: n-octanol/water: log Pow: 4.74
pH: 5
Method: OECD Test Guideline 117
GLP: yes

log Pow: 3.80
pH: 7
Method: OECD Test Guideline 117
GLP: yes
log Pow: 3.26  
Method: OECD Test Guideline 117  
GLP: yes

Silica:  
Partition coefficient: n-octanol/water  
Remarks: Not applicable

Titanium oxide (TiO2):  
Partition coefficient: n-octanol/water  
Remarks: No data available

Octadecanoic acid, magnesium salt (2:1):  
Partition coefficient: n-octanol/water  
log Pow: 0.8  
Method: OECD Test Guideline 107

Mobility in soil

Components:

Vemurafenib:  
Distribution among environmental compartments  
Koc method  
Medium: Soil  
Koc: 37000 - 55454  
Method: OECD Test Guideline 106  
Remarks: immobile  

Koc method  
Medium: Sludge  
Koc: 3739 - 53630  
Method: OECD Test Guideline 106  
Remarks: immobile

Other adverse effects

Product:  
Ozone-Depletion Potential  
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 information  
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life.  
Very toxic to aquatic life with long lasting effects.
Components:

Vemurafenib:
Results of PBT and vPvB assessment: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company. Can be disposed as waste water, when in compliance with local regulations.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG
UN number: UN 3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Vemurafenib mixture)
Class: 9
Packing group: III
Labels: 9

IATA-DGR
UN/ID No.: UN 3077
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Vemurafenib mixture)
Class: 9
Packing group: III
Labels: Miscellaneous
Packing instruction (cargo aircraft): 956
Packing instruction (passenger aircraft): 956
Environmentally hazardous: yes

IMDG-Code
UN number: UN 3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,
SAFETY DATA SHEET

ZELBORAF(R) F.C. Tablets (240 mg)

Version: 1.2
Revision Date: 07-20-2021
Date of last issue: 02-11-2020
Date of first issue: 06-10-2017

N.O.S. (Vemurafenib mixture)

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

Domestic regulation

49 CFR
UN/ID/NA number: UN 3077
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Vemurafenib mixture)
Class: 9
Packing group: III
Labels: CLASS 9
ERG Code: 171
Marine pollutant: no

Special precautions for user
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards:
Carcinogenicity

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 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).
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 SOCMI Intermediate or Final VOC's (40 CFR 60.489).
Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know
Silica 7631-86-9

Pennsylvania Right To Know
Hydroxypropyl methylcellulose acetate succinate 71138-97-1
Vemurafenib 918504-65-1
Croscarmellose sodium 74811-65-7
Silica 7631-86-9

Maine Chemicals of High Concern
Product does not contain any listed chemicals

Vermont Chemicals of High Concern
Product does not contain any listed chemicals

Washington Chemicals of High Concern
Product does not contain any listed chemicals

California Prop. 65
WARNING: This product can expose you to chemicals including Titanium oxide (TiO2), which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances
Silica 7631-86-9

California Permissible Exposure Limits for Chemical Contaminants
Silica 7631-86-9

The ingredients of this product are reported in the following inventories:

DSL: This product contains the following components that are not on the Canadian DSL nor NDSL:
Hydroxypropyl methylcellulose acetate succinate
Vemurafenib
Croscarmellose sodium
non hazardous compounds

AICS: Not in compliance with the inventory

NZIoC: Not in compliance with the inventory

ENCS: Not in compliance with the inventory

ISHL: Not in compliance with the inventory
SAFETY DATA SHEET

ZELBORAF(R) F.C. Tablets (240 mg)

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Date of first issue: 06-10-2017

KECI: Not in compliance with the inventory
PICCS: Not in compliance with the inventory
IECSC: Not in compliance with the inventory
TCSI: Not in compliance with the inventory
TSCA: Substance(s) not listed on TSCA inventory

TSCA list
No substances are subject to a Significant New Use Rule.
No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

NFPA 704:

HMIS® IV:

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH: USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL: USA. NIOSH Recommended Exposure Limits
OSHA P0: USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-3: USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
ACGIH / TWA: 8-hour, time-weighted average
NIOSH REL / TWA: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA: 8-hour time weighted average
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.

US / Z8 / 2004