MATERIAL SAFETY DATA SHEET

Dronabinol

SECTION 1 - IDENTIFICATION OF THE PRODUCT AND THE COMPANY

<table>
<thead>
<tr>
<th>PRODUCT NAME</th>
<th>Dronabinol</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELEPHONE</td>
<td>626-334-2908</td>
</tr>
<tr>
<td>MANUFACTURER</td>
<td>Norac, Inc.</td>
</tr>
<tr>
<td>ADDRESS</td>
<td>405 S. Motor Ave., Azusa, CA 91702</td>
</tr>
<tr>
<td>CHEMICAL NAME</td>
<td>3-Pentyl-6,6,9-Trimethyl-6a,7,8,10a-Tetrahydro-6H-Dibenzo(b,d)Pyran-1-ol</td>
</tr>
<tr>
<td>CAS NO.</td>
<td>See Section 2</td>
</tr>
<tr>
<td>CHEMICAL FAMILY</td>
<td>Cannabinoids</td>
</tr>
<tr>
<td>FORMULA</td>
<td>See Section 2</td>
</tr>
<tr>
<td>SYNONYMS</td>
<td>Cannabinol, 1-trans-delta(sup 9)-tetrahydro-; Delta-9 Tetrahydrocannabinol; Dronabinol; Marinol; THC</td>
</tr>
</tbody>
</table>

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>CAS NO.</th>
<th>%</th>
<th>Formula</th>
<th>Hazard Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta-9 Tetrahydrocannabinol</td>
<td>1972-08-3</td>
<td>&gt; 95</td>
<td>C_{21}H_{30}O_2</td>
<td>Oral--Rat LD_{50}: 666 mg/kg</td>
</tr>
<tr>
<td>Delta-8 Tetrahydrocannabinol</td>
<td>5957-75-5</td>
<td>&lt; 2</td>
<td>C_{21}H_{30}O_2</td>
<td>Oral--Rat LD_{50}: 860 mg/kg</td>
</tr>
<tr>
<td>Cannabinol</td>
<td>521-35-7</td>
<td>&lt; 5</td>
<td>C_{21}H_{30}O_2</td>
<td>Intravenous--Rabbit LD_{144}: 126 mg/kg</td>
</tr>
<tr>
<td>Exo Tetrahydrocannabinol</td>
<td>&lt; 5</td>
<td></td>
<td>C_{21}H_{30}O_2</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3 - HAZARD IDENTIFICATION OF THE PREPARATION

Harmful by inhalation, in contact with skin and if swallowed. Potentially irritating to eyes, respiratory system and skin. Possible risk of irreversible effects

Exposure can cause: Nausea, dizziness and headache. Other effects include slowed speech, ataxia, somnolence, mild euphoria, heightened sensory awareness, a generally relaxed feeling of well being and some alteration of time perception, decrease in motor coordination, muscle strength and hand steadiness and an increase in reaction time. Short-term memory function is impaired, as is the ability to accomplish tasks requiring multiple mental steps. There is an enhancement of appetite, lapses of attention, a decrease in social inhibition, and an alteration of mood, which can induce giddiness manifested by laughing episodes.

THRESHOLD LIMIT VALUE Unknown

ROUTES OF EXPOSURE

Skin Absorption Though unlikely, may be harmful by skin contact and potentially irritating to skin.

Eye Contact Eye contact causes irritation.

Ingestion Harmful if swallowed

Inhalation Harmful by inhalation, irritation to respiratory system.

EFFECTS OF OVER-EXPOSURE Possible risk of irreversible effects, possible teratogen, possible mutagen

Target Organs Nerves, liver

SECTION 4 - FIRST-AID MEASURES

Skin Remove contaminated clothes scrape off spilt material, remove any remaining residue with alcohol and wash area thoroughly with water. Seek medical attention if necessary.

Eyes Seek medical attention.

Ingestion Wash mouth with water if person is conscious. Immediately call a physician. For aid to physician, suggest Poison Control Center.

Inhalation Remove to fresh air. Seek medical attention if necessary.

SECTION 5 - FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA Carbon dioxide, dry chemical or appropriate foam

SPECIAL FIRE FIGHTING PROCEDURES Fireman should be equipped with protective clothing and SCBA's. In case of fire near storage area, cool the containers with water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS None known

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN EVENT OF SPILL OR RELEASE

Refer to protective measures listed in sections 7 and 8. Spilled material should be scraped up and remaining residue should be dissolved with alcohol. Place in a clean, sealed container, for proper disposal.

SECTION 7 - HANDLING AND STORAGE

HANDLING
Keep containers closed and under vacuum to prevent contamination and air contact. Rotate stock using the oldest material first. DO NOT USE NEAR FOOD OR DRINK. Refer to section 8 for additional information.

STORAGE
Preserve in tight container in inert atmosphere preferably under vacuum or nitrogen blanket, store in the dark or a light resistant container in a cool place; 8 to 15°C (46-59°F). Prolonged contact with air and heat will adversely affect quality. DO NOT STORE WITH FOOD OR DRINK.

OTHER PRECAUTIONS
None

SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION

RESPIRATORY PROTECTION
If necessary wear appropriate NIOSH/MSHA approved respirator.

VENTILATION
None

EYE PROTECTION
Safety goggles recommended.

HAND PROTECTION
Protective gloves recommended.

OTHER
Other protective clothing as necessary.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR:
Sticky amber resin, glassy when cold, no odor.

BOILING POINT:
390°F at .02 mmHg

SOLUBILITY IN WATER:
Negligible

SPECIFIC GRAVITY:
~ 1.05

VAPOR PRESSURE:
Negligible at 20°C

FLASH POINT:
No data available

SPECIFIC GRAVITY:
~ 1.05

VAPOR DENSITY:
No data available

FLAMMABLE LIMITS:
No data available

EVAPORATION RATE:
Negligible

pH:
Not applicable

% VOLATILE BY VOLUME:
Negligible

SECTION 10 - STABILITY AND REACTIVITY

STABILITY
Stable under vacuum

CONDITIONS TO AVOID
Exposure to air, exposure to ultraviolet light and heat.

MATERIALS TO AVOID
Strong oxidizing agents, strong acids, metallic salts

HAZARDOUS DECOMPOSITION
Unknown

PRODUCTS
HAZARDOUS POLYMERIZATION
Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

6H-DIBENZO(b,d)PYRAL-1-OL, 6a,7,8,10a-TETRAHYDRO-6,6,9-TRIMETHYL-3-PENTYL-

RTECS: HP8225000

Mutation Data
Cyto genetic analysis;
Human:lymphocyte; 2500 umol/L/24H
Mouse-intraperitoneal; 30 mg/kg/5D-1
DNA inhibition
Human:fibroblast; 10 umol/L
Human:cell types; 10 umol/L
Human:HeLa cell; 10 umol/L

Reproductive Effects
Oral--Monkey; TDLo: 396 mg/kg (1-23W preg); Effects on embryo or fetus(Fetal death); Effects on newborn(weaning or lactation index; Growth statistic)
**Tumorigenic Data**

Subcutaneous--Mouse TD_{Lo}: 800 ug/kg/W-I; Tumorigenic (Equivocal tumorigenic agent by RTECS criteria); Skin and appendages (Tumors); Tumorigenic (Tumors at site of application)

**Toxicity Data**

**Intraperitoneal**

- Mouse LD_{50}: 168 mg/kg
- Rat LD_{50}: 373 mg/kg

**Intravenous**

- Monkey LD_{50}: 128 mg/kg; Behavioral (Muscle contraction or spasticity); Cardiac (Arrhythmias); Lungs, Thorax, or Respiration (Dyspnea)
- Mouse LD_{50}: 42 mg/kg; Behavioral (Ataxia); Lungs, Thorax, or Respiration (Respiratory depression); Behavior (Excitement)
- Rat LD_{50}: 29 mg/kg; Behavioral (Ataxia); Lungs, Thorax, or Respiration (Respiratory depression); Behavior (Excitement)

**Oral**

- Dog LD_{50}: 525 mg/kg
- Mouse LD_{50}: 482 mg/kg
- Rat LD_{50}: 666 mg/kg

Only selected information from the RTECS is listed here. For complete information see actual RTECS entry.

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**SECTION 12 - ECOLOGICAL INFORMATION**

The product should be prevented from entering drains, sewers, streams, etc.

**SECTION 13 - DISPOSAL CONSIDERATIONS**

Prevent material from entering drains, sewers, streams, etc. Contact the Drug Enforcement Agency (DEA) concerning the disposal of this controlled substance. Observe all federal, state and local environmental regulations.

**SECTION 14 - TRANSPORT INFORMATION**

Not regulated by the DOT.

**SECTION 15 - REGULATORY INFORMATION**

The following chemicals are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TSCA Status**

The ingredients in this product are listed in the US Toxic Substances Control Act (TSCA) Inventory.

**Status of Carcinogenicity**

Not recognized as a carcinogen by the IARC, NTP or OSHA.

**SECTION 16 - OTHER INFORMATION**

**DISCLAIMER OF LIABILITY**

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