Dow AgroSciences LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
CHAPARRAL* Herbicide

COMPANY IDENTIFICATION
Dow AgroSciences LLC
A Subsidiary of The Dow Chemical Company
9330 Zionsville Road
Indianapolis, IN 46268-1189
USA

Customer Information Number: 800-992-5994

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 800-992-5994

2. Hazards Identification

Emergency Overview
Color: Brown
Physical State: Granules.
Odor: Mild

Hazard of product:

CAUTION! May cause eye irritation. May cause skin irritation. Powdered material may form explosive dust-air mixture. Isolate area. Toxic fumes may be released in fire situations. Slipping hazard.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects
Eye Contact: May cause moderate eye irritation. May cause slight corneal injury. Solid or dust may cause irritation or corneal injury due to mechanical action.
Skin Contact: Brief contact may cause moderate skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.  
Inhalation: Inhalation is unlikely due to physical state. No adverse effects are anticipated from single exposure to dust.  
Ingestion: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.  
Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.  
Effects of Repeated Exposure: For similar active ingredient(s). Aminopyralid. In animals, effects have been reported on the following organs: Gastrointestinal tract.  
Cancer Information: Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

### 3. Composition Information

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aminopyralid Potassium</td>
<td>566191-87-5</td>
<td>62.13 %</td>
</tr>
<tr>
<td>Metsulfuron-methyl</td>
<td>74223-64-6</td>
<td>9.45 %</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>0.1 %</td>
</tr>
<tr>
<td>Kaolin</td>
<td>1332-58-7</td>
<td>&gt;= 0.2 - &lt;= 5.2 %</td>
</tr>
<tr>
<td>Balance</td>
<td></td>
<td>&gt;= 23.12 - &lt;= 28.12 %</td>
</tr>
</tbody>
</table>

### 4. First-aid measures

**Eye Contact:** Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.  
**Skin Contact:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.  
**Inhalation:** Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.  
**Ingestion:** No emergency medical treatment necessary.  
**Notes to Physician:** May cause injury due to mechanical action. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.  
**Emergency Personnel Protection:** If potential for exposure exists refer to Section 8 for specific personal protective equipment.

### 5. Fire Fighting Measures

**Extinguishing Media:** Water. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers.  
**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Soak thoroughly with water to cool and prevent re-ignition. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires. Move container from fire area if this is possible without hazard. Contain fire water run-
off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**Special Protective Equipment for Firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation. Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, do not permit dust to accumulate. Dense smoke is produced when product burns.

**Hazardous Combustion Products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

### 6. Accidental Release Measures

**Steps to be Taken if Material is Released or Spilled:** Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

**Personal Precautions:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Spilled material may cause a slipping hazard. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental Precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

### 7. Handling and Storage

**Handling**

**General Handling:** Keep out of reach of children. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Do not swallow. Avoid breathing dust or mist. Use with adequate ventilation. Good housekeeping and controlling of dusts are necessary for safe handling of product. Keep away from heat, sparks and flame.

**Storage**

Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

### 8. Exposure Controls / Personal Protection

**Exposure Limits**

<table>
<thead>
<tr>
<th>Component</th>
<th>List</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide</td>
<td>ACGIH</td>
<td>TWA</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td></td>
<td>OSHA Table Z-1</td>
<td>PEL Total dust</td>
<td>15 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total dust</td>
<td>millions of particles per cubic foot of air</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respirable fraction</td>
<td>15 mg/m³ millions of particles per cubic foot of air</td>
</tr>
</tbody>
</table>
Kaolin ACGIH TWA Respirable fraction. 2 mg/m³ The value is for particulate matter containing no asbestos and <1% crystalline silica.

OSHA Table Z-1 PEL Respirable fraction. 5 mg/m³

OSHA Table Z-1 PEL Total dust. 15 mg/m³

**RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.**

**Personal Protection**

**Eye/Face Protection:** Use chemical goggles.

**Skin Protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Respiratory Protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

**Ingestion:** Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

**Engineering Controls**

**Ventilation:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

### 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Granules.</td>
</tr>
<tr>
<td>Color</td>
<td>Brown</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild</td>
</tr>
<tr>
<td>Flash Point - Closed Cup</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammable Limits In Air</td>
<td>Lower: Not applicable, Upper: Not applicable</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling Point (760 mmHg)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Density (air = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity (H2O = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Liquid Density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>0.0007 kg/m³ @ 22.8 °C Literature</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting Point</td>
<td>No test data available</td>
</tr>
</tbody>
</table>
Solubility in water (by weight)  
No test data available

pH  
10.3 (@ 1 %) pH Electrode (1% dispersion)

Decomposition  
No test data available

Temperature  
Not applicable

Evaporation Rate (Butyl Acetate = 1)  
Not applicable

Dynamic Viscosity  
Not applicable

Kinematic Viscosity  
Not applicable

10. Stability and Reactivity

Stability/Instability
Thermally stable at typical use temperatures.

Conditions to Avoid:  Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.


Hazardous Polymerization
Will not occur.

Thermal Decomposition
Decomposition products depend upon temperature, air supply and the presence of other materials. Toxic gases are released during decomposition.

11. Toxicological Information

Acute Toxicity
Ingestion
As product.  LD50, Rat, female > 5,000 mg/kg

Dermal
As product.  LD50, Rat, male and female > 5,000 mg/kg

Inhalation
LC50, 4 h, Aerosol, Rat, male and female > 5.09 mg/l

Eye damage/eye irritation
May cause moderate eye irritation.  May cause slight corneal injury.  Solid or dust may cause irritation or corneal injury due to mechanical action.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.

Sensitization
Skin
Did not cause allergic skin reactions when tested in guinea pigs.

Respiratory
No relevant information found.

Repeated Dose Toxicity
For similar active ingredient(s).  Aminopyralid.  In animals, effects have been reported on the following organs:  Gastrointestinal tract.

Chronic Toxicity and Carcinogenicity
Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.  For the active ingredient(s):  Aminopyralid.  Metsulfuron-methyl.  Did not cause cancer in laboratory animals.
Carcinogenicity Classifications:

<table>
<thead>
<tr>
<th>Component</th>
<th>List</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide</td>
<td>IARC</td>
<td>Possibly carcinogenic to humans.; 2B</td>
</tr>
</tbody>
</table>

Developmental Toxicity
For the active ingredient(s): Aminopyralid. Metsulfuron-methyl. Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive Toxicity
For the active ingredient(s): Aminopyralid. Metsulfuron-methyl. In animal studies, did not interfere with reproduction.

Genetic Toxicology
For similar active ingredient(s). Aminopyralid. In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative. For the active ingredient(s): Metsulfuron-methyl. In vitro genetic toxicity studies were predominantly negative.

12. Ecological Information

ENVIRONMENTAL FATE
Data for Component: **Aminopyralid Potassium**

**Movement & Partitioning**
For similar active ingredient(s). Aminopyralid. Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Potential for mobility in soil is very high (Koc between 0 and 50).
**Partition coefficient, n-octanol/water (log Pow):** 0.72 Estimated.

**Persistence and Degradability**
For similar active ingredient(s). Aminopyralid. Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
**OECD Biodegradation Tests:** For similar material(s): Aminopyralid.

<table>
<thead>
<tr>
<th>Biodegradation</th>
<th>Exposure Time</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 %</td>
<td>28 d</td>
<td>OECD 301F Test</td>
</tr>
</tbody>
</table>

Data for Component: **Metsulfuron-methyl**

**Movement & Partitioning**
Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

**Persistence and Degradability**
Material is expected to be readily biodegradable.

Data for Component: **Titanium dioxide**

**Movement & Partitioning**
Partitioning from water to n-octanol is not applicable.

**Persistence and Degradability**
Biodegradation is not applicable.

Data for Component: **Kaolin**

**Movement & Partitioning**
Partitioning from water to n-octanol is not applicable.

**Persistence and Degradability**
Biodegradation is not applicable.
ECOTOXICITY
Material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Fish Acute & Prolonged Toxicity
LC50, rainbow trout (Oncorhynchus mykiss), static renewal, 96 h: > 120 mg/l

Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, static renewal, 48 h, immobilization: > 120 mg/l

Toxicity to Above Ground Organisms
oral LD50, bobwhite (Colinus virginianus): > 2,250 mg/kg

Toxicity to Soil Dwelling Organisms
LC50, Earthworm Eisenia foetida, adult, 14 d: 2,000 mg/kg

13. Disposal Considerations

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard: Yes
Delayed (Chronic) Health Hazard: Yes
Fire Hazard: No
Reactive Hazard: No
Sudden Release of Pressure Hazard

No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>0.1%</td>
</tr>
<tr>
<td>Kaolin</td>
<td>1332-58-7</td>
<td>&gt;= 0.2 - &lt;= 5.2 %</td>
</tr>
</tbody>
</table>

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Toxic Substances Control Act (TSCA)
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

16. Other Information

Hazard Rating System

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health</th>
<th>Fire</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
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Revision
Identification Number: 1010616 / 1016 / Issue Date 06/02/2010 / Version: 3.1
DAS Code: GF-2050
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

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<thead>
<tr>
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<tr>
<td>W/W</td>
<td>Weight/Weight</td>
</tr>
<tr>
<td>OEL</td>
<td>Occupational Exposure Limit</td>
</tr>
<tr>
<td>STEL</td>
<td>Short Term Exposure Limit</td>
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<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
</tr>
<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists, Inc.</td>
</tr>
<tr>
<td>DOW IHG</td>
<td>Dow Industrial Hygiene Guideline</td>
</tr>
<tr>
<td>WEEL</td>
<td>Workplace Environmental Exposure Level</td>
</tr>
</tbody>
</table>
Dow AgroSciences LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.