

**Product Name:** TORDON\* 22K Herbicide

**Revision Date:** 2012/11/30

**Print Date:** 30 Nov 2012

Dow AgroSciences Limited 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.

## Section 1. Identification of the substance/preparation and of the company/undertaking

### 1.1 Product identifiers

**Product Name**

TORDON\* 22K Herbicide

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Identified uses**

Plant Protection Product

### 1.3 Details of the supplier of the safety data sheet

**COMPANY IDENTIFICATION**

Dow AgroSciences Limited  
A Subsidiary of The Dow Chemical Company  
Latchmore Court, Brand Street  
SG5 1NH Hitchin  
United Kingdom

[SDSQuestion@dow.com](mailto:SDSQuestion@dow.com)

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:**

0031 115 694 982

**Local Emergency Contact:**

00 31 115 69 4982

## Section 2. Hazards Identification

### 2.1 Classification of the substance or mixture

**Classification according to EU Directives 67/548/EEC or 1999/45/EC**

R43      May cause sensitization by skin contact.

### 2.2 Label elements

**Labelling according to EC Directives**

**Hazard Symbol:**

Xi      - Irritant.  
N      - Dangerous for the environment.

**Risk Phrases :**

R43 - May cause sensitization by skin contact.

**Safety Phrases :**

S2 - Keep out of the reach of children.

S24 - Avoid contact with skin.

S37 - Wear suitable gloves.

S35 - This material and its container must be disposed of in a safe way.

S57 - Use appropriate container to avoid environmental contamination.

To avoid risks to man and the environment, comply with the instructions for use.

**2.3 Other Hazards**

No information available.

**Section 3. Composition/information on ingredients****3.2 Mixture**

This product is a mixture.

<b>CAS-No. / EC-No. / Index</b>	<b>REACH No.</b>	<b>Amount</b>	<b>Component</b>	<b>Classification: REGULATION (EC) No 1272/2008</b>
<b>CAS-No.</b> 2545-60-0 <b>EC-No.</b> 219-829-6	—	24.0 %	Picloram Potassium Salt	Aquatic Chronic, 3, H412
<b>CAS-No.</b> 69029-39-6 <b>EC-No.</b> Polymer	—	< 5.0 %	Alkylphenol alkoxylate	Eye cor/irr, 2, H319 Aquatic Chronic, 2, H411
<b>CAS-No.</b> 1310-58-3 <b>EC-No.</b> 215-181-3 <b>Index</b> 019-002-00-8	—	< 5.0 %	Potassium hydroxide; caustic potash	Acute Tox., 4, H302 Skin cor/irr, 1A, H314

<b>CAS-No. / EC-No. / Index</b>	<b>Amount</b>	<b>Component</b>	<b>Classification: 67/548/EEC</b>
<b>CAS-No.</b> 2545-60-0 <b>EC-No.</b> 219-829-6	24.0 %	Picloram Potassium Salt	R52/53
<b>CAS-No.</b> 69029-39-6 <b>EC-No.</b> Polymer	< 5.0 %	Alkylphenol alkoxylate	Xi: R36; N: R51, R53
<b>CAS-No.</b> 1310-58-3 <b>EC-No.</b> 215-181-3 <b>Index</b>	< 5.0 %	Potassium hydroxide; caustic potash	Xn: R22; C: R35

|| 019-002-00-8

For the full text of the H-Statements mentioned in this Section, see Section 16.  
See Section 16 for full text of R-phrases.

## Section 4. First-aid measures

### 4.1 Description of first aid measures

**General advice:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**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.

**Skin Contact:** Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be available in work area.

**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. Suitable emergency eye wash facility should be available in work area.

**Ingestion:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

### 4.2 Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

### 4.3 Indication of immediate medical attention and special treatment needed

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.

## Section 5. Fire Fighting Measures

### 5.1 Extinguishing Media

To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

### 5.2 Special hazards arising from the substance or mixture

**Hazardous Combustion Products:** Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** This material will not burn until the water has evaporated. Residue can burn. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. 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.

## Section 6. Accidental Release Measures

**6.1 Personal precautions, protective equipment and emergency procedures:** No smoking in area. Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

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

**6.3 Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. 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.

## Section 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

**General Handling:** Keep out of reach of children. Keep away from heat, sparks and flame. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Use with adequate ventilation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Storage

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

### 7.3 Specific end uses

Refer to product label.

## Section 8. Exposure Controls / Personal Protection

### 8.1 Control parameters

#### Exposure Limits

Component	List	Type	Value
Potassium hydroxide; caustic potash	Ireland OELV	STEL	2 mg/m <sup>3</sup>
	ACGIH	Ceiling	2 mg/m <sup>3</sup>
	UK WEL	STEL	2 mg/m <sup>3</sup>

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.

## 8.2 Exposure controls

### Personal Protection

**Eye/Face Protection:** Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

**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 chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. 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, if discomfort is experienced, use an approved air-purifying respirator. Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

**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.

## Section 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

Physical State	Liquid.
Color	Brown
Odor	mild, sweet
Odor Threshold	No test data available
pH	7.23 (aqueous 10% slurry)
Melting Point	Not applicable
Freezing Point	No test data available
Boiling Point (760 mmHg)	100 °C.
Flash Point - Closed Cup	88 °C <i>Setaflash Closed Cup ASTM D3828</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammable Limits In Air	<b>Lower:</b> No test data available <b>Upper:</b> No test data available
Vapor Pressure	22 mmHg @ 20 °C Approx.
Vapor Density (air = 1)	1.14
Specific Gravity (H <sub>2</sub> O = 1)	1.16 20 °C/20 °C <i>NAPM 2A.00</i>
Solubility in water (by weight)	water solution
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available

<b>Dynamic Viscosity</b>	< 5 mPa.s @ 25.4 °C
<b>Kinematic Viscosity</b>	3.88 cSt @ 20 °C
<b>Explosive properties</b>	No <i>EEC A14</i>
<b>Oxidizing properties</b>	No significant increase (>5C) in temperature.

## 9.2 Other information

<b>Liquid Density</b>	1.163 g/cm3 @ 20 °C <i>Digital density meter</i>
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## Section 10. Stability and Reactivity

### 10.1 Reactivity

No dangerous reaction known under conditions of normal use.

### 10.2 Chemical stability

Thermally stable at typical use temperatures.

### 10.3 Possibility of hazardous reactions

Polymerization will not occur.

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

**10.5 Incompatible Materials:** Avoid contact with: Oxidizers. Strong acids.

### 10.6 Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride. Nitrogen oxides. Toxic gases are released during decomposition.

## Section 11. Toxicological Information

### 11.1 Information on toxicological effects

#### Acute Toxicity

##### Ingestion

Very low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

As product: LD50, rat, male and female > 5,000 mg/kg

##### Aspiration hazard

Based on physical properties, not likely to be an aspiration hazard.

##### Dermal

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: LD50, rabbit > 5,000 mg/kg

##### Inhalation

No adverse effects are anticipated from single exposure to mist. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.

As product: LC50, 4 h, Aerosol, rat, male and female > 8.11 mg/l

##### Eye damage/eye irritation

May cause moderate eye irritation. Corneal injury is unlikely.

##### Skin corrosion/irritation

Brief contact is essentially nonirritating to skin.

##### Sensitization

##### Skin

Has caused allergic skin reactions when tested in guinea pigs. Did not cause allergic skin reactions when tested in humans.

##### Respiratory

No relevant data found.

##### Repeated Dose Toxicity

For the active ingredient(s): Repeated exposure did not produce systemic toxicity when applied to the skin of rabbits.

#### **Chronic Toxicity and Carcinogenicity**

For similar active ingredient(s). Picloram acid. Did not cause cancer in laboratory animals.

#### **Developmental Toxicity**

For the active ingredient(s): Did not cause birth defects or any other fetal effects in laboratory animals.

#### **Reproductive Toxicity**

For similar active ingredient(s). Picloram acid. In animal studies, did not interfere with reproduction.

#### **Genetic Toxicology**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

## Section 12. Ecological Information

### 12.1 Toxicity

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species). Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

#### **Fish Acute & Prolonged Toxicity**

LC50, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 h: 26 mg/l

#### **Aquatic Invertebrate Acute Toxicity**

EC50, eastern oyster (*Crassostrea virginica*), flow-through test, 48 h, shell growth inhibition: 18 - 32 mg/l

#### **Aquatic Plant Toxicity**

EC50, *Skeletonema costatum*, static test, 120 h: 14 mg/l

EC50, diatom *Navicula* sp., biomass growth inhibition: 3.9 mg/l

#### **Toxicity to Above Ground Organisms**

dietary LC50, *Anas platyrhynchos* (Mallard duck): > 10000 mg/kg diet.

dietary LC50, *Colinus virginianus* (Bobwhite quail): > 10000 mg/kg diet.

contact LD50, *Apis mellifera* (bees): > 20 micrograms/bee

#### **Toxicity to Soil Dwelling Organisms**

LC50, *Eisenia fetida* (earthworms), 14 d: > 2,388.89 mg/kg

### 12.2 Persistence and Degradability

#### Data for Component: Picloram Potassium Salt

For similar active ingredient(s). Picloram. 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. Biodegradation may occur under aerobic conditions (in the presence of oxygen). Surface photodegradation is expected with exposure to sunlight.

Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

#### Data for Component: Alkylphenol alkoxybate

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.

#### Data for Component: Potassium hydroxide; caustic potash

|| Biodegradation is not applicable.

### 12.3 Bioaccumulative potential

#### Data for Component: Picloram Potassium Salt

**Bioaccumulation:** For similar active ingredient(s). Picloram. Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

#### Data for Component: Alkylphenol alkoxybate

**Bioaccumulation:** No bioconcentration is expected because of the relatively high water solubility. May foam in water.

#### Data for Component: Potassium hydroxide; caustic potash

|| **Bioaccumulation:** Partitioning from water to n-octanol is not applicable.

## 12.4 Mobility in soil

### Data for Component: **Picloram Potassium Salt**

**Mobility in soil:** For similar active ingredient(s)., Picloram., Potential for mobility in soil is very high (Koc between 0 and 50).

### Data for Component: **Alkylphenol alkoxyate**

**Mobility in soil:** No data available.

### Data for Component: **Potassium hydroxide; caustic potash**

**Mobility in soil:** No data available for assessment due to technical difficulties with testing.

## 12.5 Results of PBT and vPvB assessment

### Data for Component: **Picloram Potassium Salt**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

### Data for Component: **Alkylphenol alkoxyate**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

### Data for Component: **Potassium hydroxide; caustic potash**

**Mobility in soil:** This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

## 12.6 Other adverse effects

### Data for Component: **Picloram Potassium Salt**

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

### Data for Component: **Alkylphenol alkoxyate**

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

### Data for Component: **Potassium hydroxide; caustic potash**

**Mobility in soil:** This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

## Section 13. Disposal Considerations

### 13.1 Waste treatment methods

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.

## Section 14. Transport Information

### ADR/RID

#### 14.1 UN number

Not applicable

#### 14.2 UN proper shipping name

Proper Shipping Name: NOT REGULATED

#### 14.3 Transport hazard class(es)

Not applicable

#### 14.4 Packing Group

Not applicable



**14.5 Environmental hazards**

Not considered environmentally hazardous based on available data

**14.6 Special precautions for user**

Special Provisions: no data available

Hazard identification No: no data available

**ADNR / ADN****14.1 UN number**

Not applicable

**14.2 UN proper shipping name**

Proper Shipping Name: NOT REGULATED

**14.3 Transport hazard class(es)**

Not applicable

**14.4 Packing Group**

Not applicable

**14.5 Environmental hazards**

Not considered environmentally hazardous based on available data

**14.6 Special precautions for user**

no data available

**IMDG****14.1 UN number**

Not applicable

**14.2 UN proper shipping name**

Proper Shipping Name: NOT REGULATED

**14.3 Transport hazard class(es)**

Not applicable

**14.4 Packing Group**

Not applicable

**14.5 Environmental hazards**

Not considered environmentally hazardous based on available data

**14.6 Special precautions for user**

EMS Number: Not applicable

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable

**ICAO/IATA****14.1 UN number**

Not applicable

**14.2 UN proper shipping name**

Proper Shipping Name: NOT REGULATED

**14.3 Transport hazard class(es)**

Not applicable

**14.4 Packing Group**

Not applicable

**14.5 Environmental hazards**

Not applicable

**14.6 Special precautions for user**

no data available

**Section 15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****European Inventory of Existing Commercial Chemical Substances (EINECS)**

The components of this product are on the EINECS inventory or are exempt from inventory requirements.

Product Registration Number: MAPP 13869

**Registration Information**

MAFF 05083

**15.2 Chemical Safety Assessment**

For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

**Section 16. Other Information****Hazard statement in the composition section**

H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H319	Causes serious eye irritation.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

**Risk-phrases in the Composition section**

R22	Harmful if swallowed.
R35	Causes severe burns.
R36	Irritating to eyes.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Revision**

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

*Dow AgroSciences Limited 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.*