SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier
Trade name ARMADA® 50 WDG
Product code (UVP) 79974582
SDS Number 102000024286
EPA Registration No. 432-1513

Relevant identified uses of the substance or mixture and uses advised against
Use Fungicide
Restrictions on use See product label for restrictions.

Information on manufacturer
Bayer Environmental Science
2 T.W. Alexander Drive
Research Triangle PK, NC 27709
United States

Emergency telephone no.
All Emergencies, 24hr/ 7 days 1-800-334-7577 (24 hours/day)

Product Information Telephone No. 1-800-331-2867
SDS Information or Request SDSINFO.BCS-NA@bayer.com

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
Skin sensitisation : Category 1B
Skin irritation : Category 2
Eye irritation : Category 2B
Acute toxicity (Inhalation): Category 3
Acute toxicity (Oral): Category 4

Signal word: Danger

Hazard statements
May cause an allergic skin reaction.
Causes skin irritation.
Causes eye irritation.
Toxic if inhaled.
Harmful if swallowed.

Precautionary statements
Avoid breathing dust, mist, spray.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Do not eat, drink or smoke when using this product.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER or doctor/physician.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
Rinse mouth.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/container in accordance with local regulation.

Other hazards
No other hazards known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Component Name</th>
<th>CAS-No.</th>
<th>Average % by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triadimefon</td>
<td>43121-43-3</td>
<td>41.67</td>
</tr>
<tr>
<td>Trifloxystrobin</td>
<td>141517-21-7</td>
<td>8.33</td>
</tr>
<tr>
<td>Sodium dodecylbenzenesulfonate</td>
<td>25155-30-0</td>
<td>1.83</td>
</tr>
<tr>
<td>Crystalline quartz (respirable)</td>
<td>14808-60-7</td>
<td>0.37</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General advice
When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Inhalation
Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Skin contact
Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.

Eye contact
Hold eye 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 eye. Call a physician or poison control center immediately.
Ingestion

Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed
Symptoms
To date no symptoms are known.

Indication of any immediate medical attention and special treatment needed
Treatment
Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media
Suitable
Carbon dioxide (CO2), Dry chemical, Foam

Unsuitable
None known.

Special hazards arising from the substance or mixture
Dangerous gases are evolved in the event of a fire.

Advice for firefighters
Special protective equipment for fire-fighters
Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

Further information
Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

Flash point
not applicable

Autoignition temperature
no data available

Lower explosion limit
not applicable

Upper explosion limit
not applicable

Explosivity
no data available
SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions
Avoid dust formation. Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up
Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations.

Additional advice
Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact non-target plants.

Reference to other sections
Information regarding safe handling, see section 7.
Information regarding personal protective equipment, see section 8.
Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling
Handle and open container in a manner as to prevent spillage. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

Advice on protection against fire and explosion
Keep away from heat and sources of ignition.

Hygiene measures
Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers
Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
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</table>


<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
<th>Concentration</th>
<th>Exposure Level</th>
<th>Date</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>Triadimefon</td>
<td>43121-43-3</td>
<td>0.7 mg/m³</td>
<td>TWA</td>
<td>07 2011</td>
<td>TX ESL</td>
</tr>
<tr>
<td>Triadimefon</td>
<td>43121-43-3</td>
<td>100 ug/m³</td>
<td>(ST ESL)</td>
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<td></td>
</tr>
<tr>
<td>Triadimefon</td>
<td>43121-43-3</td>
<td>10 ug/m³</td>
<td>(AN ESL)</td>
<td>07 2011</td>
<td>TX ESL</td>
</tr>
<tr>
<td>Trifloxystrobin</td>
<td>141517-21-7</td>
<td>2.7 mg/m³</td>
<td>TWA</td>
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<td>OES BCS*</td>
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<tr>
<td>Sodium dodecylbenzenesulfonate (Particulate)</td>
<td>25155-30-0</td>
<td>50 ug/m³</td>
<td>(ST ESL)</td>
<td>02 2013</td>
<td>TX ESL</td>
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<tr>
<td>Sodium dodecylbenzenesulfonate (Vapor.)</td>
<td>25155-30-0</td>
<td>1000 ug/m³</td>
<td>(ST ESL)</td>
<td>02 2013</td>
<td>TX ESL</td>
</tr>
<tr>
<td>Sodium dodecylbenzenesulfonate (Vapor.)</td>
<td>25155-30-0</td>
<td>100 ug/m³</td>
<td>(AN ESL)</td>
<td>02 2013</td>
<td>TX ESL</td>
</tr>
<tr>
<td>Sodium dodecylbenzenesulfonate (Particulate.)</td>
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<td>5 ug/m³</td>
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<td>02 2013</td>
<td>TX ESL</td>
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<tr>
<td>Crystalline quartz (respirable) (Respirable fraction.)</td>
<td>14808-60-7</td>
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<td>NIOSH</td>
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<td>0.1 mg/m³</td>
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<td>TN OEL</td>
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<td>Crystalline quartz (respirable) (Particulate.)</td>
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<td>0.27 ug/m³</td>
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<td>14 ug/m³</td>
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<td>TX ESL</td>
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<tr>
<td>Crystalline quartz (respirable) (Total dust.)</td>
<td>14808-60-7</td>
<td>0.3 mg/m³</td>
<td>TWA PEL</td>
<td>08 2010</td>
<td>US CA OEL</td>
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<td>Crystalline quartz (respirable) (Respirable dust.)</td>
<td>14808-60-7</td>
<td>0.1 mg/m³</td>
<td>TWA PEL</td>
<td>08 2010</td>
<td>US CA OEL</td>
</tr>
<tr>
<td>Crystalline quartz (respirable) (Respirable.)</td>
<td>14808-60-7</td>
<td>2.4 millions of particles per cubic foot of air</td>
<td>TWA</td>
<td>2000</td>
<td>Z3</td>
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<td>Crystalline quartz (respirable) (Respirable.)</td>
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<td>0.1 mg/m³</td>
<td>TWA</td>
<td>2000</td>
<td>Z3</td>
</tr>
<tr>
<td>Crystalline quartz (respirable) (Total dust.)</td>
<td>14808-60-7</td>
<td>0.3 mg/m³</td>
<td>TWA</td>
<td>2000</td>
<td>Z3</td>
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<tr>
<td>Kaolin (Respirable fraction.)</td>
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<td>2 mg/m³</td>
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<td>Kaolin (Respirable.)</td>
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<td>5 mg/m³</td>
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<td>NIOSH</td>
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<tr>
<td>Kaolin (Total)</td>
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<td>10 mg/m³</td>
<td>REL</td>
<td>2010</td>
<td>NIOSH</td>
</tr>
</tbody>
</table>
Exposure controls

**Personal protective equipment**
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

**Respiratory protection**
When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

**Hand protection**
Chemical resistant nitrile rubber gloves

**Eye protection**
Chemical resistant goggles must be worn.

**Skin and body protection**
Wear long-sleeved shirt and long pants and shoes plus socks.

**General protective measures**
Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water.
Keep and wash PPE separately from other laundry.
### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>tan</td>
</tr>
<tr>
<td>Physical State</td>
<td>water-dispersible granules</td>
</tr>
<tr>
<td>Odor</td>
<td>characteristic</td>
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<tr>
<td>Odour Threshold</td>
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<tr>
<td>pH</td>
<td>7.5</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>not applicable</td>
</tr>
<tr>
<td>Vapor Density (Air = 1)</td>
<td>not applicable</td>
</tr>
<tr>
<td>Bulk density</td>
<td>32 - 38 lb/ft³</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>not applicable</td>
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<tr>
<td>Boiling Point</td>
<td>not applicable</td>
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<tr>
<td>Melting / Freezing Point</td>
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<tr>
<td>Water solubility</td>
<td>dispersible</td>
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<tr>
<td>Minimum Ignition Energy</td>
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<tr>
<td>Decomposition temperature</td>
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</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>no data available</td>
</tr>
<tr>
<td>Viscosity</td>
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</tr>
<tr>
<td>Flash point</td>
<td>not applicable</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>not applicable</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>not applicable</td>
</tr>
<tr>
<td>Explosivity</td>
<td>no data available</td>
</tr>
</tbody>
</table>
SECTION 10: STABILITY AND REACTIVITY

Reactivity
Thermal decomposition: no data available

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use.

Conditions to avoid: Heat, flames and sparks.

Incompatible materials: Strong oxidizing agents, Acids

Hazardous decomposition products: Hydrogen chloride (HCl), Amines, Nitrogen oxides (NOx), Carbon monoxide

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes: Eye contact, Skin contact, Inhalation, Ingestion

Immediate Effects
Eye: Moderate eye irritation.

Skin: Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Harmful if absorbed through skin.

Ingestion: Harmful if swallowed.

Inhalation: Harmful if inhaled.

Information on toxicological effects
Acute oral toxicity: LD50 (rat) > 500 - 5,000 mg/kg

Acute inhalation toxicity: LC50 (rat) > 0.5 - 2.0 mg/l
Exposure time: 4 h
Determined in the form of dust.

LC50 (rat) > 2.0 - 8.0 mg/l
Exposure time: 1 h
Determined in the form of dust.
Extrapolated from the 4 hr LC50.

Acute dermal toxicity: LD50 (rat) > 2,000 - 5,000 mg/kg
Skin irritation
Moderate skin irritation. (rabbit)

Eye irritation
Mild eye irritation. (rabbit)

Sensitisation
(guinea pig)
May cause sensitisation by skin contact.

Assessment repeated dose toxicity
Triadimefon did not cause specific target organ toxicity in experimental animal studies.
Trifloxystrobin did not cause specific target organ toxicity in experimental animal studies.

Assessment Mutagenicity
Triadimefon was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Trifloxystrobin was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment Carcinogenicity
Triadimefon was not carcinogenic in a lifetime feeding study in rats. Triadimefon caused an increased incidence of tumours in mice in the following organ(s): liver. The mechanism that triggers these tumours is not relevant to humans.
Trifloxystrobin was not carcinogenic in lifetime feeding studies in rats and mice.

ACGIH
Crystalline quartz (respirable) 14808-60-7 Group A2

NTP
Crystalline quartz (respirable) 14808-60-7

IARC
Crystalline quartz (respirable) 14808-60-7 Overall evaluation: 1

OSHA
None.

Assessment toxicity to reproduction
Triadimefon caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. Triadimefon caused reduced fertility, a reduced pup survival. Trifloxystrobin caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. The reproduction toxicity seen with Trifloxystrobin is related to parental toxicity.

Assessment developmental toxicity
Triadimefon caused developmental toxicity in only at dose levels toxic to the dams. Triadimefon caused an increased incidence of non-specific malformations.
Trifloxystrobin caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Trifloxystrobin are related to maternal toxicity.

Further information
Acute toxicity studies have not been performed on this product as formulated.
Acute toxicity studies have been bridged from a similar formulation(s).
The non-acute information pertains to the active ingredient(s).
SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish

- LC50 (Rainbow trout (Oncorhynchus mykiss)) 4.08 mg/l
  Exposure time: 96 h
  The value mentioned relates to the active ingredient triadimefon.

- LC50 (Rainbow trout (Oncorhynchus mykiss)) 0.015 mg/l
  Exposure time: 96 h
  The value mentioned relates to the active ingredient trifloxystrobin.

Toxicity to aquatic invertebrates

- EC50 (Water flea (Daphnia magna)) 7.16 mg/l
  Exposure time: 48 h
  The value mentioned relates to the active ingredient triadimefon.

- EC50 (Water flea (Daphnia magna)) 0.016 mg/l
  Exposure time: 48 h
  The value mentioned relates to the active ingredient trifloxystrobin.

Toxicity to aquatic plants

- IC50 (Pseudokirchneriella subcapitata) 2.01 mg/l
  Exposure time: 120 h
  The value mentioned relates to the active ingredient triadimefon.

- IC50 (Desmodesmus subspicatus) 0.0053 mg/l
  Growth rate; Exposure time: 72 h
  The value mentioned relates to the active ingredient trifloxystrobin.

Biodegradability

- Triadimefon: not rapidly biodegradable
- Trifloxystrobin: not rapidly biodegradable

Koc

- Triadimefon: Koc: 150 - 510
- Trifloxystrobin: Koc: 2377

Bioaccumulation

- Triadimefon: Bioconcentration factor (BCF) 31
  Does not bioaccumulate.
- Trifloxystrobin: Bioconcentration factor (BCF) 431
  Does not bioaccumulate.

Mobility in soil

- Triadimefon: Moderately mobile in soils
- Trifloxystrobin: Slightly mobile in soils
Environmental precautions
Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Apply this product as specified on the label.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods
Product
Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Contaminated packaging
Do not re-use empty containers. Triple rinse containers. Completely empty container into application equipment, then dispose of empty container in a sanitary landfill, by incineration or by other procedures approved by state/provincial and local authorities. If burned, stay out of smoke. Follow advice on product label and/or leaflet.

RCRA Information
Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user’s responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

49CFR
Not dangerous goods / not hazardous material

IMDG
UN number 3077
Class 9
Packaging group III
Marine pollutant YES
Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (TRIFLOXYSTROBIN, TRIADIMEFON MIXTURE)

IATA
UN number 3077
Class 9
Packaging group: III  
Environm. Hazardous Mark: YES  
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (TRIFLOXYSROBIN, TRIADIMEFON MIXTURE )

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

**SECTION 15: REGULATORY INFORMATION**

**EPA Registration No.** 432-1513  
**US Federal Regulations**

**TSCA list**
- Sodium dodecylbenzenesulfonate 25155-30-0
- Crystalline quartz (respirable) 14808-60-7

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**
None.

**SARA Title III - Section 302 - Notification and Information**
None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**
- Triadimefon 43121-43-3 (25,000lbs)

**US States Regulatory Reporting**

**CA Prop65**
- This product contains a chemical known to the State of California to cause cancer.
- Crystalline quartz (respirable) 14808-60-7

**US State Right-To-Know Ingredients**
- Triadimefon 43121-43-3 (Developmental toxin)
- Triadimefon 43121-43-3 (Male reproductive toxin)
- Triadimefon 43121-43-3 (Female reproductive toxin)

**Canadian Regulations**

**Canadian Domestic Substance List**
- Sodium dodecylbenzenesulfonate 25155-30-0
- Crystalline quartz (respirable) 14808-60-7

**Environmental**

**CERCLA**
- Sodium dodecylbenzenesulfonate 25155-30-0 (1,000 lbs)

**Clean Water Section 307 Priority Pollutants**
None.

**Safe Drinking Water Act Maximum Contaminant Levels**
EPA/FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

**Signal word:** Caution!

**Hazard statements:**
- Moderate eye irritation.
- Harmful if swallowed, inhaled or absorbed through the skin.
- Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
- Avoid breathing dust or spray mist.
- Avoid contact with skin, eyes and clothing.

SECTION 16: OTHER INFORMATION

NFPA 704 (National Fire Protection Association):
- Health - 2
- Flammability - 1
- Instability - 1
- Others - none

- Health - 2
- Flammability - 1
- Physical Hazard - 1
- PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: Revised according to the current OSHA Hazard Communication Standard (29CFR1910.1200)

Revision Date: 01/06/2014

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.