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Product name	<b>AURORA™ 40 WG</b>	February 2019
Safety data sheet according to EU Reg. 1907/2006 as amended		Supersedes June 2018

## SAFETY DATA SHEET

# Aurora™ 40 WG

Revision: Sections containing a revision or new information are marked with a ♣.

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

- 1.1. **Product identifier** ..... **Aurora™ 40 WG**
- 1.2. **Relevant identified uses of the substance or mixture and uses advised against** ..... Can be used as herbicide only.
- 1.3. **Details of the supplier of the safety data sheet** **CHEMINOVA A/S**, a subsidiary of FMC Corporation  
Thyborønvej 78  
DK-7673 Harboøre  
Denmark  
[SDS.Ronland@fmc.com](mailto:SDS.Ronland@fmc.com)
- Local contact (South Africa) -** **FMC Chemicals (Pty) Ltd**  
Pegasus Building 1, Floor 2  
210 Amarand Ave  
Menlyn  
Pretoria, 0181  
South Africa
- 1.4. **Emergency telephone number** .... **For any emergency or poisoning contact:**  
Griffon Poison Information Centre (24 hrs)  
+27-(0)-82-446-8946
- For fire, leak, spill or other accident emergencies**  
+1 703 / 527 3887 (CHEMTREC - Collect)

### ♣ SECTION 2: HAZARDS IDENTIFICATION

- 2.1. **Classification of the substance or mixture** Hazards to the aquatic environment, acute: Category 1 (H400)  
chronic: Category 1 (H410)
- WHO classification ..... Class U (Unlikely to present acute hazard in normal use)
- Health hazards ..... Serious hazards to health are not expected. However, the product should always be treated with the usual care of handling chemicals.
- Environmental hazards ..... The product is very toxic to aquatic organisms.
- 2.2. **Label elements**  
According to EU Reg. 1272/2008 as amended  
Product identifier ..... Aurora 40WG

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Hazard pictogram (GHS09) .....



Signal word .....

Warning

Hazard statement

H410 .....

Very toxic to aquatic life with long lasting effects.

Supplementary hazard statement

EUH401 .....

To avoid risks to human health and the environment, comply with the instructions of use.

Precautionary statements

P273 .....

Avoid release to the environment.

P391 .....

Collect spillage.

P501 .....

Dispose of contents/container as hazardous waste.

2.3. **Other hazards** .....

None of the ingredients in the product meets the criteria for being PBT or vPvB.

### ♣ SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substances** .....

The product is a mixture, not a substance

3.2. **Mixtures** .....

See section 16 for full text of hazard statements.

#### Active ingredient

**Carfentrazone-ethyl** .....

Content: < 50% w/w

CAS name .....

Benzenepropanoic acid, 2,2-dichloro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazole-1-yl]-4-fluoro, ethyl ester  
128639-02-1

CAS no. ....

IUPAC name(s) .....

Ethyl 2-chloro-3-(2-chloro-5-(4-difluoromethyl)-3-methyl-5-oxo-4,5-dihydro-1H-1,2,4-triazol-1-yl)-4-fluorophenyl)propanoate  
Carfentrazone-ethyl

ISO name/EU name .....

None

EC no. (EINECS no.) .....

EU index no. ....

607-309-00-5

Molecular weight .....

412.2

Classification of the ingredient .....

Hazards to the aquatic environment, acute: Category 1 (H400)  
chronic: Category 1 (H410)

#### Reportable ingredient

D-Glycopyranose, oligomers, decyl octyl glycosides

Content (% w/w)	CAS no.	EC no. (NLP no.)	Classification
< 5	68515-73-1	500-220-1	Eye Dam. 1 (H318)

### ♣ SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures**

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Inhalation .....	If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.
Skin contact .....	Immediately remove contaminated clothing and footwear. Flush skin with water. Wash with water and soap. Get medical attention if irritation develops.
Eye contact .....	Immediately rinse eyes with much water or eyewash solution, occasionally opening eyelids, until no evidence of chemical remains. Remove contact lenses after a few minutes and rinse again. Get medical attention if irritation persists.
Ingestion .....	Let the exposed person rinse mouth and drink several glasses of water or milk, but not induce vomiting. If vomiting does occur, let him/her rinse mouth and drink fluids again. Get medical attention immediately.
4.2. <b>Most important symptoms and effects, both acute and delayed</b>	None known
4.3. <b>Indication of any immediate medical attention and special treatment needed</b>	Immediate medical attention is required in case of ingestion. It may be helpful to show this safety data sheet to physician.
Notes to physician .....	A specific antidote for exposure to this material is not known. Gastric lavage and/or the administration of activated charcoal can be considered. After decontamination, treatment should be directed at the control of symptoms and the clinical condition.

#### ♣ SECTION 5: FIRE-FIGHTING MEASURES

5.1. <b>Extinguishing media</b> .....	Dry chemical or carbon dioxide for small fires, water spray or foam for large fires. Avoid heavy hose streams.
5.2. <b>Special hazards arising from the substance or mixture</b>	The essential breakdown products are volatile, malodorous, toxic, irritant and inflammable compounds such as hydrogen chloride, hydrogen fluoride, nitrogen oxides, carbon monoxide, carbon dioxide and various chlorinated and fluorinated organic compounds.
5.3. <b>Advice for firefighters</b> .....	Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Fight fire from protected location or maximum possible distance. Dike area to prevent water runoff. Firemen should wear self-contained breathing apparatus and protective clothing.

#### ♣ SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. <b>Personal precautions, protective equipment and emergency procedures</b>	It is recommended to have a predetermined plan for the handling of spills. Empty, closable vessels for the collection of spills should be available.  In case of large spill (involving 10 tonnes of the product or more): 1. use personal protection equipment; see section 8
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2. call emergency telephone no.; see section 1
3. alert authorities.

Observe all safety precautions when cleaning up spills. Use personal protection equipment. Depending on the magnitude of the spill this may mean wearing respirator, face mask or eye protection, chemical resistant clothing, gloves and rubber boots.

Stop the source of the spill immediately if safe to do so.

- 6.2. **Environmental precautions** ..... Contain the spill to prevent any further contamination of surface, soil or water. Wash waters must be prevented from entering surface water drains. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body.
- 6.3. **Methods and materials for containment and cleaning up**
- It is recommended to consider possibilities to prevent damaging effects of spills, such as bunding or capping. See GHS (Annex 4, Section 6).
- If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should immediately be swept up or preferably vacuumed up using equipment with high efficiency final filter. Transfer to suitable containers. Clean area with strong industrial detergent and much water. Absorb wash liquid onto inert absorbent such as universal binder, Fuller's earth, bentonite or other absorbent clay and collect in suitable containers. The used containers should be properly closed and labelled.
- Large spills which soak into the ground should be dug up and transferred to suitable containers.
- Spills in water should be contained as much as possible by isolation of the contaminated water. The contaminated water must be collected and removed for treatment or disposal.
- 6.4. **Reference to other sections** ..... See subsection 8.2. for personal protection.  
See section 13 for disposal.

<b>♣ SECTION 7: HANDLING AND STORAGE</b>
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- 7.1. **Precautions for safe handling** .....
- In an industrial environment it is recommended to avoid all personal contact with the product, if possible by using closed systems with remote system control. The material should be handled by mechanical means as much as possible. Adequate ventilation or local exhaust ventilation is required. The exhaust gases should be filtered or treated otherwise. For personal protection in this situation, see section 8.
- For its use as a pesticide, first look for precautions and personal protection measures on the officially approved label on the packaging or for other official guidance or policy in force. If these are lacking, see section 8.
- Remove contaminated clothing immediately. Wash thoroughly after handling. Before removing gloves, wash them with water and soap. After work, take off all work clothes and footwear. Take a shower,

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using water and soap. Wear only clean clothes when leaving job. Wash protective clothing and protective equipment with water and soap after each use.

Do not discharge to the environment. Do not contaminate water when disposing of equipment wash waters. Collect all waste material and remains from cleaning equipment, etc., and dispose of as hazardous waste. See section 13 for disposal.

**7.2. Conditions for safe storage, including any incompatibilities**

The product is stable under normal conditions of warehouse storage.

Store in closed, labelled containers. The storage room should be constructed of incombustible material, closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. A warning sign reading "POISON" is recommended. The room should only be used for storage of chemicals. Food, drink, feed and seed should not be present. A hand wash station should be available.

**7.3. Specific end use(s) .....**

The product is a registered pesticide which may only be used for the applications it is registered for, in accordance with a label approved by the regulatory authorities.

**♣ SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1. Control parameters**

Personal exposure limits .....

To our knowledge not established for any of the ingredients in this product. However, personal exposure limits defined by local regulations may exist and must be observed.

**Carfentrazone-ethyl**

DNEL, systemic .....

0.6 mg/kg bw/day

PNEC, aquatic environment .....

1.1 µg/l

**8.2. Exposure controls .....**

When used in a closed system, personal protection equipment will not be required. The following is meant for other situations, when the use of a closed system is not possible, or when it is necessary to open the system. Consider the need to render equipment or piping systems non-hazardous before opening.

The precautions mentioned below are primarily meant for handling of the undiluted product and for preparing the spray solution, but can be recommended for spraying as well.

In cases of incidental high exposure, maximal personal protection may be necessary, such as respirator, face mask, chemical resistant coveralls.



Respiratory protection

The product does not automatically present an airborne exposure concern when handled carefully, but in the event of an accidental discharge of the material which produces a heavy vapour or dust, workers must put on officially approved respiratory protection equipment with a universal filter type including particle filter.

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Protective gloves .....

Wear chemical resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber or viton. The breakthrough times of these materials for the product are unknown, but it is expected that they will give adequate protection.



Eye protection .....

Wear safety glasses. It is recommended to have an eye wash fountain immediately available in the workplace when there is a potential for eye contact.



Other skin protection

Wear appropriate chemical resistant clothing to prevent skin contact depending on the extent of exposure. During most normal work situations where exposure to the material cannot be avoided for a limited time span, waterproof pants and apron of chemical resistant material or coveralls of polyethylene (PE) will be sufficient. Coveralls of PE must be discarded after use if contaminated. In cases of excessive or prolonged exposure, coveralls of barrier laminate may be required.

## ♣ SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on physical and chemical properties

Appearance .....	White to beige solid
Odour .....	Faint chemical
Odour threshold .....	Not determined
pH .....	5.44% dispersion in water: 7.5
Melting point/freezing point .....	Not determined
Initial boiling point and boiling range	Not determined
Flash point .....	Not determined
Evaporation rate .....	Not determined
Flammability (solid/gas) .....	Not highly flammable
Upper/lower flammability or explosive limits .....	Not determined
Vapour pressure .....	<b>Carfentrazone-ethyl</b> : $7.2 \times 10^{-6}$ Pa at 20°C
Vapour density .....	Not determined
Relative density .....	0.55
Solubility(ies) .....	Solubility of <b>carfentrazone-ethyl</b> at 20°C in ethanol > 2000 g/l hexane 30 g/l water 12 mg/l
Partition coefficient n-octanol/water	<b>Carfentrazone-ethyl</b> : $\log K_{ow} = 3.36$ at 20°C
Autoignition temperature .....	Not determined
Decomposition temperature .....	Not determined
Viscosity .....	Not determined
Explosive properties.....	Not explosive
Oxidising properties .....	Not oxidising

### 9.2. Other information

Miscibility ..... The product is dispersible in water.

## ♣ SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity ..... To our knowledge, the product has no special reactivities.

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- 10.2. **Chemical stability** ..... The product is stable during normal handling and storage at ambient temperatures.
- 10.3. **Possibility of hazardous reactions** None known.
- 10.4. **Conditions to avoid** ..... Heating of the product will evolve harmful and irritant vapours.
- 10.5. **Incompatible materials** ..... None known.
- 10.6. **Hazardous decomposition products** See subsection 5.2.

<b>♣ SECTION 11: TOXICOLOGICAL INFORMATION</b>
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- 11.1. **Information on toxicological effects** \* = Based on available data, the classification criteria are not met.

Product

- Acute toxicity ..... The product is not considered as harmful by single exposures. \* The acute toxicity is measured as:
- Route(s) of entry    - ingestion    LD<sub>50</sub>, oral, rat: > 5000 mg/kg  
                               - skin                LD<sub>50</sub>, dermal, rat: > 5000 mg/kg  
                               - inhalation    LC<sub>50</sub>, inhalation, rat: > 5.72 mg/l/4 h
- Skin corrosion/irritation ..... Not irritating to skin. \*
- Serious eye damage/irritation ..... Not irritating to eyes. \*
- Respiratory or skin sensitisation ... Does not cause skin sensitisation. \*
- Germ cell mutagenicity ..... The product contains no ingredients known to be mutagenic. \*
- Carcinogenicity ..... The product contains no ingredients known to be carcinogenic. \*
- Reproductive toxicity ..... The product contains no ingredients found to have adverse effects on reproduction. \*
- STOT – single exposure ..... To our knowledge, no specific effects have been observed after single exposure. \*
- STOT – repeated exposure ..... The following was measured on the active ingredient **carfentrazone-ethyl**:  
 NOAEL: 50 ppm (3 mg/kg bw/day) in a 2-year rat study. \*
- Aspiration hazard ..... The product does not present an aspiration pneumonia hazard. \*
- Symptoms and effects, acute and delayed ..... None known

Carfentrazone-ethyl

Toxicokinetics, metabolism and distribution    Carfentrazone-ethyl is rapidly absorbed and widely distributed in the body after oral intake. It is extensively metabolised and rapidly excreted, almost completely within 7 days. There is no evidence of accumulation.

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Acute toxicity .....		The substance is not considered as harmful. * The acute toxicity of the substance is measured as:
Route(s) of entry	- ingestion	LD <sub>50</sub> , oral, rat: > 5000 mg/kg
	- skin	LD <sub>50</sub> , dermal, rat: > 4000 mg/kg
	- inhalation	LC <sub>50</sub> , inhalation, rat: > 5.09 mg/l/4 h
Skin corrosion/irritation		Not irritating to skin. *
Serious eye damage/irritation .....		Not irritating to eyes. *
Respiratory or skin sensitisation ...		Not sensitising. *

*D-Glycopyranose, oligomers, decyl octyl glycosides*

Toxicokinetics, metabolism and distribution      The substance is readily absorbed after oral administration. It is extensively metabolised into natural body constituents and incorporated in normal metabolism. There is no risk of accumulation, except that it can be converted into fat and as such be stored in fat deposits in the body.

Acute toxicity .....		The substance is not considered as harmful by single exposure. * The acute toxicity is measured as:
Route(s) of entry	- ingestion	LD <sub>50</sub> , oral, rat: > 5000 mg/kg (method similar to OECD 401)
	- skin	LD <sub>50</sub> , dermal, rat: > 2000 mg/kg (method similar to OECD 402)
	- inhalation	LC <sub>50</sub> , inhalation, rat: not available (the substance has low volatility)
Skin corrosion/irritation .....		Moderately irritating to skin (method similar to OECD 404). *
Serious eye damage/irritation .....		Severely irritating to eyes (method similar to OECD 405).
Respiratory or skin sensitisation ...		Not a skin sensitizer (method similar to OECD 406). *

**♣ SECTION 12: ECOLOGICAL INFORMATION**

- 12.1. **Toxicity** .....      The product is very toxic to algae. It is considered less harmful to fish and aquatic invertebrates. It is considered as non-toxic to soil micro- and macroorganisms, birds and insects.
- The following has been measured on the product:
- 72-h E<sub>r</sub>C<sub>50</sub>, algae: 0.067 mg/l  
NOEC, chronic, algae: 0.0063 mg/l
- 12.2. **Persistence and degradability** ....      **Carfentrazone-ethyl** is not readily biodegradable. Primary degradation in the environment is rapid, usually less than one day, but degradation products are degraded much slower.
- The product contains small amounts of other ingredients which are not readily biodegradable and may not be degradable in a waste water treatment plant.
- 12.3. **Bioaccumulative potential** .....      See section 9 for octanol-water partition coefficient.



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**Carfentrazone-ethyl** is not expected to bioaccumulate either. A Bioaccumulation Factor (BCF) of 176 was measured for whole fish.

12.4. **Mobility in soil** ..... **Carfentrazone-ethyl** and its soil metabolites have a potential for being mobile, but were not detected in a field leaching study.

12.5. **Results of PBT and vPvB assessment** ..... None of the ingredients meets the criteria for being PBT or vPvB.

12.6. **Other adverse effects** ..... Other relevant hazardous effects in the environment are not known.

**♣ SECTION 13: DISPOSAL CONSIDERATIONS**

13.1. **Waste treatment methods** ..... Remaining quantities of the material and empty but unclean packaging should be regarded as hazardous waste.

Disposal of waste and packagings must always be in accordance with all applicable local regulations.

Disposal of product ..... According to the Waste Framework Directive (2008/98/EC), possibilities for reuse or reprocessing should first be considered. If this is not feasible, the material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing.

Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Disposal of packaging ..... It is recommended to consider possible ways of disposal in the following order:  
 1. Reuse or recycling should first be considered. If offered for recycling, containers must be emptied and triply rinsed (or equivalent). Do not discharge rinsing water to sewer systems.  
 2. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.  
 3. Delivery of the packaging to a licensed service for disposal of hazardous waste.  
 4. Disposal in a landfill or burning in open air should only occur as a last resort. For disposal in a landfill containers should be emptied completely, rinsed and punctured to make them unusable for other purposes. If burned, stay out of smoke.

**♣ SECTION 14: TRANSPORT INFORMATION**

ADR/RID/IMDG/IATA/ICAO classification

14.1. **UN number** ..... 3077

14.2. **UN proper shipping name** ..... Environmentally hazardous substance, solid, n.o.s. (carfentrazone-ethyl)

14.3. **Transport hazard class(es)** ..... 9

14.4. **Packing group** ..... III

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- 14.5. **Environmental hazards** ..... Marine pollutant
- 14.6. **Special precautions for user** ..... Avoid any unnecessary contact with the product. Misuse can result in damage to health. Do not discharge to the environment.
- 14.7. **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code** ..... The product is not transported in bulk by ship.

#### ♣ SECTION 15: REGULATORY INFORMATION

- 15.1. **Safety, health and environmental regulations/legislation specific for the substance or mixture** ..... Seveso category (Dir. 2012/18/EU): dangerous for the environment.
- 15.2. **Chemical safety assessment** ..... A chemical safety assessment is not required to be included for this product.

#### ♣ SECTION 16: OTHER INFORMATION

- Relevant changes in the safety data sheet Numerous changes have been made to adapt the format of the safety data sheet, but these do not concern new information on hazardous properties.
- List of abbreviations .....
- |                                |  |
|--------------------------------|--|
| CAS                            | Chemical Abstracts Service   |
| Dir.                           | Directive  |
| DNEL                           | Derived No Effect Level  |
| EC                             | European Community   |
| E <sub>r</sub> C <sub>50</sub> | 50% Effect Concentration based on growth   |
| EINECS                         | European INventory of Existing Commercial Chemical Substances                                    |
| GHS                            | Globally Harmonized classification and labelling System of chemicals, Fifth revised edition 2013 |
| IBC                            | International Bulk Chemical code   |
| IUPAC                          | International Union of Pure and Applied Chemistry  |
| LC <sub>50</sub>               | 50% Lethal Concentration   |
| LD <sub>50</sub>               | 50% Lethal Dose  |
| MARPOL                         | Set of rules from the International Maritime Organisation (IMO) for prevention of sea pollution  |
| NLP                            | No Longer Polymer  |
| NOAEL                          | No Observed Adverse Effect Level   |
| NOEC                           | No Observed Effect Concentration   |
| n.o.s.                         | Not otherwise specified  |
| OECD                           | Organisation for Economic Cooperation and Development  |
| PBT                            | Persistent, Bioaccumulative, Toxic   |
| PNEC                           | Predicted No Effect Concentration  |
| Reg.                           | Regulation   |
| STOT                           | Specific Target Organ Toxicity   |
| vPvB                           | very Persistent, very Bioaccumulative  |
| WG                             | Water dispersible Granules   |
| WHO                            | World Health Organisation  |
- References ..... Data measured on this product are unpublished company data. Data on

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ingredients are available from published literature and can be found several places.

Method for classification .....	Test data
Used hazard statements .....	<p>H318 Causes serious eye damage.</p> <p>H400 Very toxic to aquatic life.</p> <p>H410 Very toxic to aquatic life with long lasting effects..</p> <p>EUH401 To avoid risks to human health and the environment, comply with the instructions of use.</p>
Advice on training .....	This material should only be used by persons who are made aware of its hazardous properties and have been instructed in the required safety precautions.

The information provided in this safety data sheet is believed to be accurate and reliable, but uses of the product vary and situations unforeseen by FMC Corporation may exist. The user has to check the validity of the information under local circumstances.

Prepared by: FMC Corporation / Cheminova A/S / GHB