

## Material Safety Data Sheet

# Ethos 275 EC L8740 (Act 36 of 1947)

1) PRODUCT AND COMPANY IDENTIFICATION	
Product name:	ETHOS 275 EC
Other means of identification:	Difenoconazole, Penconazole 275 g/L EC
Chemical Name:	Difenoconazole: <i>cis,trans</i> -3-chloro-4-[4methyl2-(1 <i>H</i> -1,2,4triazol-1-ylmethyl)-1,3dioxolan-2-yl]phenyl 4-chlorophenyl ether (IUPAC) Penconazole: 1-(2,4-dichloro-β-propylphenethyl)-1 <i>H</i> ,1,2,4triazole (IUPAC)
Recommended use:	Fungicide
Restrictions on use:	Agriculture
UN No:	1993
Distributed by:	MERIDIAN AGRITECH P O BOX 436 MODDERFONTEIN TEL 011 8228509 FAX 0866901386 MOBILE: 0834006056 <a href="http://www.agritech.co.za">www.agritech.co.za</a>
Emergency Number:	POISON CENTRE (UNITAS HOSPITAL) 012 664 1100 TYGERBERG:021 931 6129 RED CROSS: 021 689 5227 RAPID SPILL RESPONSE 0800 775 3305
2) HAZARDS IDENTIFICATION	
Classification of the substance/mixture:	Flammable Liquid Acute Toxicity (Oral) Category 4 Acute Toxicity (Dermal) Category 4 Acute Toxicity (Inhalation) Category 4 Skin Irritation Category 3 Eye Damage Category 1 Reproductive Toxicity Category 2 Aspiration Hazard Category 1 Aquatic Acute Category 1 Aquatic Chronic Category 1
Label Elements: Globally Harmonized System, EU (GHS):	<p>Pictograms:</p>  <p>Signal word: Danger</p> <p><b>Hazard Statements:</b>  <b>H226:</b> Flammable liquid and vapour.  <b>H302:</b> Harmful if swallowed.  <b>H304:</b> May be fatal if swallowed and enters airways.  <b>H315:</b> Causes skin irritation.  <b>H318:</b> Causes serious eye damage.  <b>H319:</b> Causes serious eye irritation.</p>

<p>According to Directive 67/548/EEC No. 1272/2008 [CLP]</p>	<p><b>H332:</b> Harmful if inhaled.  <b>H361d:</b> Suspected of damaging the unborn child.  <b>H400:</b> Very toxic to aquatic life.  <b>H410:</b> Very toxic to aquatic life with long-lasting effects.</p> <p><b>Precautionary Statements:</b>  <b>P201:</b> Obtain special instructions before use.  <b>P202:</b> Do not handle until all safety precautions have been read and understood.  <b>P260:</b> Do not breathe vapours/mist/spray/fumes.  <b>P262:</b> Do not get in eyes, on skin, or on clothing.  <b>P270:</b> Do not eat, drink or smoke when using the product.  <b>P272:</b> Contaminated work clothing should not be allowed out of the workplace.  <b>P273:</b> Avoid release to the environment.  <b>P280:</b> Wear protective gloves, protective clothing, eye protection.  <b>P321:</b> Specific treatment (See First aid measures on this label)  <b>P362+P364:</b> Take off contaminated clothing and wash it before reuse.  <b>P405:</b> Store locked up.</p> <p><b>Hazard Symbol(s):</b>  Xn – dangerous to health  Xi - Irritant  N – dangerous for the environment  F - Flammable</p> <p><b>Risk phrases:</b>  <b>R10:</b> Flammable.  <b>R20/22:</b> Harmful by inhalation and if swallowed.  <b>R37/38:</b> Irritating to eyes, respiratory system and skin.  <b>R41:</b> Risk of serious damage to eyes.  <b>R50/53:</b> Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</p> <p><b>Safety phrases:</b>  <b>S1/2:</b> Keep locked up and out of reach children.  <b>S13:</b> Keep away from food, drink and animal feeding stuffs.  <b>S16:</b> Keep away from sources of ignition – No smoking.  <b>S20/21:</b> When using do not eat, drink or smoke.  <b>S23:</b> Do not breathe vapour/spray.  <b>S24/25:</b> Avoid contact with skin and eyes.  <b>S36/37/39:</b> Wear suitable protective clothing, gloves and eye/face protection.</p>
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### 3) COMPOSITION / INFORMATION ON INGREDIENTS

#### 3.1 Substances:

Not applicable

#### 3.2 Mixtures:

Chemical name	Concentration	CAS No.	EC No.	Classification according to Regulation EC 1272/2008 (CLP)
Difenoconazole	150 g/L	119446-68-3	601-613-1	Acute Tox 4 (H302) Eye Irrit. 2 (H319) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Penconazole	125 g/L	66246-88-6	266-275-6	Acute Tox 4 (H302) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) Repr. 2 (H361d)
Aromatic hydrocarbons	47%	64742-94-5	265-198-5	Asp. Tox 1 (304)
Cyclohexanone	15%	108-94-1	203-631-1	Flam. Liq. 3 (H226) Acute Tox 4 (H332)
4-C10-14 alkyl derivatives	<5%	90194-26-6	290-635-1	Skin Irrit. 2 (H315)

				Eye Dam. 1 (H318)
4) FIRST AID MEASURES				
<b>Description of First-Aid Measures:</b>				
Inhalation:		Remove patient to fresh air. Lie down and keep warm and rested. If breathing is shallow or has stopped ensure airway is clear and apply resuscitation. Seek medical assistance immediately.		
Skin contact:		Immediately flush body and clothes with large amounts of water. Remove contaminated clothing and footwear. Wash affected areas with soap and water. Do not rub skin. If a large area is affected seek medical assistance.		
Eye contact:		Flush eyes with plenty of water for 15 minutes holding eyelids open if necessary. Seek medical assistance immediately.		
Ingestion:		Rinse mouth thoroughly. Never give anything by mouth to an unconscious person. If swallowed do NOT induce vomiting. Prevent aspiration if vomiting occurs. Administer activated charcoal in a glass of water. For advice, contact the National Poisons Centre. Seek medical assistance immediately.		
Most important symptoms and effects, both acute and delayed:		The product contains solvent that may cause chemical pneumonitis if aspirated into lungs. Onset of pulmonary injury may be delayed.		
Indication of any immediate medical attention and special treatment needed:		No specific antidote. Treat symptomatically. Perform gastric lavage if ingested and administer activated charcoal.		
5) FIRE-FIGHTING MEASURES				
Extinguishing Media:		Water fog, Carbon dioxide or dry chemical, halon or alcohol-resistant foam.		
Unsuitable Extinguishing Media:		Do not use high volume water jet, due to contamination risk.		
Specific Hazards arising from the substance/mixture:		Fire may produce irritating or poisonous vapours (toxic oxides of nitrogen and corrosive bromine), mists or other products of combustion.		
Fire Fighting:		Remove spectators from surrounding area. Isolate the fire area and evacuate downwind. Fight fire from maximum distance and use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind. Remove container from fire area if possible and without risk. Water can be used to cool unaffected containers but must be contained for later disposal. Dike fire control water for later disposal. Do not scatter the material. Avoid pollution of waterways.		
Protective clothing:		Full protective clothing and self-contained breathing apparatus.		
6) ACCIDENTAL RELEASE MEASURES				
Personal precautions, protective equipment and emergency procedures:		Avoid contact with skin and eyes. Do not breathe in spray or fumes. For personal protection see Section 8.		
Environmental precautions:		Do not contaminate waterways, drains and groundwater. If contamination of waterways, drains, rivers or lakes is unavoidable, warn the local authorities (Police and Department of Water/Environmental affairs) immediately.		
Methods and material for containment and cleaning up:		Wear protective clothing. Clear area of unprotected personnel and ventilate the area. Sweep up solids without generating dust and spreading. Contain and absorb liquid spills with inert material and place in waste containers. If spill does enter waterways contact the local authority. Collect in an appropriate sealable container for disposal in an approved landfill. Wash area with water and detergent and absorb with further inert material. Do not get water inside containers. Dispose of waste safely in an approved landfill. Open burning or dumping of this material is prohibited.		

<b>7) HANDLING &amp; STORAGE</b>	
<p><b>Precautions for Safe Handling:</b></p> <p><b>Conditions for Safe Storage, including any incompatibilities:</b></p>	<p>Avoid skin and eye contact and inhalation of spray mist or fumes. Ensure adequate ventilation. Do not handle near sources of ignition. Do not directly apply to areas where surface water is present. Cleaning water should be disposed of in appropriate manner.</p> <p>Store in original container tightly closed and in a locked, dry, cool, ventilated area away from foodstuffs, fertilisers and seeds and sources of ignition. Protect from extreme temperatures. Keep out of reach of children.</p>
<b>8) EXPOSURE CONTROL / PERSONAL PROTECTION</b>	
<p><b>Appropriate Engineering Controls:</b></p> <p><b>Control Parameters: Occupational exposure limits:</b></p> <p><b><u>PERSONAL PROTECTIVE EQUIPMENT:</u></b></p> <p><b>Clothing:</b></p> <p><b>Gloves:</b></p> <p><b>Eye protection:</b></p> <p><b>Emergency eye wash:</b></p>	<p>It is essential to provide adequate ventilation. The measures appropriate for a particular work site depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.</p> <p>None known.</p> <p>Employee must wear appropriate protective (impervious) clothing and full-face respirator to prevent skin contact with this substance.</p> <p>Employee must wear appropriate chemical-resistant gloves to prevent contact with this substance.</p> <p>The use of safety goggles or full-face shield is recommended.</p> <p><b>Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.</b></p>
<b>9) PHYSICAL &amp; CHEMICAL PROPERTIES</b>	
<b>Form:</b>	Liquid
<b>Colour:</b>	Cream
<b>Odour:</b>	Characteristic odour
<b>Solubility:</b>	Water dispersible
<b>pH:</b>	7,7
<b>Odour threshold:</b>	Not available
<b>Melting point / Freezing point</b>	82 – 83°C (Difenoconazole), 60.3 – 61°C (Penconazole)
<b>Initial boiling point and boiling range</b>	Not available
<b>Flash point:</b>	27°C
<b>Evaporation rate:</b>	Not available
<b>Flammability (solid, gas)</b>	Not available
<b>Upper/ lower flammability or explosive limits:</b>	Not available
<b>Vapour pressure:</b>	3.3 x 10 <sup>-5</sup> mPa (Difenoconazole), 0.37 mPa (Penconazole) @25°C
<b>Vapour density:</b>	Not available
<b>Relative density:</b>	Not available
<b>Partition coefficient: n-octanol/water</b>	Log K <sub>ow</sub> 4.4 (Difenoconazole), 3.1 (Penconazole)
<b>Auto-ignition temperature:</b>	Not available
<b>Decomposition Temperature:</b>	Not available
<b>Viscosity:</b>	Not available
<b>10) STABILITY &amp; REACTIVITY</b>	
<p><b>Reactivity:</b></p> <p><b>Chemical Stability:</b></p> <p><b>Possibility of hazardous reactions:</b></p> <p><b>Conditions to avoid:</b></p> <p><b>Incompatible materials:</b></p> <p><b>Hazardous decomposition product(s):</b></p>	<p>No hazardous reactions if stored and handled as indicated.</p> <p>When stored appropriately this product should show no significant degradation for 2 years from the date of manufacture.</p> <p>None known.</p> <p>Keep the product in a cool, dry place at below 30°C. Avoid exposure to heat, sunlight, flames and ignition sources.</p> <p>None known.</p> <p>Fire may produce harmful combustion products, such as carbon monoxide and organic components, which are toxic and irritating.</p>
<b>11) TOXICOLOGICAL INFORMATION</b>	

<b>Acute Toxicity: Difenoconazole</b> <b>Oral:</b> <b>Dermal:</b> <b>Inhalation:</b>	LD50 > 1400 mg/L, rat. LD50 > 2010 mg/kg, rabbit LC50 (4 h) >3300 mg/m <sup>3</sup> air, rat
<b>Acute Toxicity: Penconazole</b> <b>Oral:</b> <b>Dermal:</b> <b>Inhalation:</b>	LD50 > 2000 mg/L, rat. LD50 > 3000 mg/kg, rat LC50 (4 h) >4000 mg/m <sup>3</sup> air, rat
<b>Skin Corrosion/Irritation:</b>	Moderate skin irritant.
<b>Serious Eye Damage/Irritation:</b>	Severe eye irritant.
<b>Respiratory or Skin Sensitization:</b>	Animal test did not cause sensitization by skin contact, guinea pig.
<b>Germ Cell Mutagenicity:</b>	No information available.
<b>Carcinogenicity:</b>	No information available.
<b>Reproductive Toxicity:</b>	Suspected of damaging the unborn child.
<b>STOT-SE:</b>	No information available.
<b>STOT-RE:</b>	No information available.
<b>Aspiration Hazard:</b>	May be fatal if swallowed and enters airways.
<b>12) ECOLOGICAL INFORMATION</b>	
<b>Ecotoxicity: Difenoconazole</b> <b>Birds:</b> <b>Fish:</b> <b>Daphnia:</b> <b>Algae:</b> <b>Worms:</b> <b>Bees:</b>	Oral LD <sub>50</sub> (9-11d) Japanese quail: > 2000 mg/kg. Mallard ducks: > 2150 mg/kg. LC <sub>50</sub> (96 hours) Rainbow trout: 0.81 mg/l. Bluegill sunfish: 1.2 mg/l. LC <sub>50</sub> (48 hours) 0.77 mg/l. EC <sub>50</sub> (72 h) for <i>Scenedesmus subspicatus</i> 0.032-1.2 mg/l. LC50 for earthworms > 610 mg/kg dry soil. LD50 (oral): > 18 µg/bee. LC50 (contact): > 100 µg/bee.
<b>Ecotoxicity: Penconazole</b> <b>Birds:</b> <b>Fish:</b> <b>Daphnia:</b> <b>Algae:</b> <b>Worms:</b> <b>Bees:</b>	Oral LD <sub>50</sub> (8 d) Japanese quail: 2424 mg/kg. Mallard ducks: > 1590 mg/kg. LC <sub>50</sub> (96 hours) Rainbow trout: 1.7-4.3 mg/l. Bluegill sunfish: 2.1-2.8 mg/l. LC <sub>50</sub> (48 hours) 7-11 mg/l. EC50 (3 d) for <i>Pseudokirchneriella subcapitata</i> 1.7 mg/l. LC50 (14 d) for earthworms > 1000 mg/kg. LD50 (oral and topical) >5 µg/bee.
<b>Persistence and Degradability:</b>	<b>Difenoconazole:</b> Soil dissipation rate is slow and dependent on application rate; DT <sub>50</sub> 3 mo–1 y. Hydrolytically stable at pH 5–9 (25 °C). Undergoes indirect photolysis in (sterile) natural water; DT <sub>50</sub> 4.6 d. In standard lab. water-sediment systems (n=2) in the dark, rapid dissipation from the water, DT <sub>50</sub> 1–3 d, but slow degradation in whole system, DT <sub>50</sub> c. 8 mo. <b>Penconazole:</b> Soil DT <sub>50</sub> (aerobic, 20–25 °C, lab.) 61–188 d; (field) 67–107 d. Normalised K <sub>oc(ads)</sub> 786–4120 ml/g. In aquatic systems, DT <sub>50</sub> from water 2–3 d (sorption to sediment), from sediment 505 to >706 d. Insignificant hydrolytic and photolytic degradation in water.
<b>Bio-accumulative Potential:</b>	<b>Difenoconazole:</b> No evidence for accumulation. <b>Penconazole:</b> No evidence for accumulation.
<b>Mobility in Soil:</b>	<b>Difenoconazole:</b> Practically immobile in soil, strong adsorption to soil particles (mean adsorption coefficient normalised to organic carbon, K <sub>oc,ads</sub> 4545 ml/g), low potential to leach below top soil layer. <b>Penconazole:</b> Immobile in soil.
<b>13) DISPOSAL CONSIDERATIONS</b>	
<b>Waste Disposal:</b>	Waste should not be re-used. Do not contaminate water, food or feed by disposal. Open dumping or burning of this pesticide is prohibited. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.
<b>Container Disposal:</b>	Refer to the product label for instructions. Container Refilling and Disposal: If the container is to be refilled, do not rinse with any material or introduce any pesticide other than this product. Add rinsing to the contents of the spray tank before destroying the container in the prescribed manner. <b>DO NO REUSE THE CONTAINER FOR ANY OTHER PURPOSE.</b> Destroy it by perforation and flattening and bury in an approved dumpsite.
<b>14) TRANSPORTATION INFORMATION</b>	
<b>Road Transport ADR / IRD:</b>	UN NUMBER: 1993 UN Proper Shipping name: Flammable liquid, N.O.S. (difenoconazole 150 g/l; penconazole 125 g/l)

	Transport Hazard Class: 3 Packaging group: III Labelling no: 3 Environmental Hazards: Not applicable Special Precautions for User: Read safety instructions, SDS and emergency procedures before handling.
<b>Maritime Transport IMDG / IMO:</b>	UN NUMBER: 1993 UN Proper Shipping name: Flammable liquid, N.O.S. (difenoconazole 150 g/l; penconazole 125 g/l) Transport Hazard Class: 3 Packaging group: III Labelling no: 3 Environmental Hazards: Marine Pollutant Special Precautions for User: Read safety instructions, SDS and emergency procedures before handling. 
<b>Air Transport ICAO / IATA:</b>	Not regulated. Possible optional classification as per IATA "Special Provision A97",
<b>Transport in Bulk (according to Annex II of MARPOL 73/78 and the IBC Code):</b>	No transport in bulk according to the IBC Code.
<b>15) REGULATORY INFORMATION</b>	
<b>Safety, health and environmental regulations/legislation specific for the substance/mixture:</b>	For the user of this plant-protective product applies: 'To avoid risks to man and the environment, comply with the instructions for use.' (Directive 1999/45/EC, Article 10, No. 1.2)
<b>Chemical Safety Assessment:</b>	Advice on product handling can be found in sections 7 and 8 of this safety data sheet.
<b>16) OTHER INFORMATION</b>	
<p>All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the product as such. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear.</p> <p>It is the responsibility of persons in receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with this product. If the recipient subsequently produces formulation(s) containing this product, it is the recipient's sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS. The information contained herein is provided in good faith but makes no representation as to its comprehensiveness or accuracy. A properly trained person using this product intends this document only as a guide to the appropriate handling of the material. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.</p> <p>MERIDIAN AGRITECH MAKES NO REPRESENTATION OR WARRANTIES, EITHER EXPRESSES OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANT ABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MERIDIAN AGRITECH (PTY) LTD WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.</p> <p>Date of issue: 25/06/2010  Date of revision: 26/04/2016, 08/01/2021</p> <p><b>Abbreviations and acronyms:</b></p> <ol style="list-style-type: none"> <li>1. CAS number: Chemical Abstracts Service number.</li> <li>2. CLP: Classification, Labelling, Packaging.</li> <li>3. LD<sub>50</sub>: Lethal Dose for 50% of the test population.</li> <li>4. LC<sub>50</sub>: Lethal Concentration for 50% of the test population.</li> <li>5. DT<sub>50</sub>: Half-life.</li> <li>6. GHS: Globally Harmonised System (of Classification and Labelling of Chemicals).</li> <li>7. STOT: Specific Target Organ Toxicity</li> <li>8. SE: Single exposure</li> <li>9. RE: Repeated exposure</li> </ol> <p><b>Literature References:</b></p> <ul style="list-style-type: none"> <li>• GHS: <a href="http://www.ccohs.ca/oshanswers/chemicals/ghs.html">www.ccohs.ca/oshanswers/chemicals/ghs.html</a></li> <li>• ECHA: <a href="https://echa.europa.eu/search-chemicals">https://echa.europa.eu/search-chemicals</a></li> </ul>	