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MATERIAL SAFETY DATA SHEET

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N/R In Product Identification section means Not Regulated as a Dangerous Good and no UN number is allocated.

ISSUED DUPONT 09/03/04

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PRODUCT: DUPONT NUSTAR® DF® FUNGICIDE

Hazardous According to Criteria of NOHSC.

PRODUCT IDENTIFICATION

UN No: N/R Poisons: S6 (Fed)

Tradenames: Nustar® DF® fungicide
Manuf.: DuPont
ManCode:

Use:
For the curative and protective control of scab (Black Spot) of apples and pears and for the control of powdery mildew of apples and grapevines.

Ingredients:	CAS No:	Proportion:
Flusilazole	85509-19-9	20 %
Inert Ingredients		80 %

Physical Description / Properties

Appearance:
Odour: Slight lignin sulphonate
Colour: Light brown
Form: Solid granules, dry flowable

Other Properties:

Bulk density:	0.58 g/cm ³
Chemical family:	Triazole
pH:	9 at 20°C (at 10 g/L H ₂ O)
Autoignition Temperature:	525 °C
Decomposition Temperature:	from 300°C
Solubility (water):	dispersible
Partition Coefficient (n-octanol/water):	5550 (pH 7) (flusilazole)
Explosion Limits:	- lower 0.173 vol. %

HEALTH HAZARD INFORMATION

Acute Effects

Eye:
Classified as an eye irritant according to NOHSC. Attacks eyes. Causes substantial but temporary eye injury.

Skin:
May irritate skin, slightly toxic by contact. Classified as a skin irritant but not a skin sensitiser.

Inhaled:
May irritate the throat. Not classified as a respiratory irritant according to the criteria of NOHSC.

Swallowed:
Slightly toxic by ingestion. Not classified as hazardous by inhalation according to the criteria of NOHSC.

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**PRODUCT: DUPONT NUSTAR® DF® FUNGICIDE**

HEALTH HAZARD INFORMATION (Continued)

Chronic Effects

None established for formulated product.

Flusilazole:

Repeated oral dosing resulted in increased liver weights, reversible changes of the bladder, kidneys, testes, epididymides, and liver, slight haemolytic effect, and reduced body weight gain. A 90 day feeding study in mice which included lethal dose levels showed high dose effects of heart muscle degeneration and pneumonitis in addition to some of the effects listed above. Long term oral dosing caused increased liver weights, mild inflammatory response in the liver and stomach, clinical chemical and haematological changes. Animal testing indicates that this compound is a weak carcinogen at high doses. All tumour types appeared in the presence of significant chronic toxicity in the target tissues and would not be expected to present a significant risk to humans exposed to much lower levels of flusilazole. In a two generation feeding study, there was an increase in gestation length, were fewer viable pups born and lower weanling weights in exposed animals; however, these effects only occurred at dose levels that caused other toxicity in the parental animals. Therefore, this compound is not considered a reproductive hazard. Tests in animals indicate that the compound may be a weak developmental toxicant. The compound does not produce genetic damage in bacterial or mammalian cell cultures or animals. It has not been tested for heritable genetic damage.

First Aid**Eye:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Seek Medical attention.

Skin:

In case of contact, immediately wash skin with soap and plenty of water. Wash contaminated clothing before reuse.

Inhaled:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek Medical attention.

Swallowed:

If swallowed, seek medical attention. Never give anything by mouth to an unconscious person.

Advice to Doctor:

No specific requirements. Treat symptomatically.

Toxicity Data:

Acute oral LD₅₀ (rat): > 4000 mg/kg (male): 3000 mg/kg (female)

Acute dermal LD₅₀ (rabbit): > 2000 mg/kg

4 hr Inhalation LC₅₀ (rat): > 4.3 mg/L

PRECAUTIONS FOR USE**Exposure Standards:**

None established for formulated product.

Flusilazole:

AEL (Du Pont): 0.5 mg/m³ (8 hr TWA)

Engineering Controls:

Use only with adequate ventilation.

Personal Protection:

Attacks eyes and may irritate skin. Avoid contact with eyes and skin. **DO NOT** inhale dust. Protect eyes while using. When using the product wear face shield or goggles. Wash hands after use. After each day's use, wash face shield or goggles and contaminated clothing.

Flammability:

Keep away from heat, sparks and flames.

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**PRODUCT: DUPONT NUSTAR® DF® FUNGICIDE**

PRECAUTIONS FOR USE (Continued)

Environment:

- 96 h LC₅₀ (fish): > 8mg/L
- 48 h EC₅₀ (daphnia): 21.4 mg/L
- 72 h EC₅₀ (algae): 4.4 mg/L (growth rate)
- 8 day LC₅₀ (mallard duck): 1584 mg/kg (flusilazole)
- 8 day LC₅₀ (bobwhite quail): > 5620 mg/kg (flusilazole)
- Bioaccumulation: log POW = 3.74

SAFE HANDLING INFORMATION

Storage and Transport:

Keep container tightly closed. **DO NOT** consume food, drink or tobacco in the areas where they may become contaminated with this material. Store in closed original containers in a cool, well ventilated area out of direct sunlight. **DO NOT** contaminate water, other pesticides, fertilisers, food or feed with this product.

Spills and Disposal:

Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with cleanup. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Shovel or sweep up. Never return to container for reuse. Scoop into bags or boxes with plastic or aluminium shovel. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State, and Local regulations. Remove non-usable solid material and / or contaminated soil, for disposal in an approved and permitted landfill. **DO NOT** reuse container. Triple rinse the container then puncture and dispose of in a sanitary landfill, or by another approved method. **DO NOT** burn empty containers or product.

Reactivity Data:

Stable at normal temperatures and storage conditions. No incompatibilities reasonably foreseeable. Decomposition will not occur. Polymerisation will not occur.

Fire/Explosion Hazard:

Not a fire or explosion hazard. Like most organic powders or crystals, under severe dusting conditions, this material may form explosive mixtures in air. Evacuate personnel to a safe area. Wear self-contained breathing apparatus and full protective equipment. Suitable extinguishing media: water spray, dry powder, foam, carbon dioxide (CO₂). On small fires, if area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the contamination hazard. There is a possibility of generating hazardous gases during a fire due to presence of F and CN groups, but material will not burn vigorously.

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**PRODUCT: DUPONT NUSTAR® DF® FUNGICIDE****REGULATORY INFORMATION**

Package and Labelling: S6 (Fed)
Contains: Flusilazole 20 %
Symbol: N – Dangerous to the environment.

Risk Phrases:

R36 Irritating to eyes.
R38 Irritating to skin.
R40 Limited evidence of carcinogenic effect.
R61 May cause harm to the unborn child.
R51/53 Toxic to aquatic organisms, may cause long term adverse effects on the aquatic environment.

Safety Phrases:

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37 Wear suitable protective clothing and gloves.
S45 In case of accident or if you feel unwell, seek medical advice immediately.
S53 Avoid exposure – obtain special instructions before use.
S35 This material and its container must be disposed of in a safe way.
S57 Use appropriate containment to avoid environmental contamination.

SOURCE INFORMATION**Technical Data:**

Source MSDS: US-DU005717, revised 08/08/2001
EU000000587/N/NS, revised 10/04/2003

ADDITIONAL INFORMATION**Contact Points:**

For sales, technical, and product related enquiries contact DuPont's North Sydney office on (02) 9923 6111. Outside the Sydney metropolitan area 1800 252 997 is a toll free number to North Sydney Office. To assist communications, ask for the Customer Service, Technical, or Marketing personnel for the product family relative to the inquiry.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.