

SAFETY DATA SHEET

Date: 22, August, 2017
Serial No.: AGG10001C3b_00

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME **Dinotefuran 20SG**

USE OF PRODUCT Insecticide

COMPANY IDENTIFICATION

Mitsui Chemicals Agro, Inc.
Nihonbashi Dia Building, 1-19-1, Nihonbashi, Chuo-ku, Tokyo
103-0027, JAPAN
Telephone: +81-3-5290-2810
Telefax: +81-3-3231-1183

EMERGENCY TELEPHONE NUMBER

Mitsui Chemicals Agro, Inc. +81-3-5290-2810 (Office hours only; Japan standard time: JST)

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Acute Toxicity	
Oral	Not classified
Dermal	Not classified
Inhalation	Not classified
Serious eye damage/eye irritation	Not classified
Skin sensitization	Not classified
Aquatic hazard	
Acute	Not classified
Chronic	Category 1

GHS LABEL ELEMENTS

Hazard Pictograms



Signal Word

Warning

Hazard Statements

H410: Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention

P273: Avoid release to the environment.

Response

P391: Collect spillage.

Disposal

P501: Dispose of contents or container in accordance with local, regional, national and international regulations.

OTHER HAZARDS

Toxic to bees and silkworms.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	%	CAS No.
Dinotefuran (*)	20	165252-70-0
Others	80	-

* *N*-methyl-*N'*-nitro-*N''*-((tetrahydro-3-furyl)methyl)guanidine
(*RS*)-1-methyl-2-nitro-3-(tetrahydro-3-furylmethyl)guanidine

Occupational exposure limits are, if available, listed in Section 8.

4. FIRST AID MEASURES

INGESTION

Rinse mouth with water. Get medical attention immediately. Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious or convulsing person.

INHALATION

If you feel unwell, move to fresh air immediately. Get medical attention if cough or other symptoms develop. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT

Immediately remove contaminated clothing and shoes. Flush skin and clean off with large amounts of water. Get medical attention if symptoms develop.

EYE CONTACT

Immediately flush with plenty of water. Part eyelids with fingers to assure complete flushing. Check for and remove contact lenses if easily possible. Get medical attention if irritation persists.

5. FIREFIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA

Foam, dry chemical, CO₂, water, sand.

GENERAL HAZARD

Emits toxic fumes in fire condition. This product is not expected to burn or explode in normal conditions, but may burn violently if involved in fire. Dinotefuran is self-reactive under high temperature. Exposure to heat may promote violent decomposition.

HAZARDOUS COMBUSTION PRODUCTS

Nitrogen oxides.

FIREFIGHTING INSTRUCTIONS

Keep unnecessary and unprotected personnel away. Shut off supply if possible. Remove containers to safe place if possible. Keep containers and surroundings cool by spraying with water. Fight fire from an upwind position.

FIREFIGHTING EQUIPMENT

Respiratory and eye protection is required for firefighting personnel. Full protective equipment and self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS AND EMERGENCY PROCEDURES

Warn and evacuate in the neighborhood as necessary. Keep unnecessary and unprotected personnel away. Wear appropriate personal protective equipment as specified in Section 8. Remove all sources of ignition. Stop leak if possible without personal risk.

ENVIRONMENTAL PRECAUTIONS

Do not let this product enter the environment.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Scoop or sweep up the spilled product and place it in a disposal container.
Use appropriate tools. Avoid dispersal of dust in the air.

7. HANDLING AND STORAGE**HANDLING**

Use only with adequate ventilation.

Where there may be potential of fire or explosion hazard, use explosion-proof electrical equipment and take precautions against build-up of electrostatic charges.

Wear appropriate personal protective equipment. Keep away from heat, sparks, open flames and hot surfaces.

Precautions

Handle with care. Do not breathe dust. Avoid contact with eyes, skin and clothing.

Take precautionary measures against static discharge.

Advice on general occupational hygiene

Provide hand and eye wash station near work area. Wash hands thoroughly after use. Take off contaminated protective equipment before entering rest areas. Do not eat, drink or smoke when using this product.

STORAGE**Storage Conditions**

Keep away from heat, flame and all sources of ignition. Store in a cool, dark and well-ventilated area. Keep container tightly closed and sealed until ready for use.

Do not contaminate other pesticides, fertilizers, water, foodstuffs or feed by storage and disposal.

Packaging Materials

Fiber drums.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**OCCUPATIONAL EXPOSURE LIMIT VALUES**

[Particulates (Not otherwise specified) (no more than 1% crystalline silica)]

ACGIH-TLV (US): 10 mg/m³, 8 Hr. TWA as inhalable dust

3 mg/m³, 8 Hr. TWA as respirable dust

ENGINEERING CONTROLS

Provide general ventilation. Using closed system or local exhaust ventilation is recommended.

Provide safety shower and eye wash station near work area.

PERSONAL PROTECTION

Eye/face protection:

Safety glasses, goggles, face shield.

Skin Protection:

Hand protection:

Chemical resistant gloves.

Body Protection:

Safety helmet, protective clothing, safety boots.

Respiratory protection:

Dust respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

White granule.

Odor:

Faint characteristic odor.

pH:

Not available

Melting point:

Not available

Flash point:

Not available

Explosibility (22°C):
 Minimum explosive concentration; 130 mg/L (humidity 58%)
 Bulk density: 0.50-0.70 g/mL
 Solubilities: Not available

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Stable under normal conditions.

HAZARDOUS REACTIONS

No hazardous reaction when handled and stored according to provisions.

CONDITIONS TO AVOID

Exposure to heat, ignition sources.

INCOMPATIBLE MATERIALS

Not available.

HAZARDOUS DECOMPOSITION PRODUCTS

Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Oral:	Rat (female)	LD ₅₀ >5000 mg/kg	[Not classified]
Dermal:	Rat	LD ₅₀ >5000 mg/kg	[Not classified]
Inhalation:	Rat	LC ₅₀ >5.2 mg/L/4hr	[Not classified]

Skin Corrosion/Irritation

Rabbit	Slight Irritant	[Not classified]
--------	-----------------	------------------

Serious Eye Damage/Irritation

Rabbit	Mild irritant	[Not classified]
--------	---------------	------------------

Respiratory Sensitization	Not available	[Classification not possible]
---------------------------	---------------	-------------------------------

Skin Sensitization

Guinea pig	Not a skin sensitizer.	[Not classified]
------------	------------------------	------------------

Germ Cell Mutagenicity	Not available	[Classification not possible]
------------------------	---------------	-------------------------------

Carcinogenicity	Not available	[Classification not possible]
-----------------	---------------	-------------------------------

Reproductive Toxicity	Not available	[Classification not possible]
-----------------------	---------------	-------------------------------

Specific Target Organ Toxicity

Single Exposure:	Not available	[Classification not possible]
Repeated Exposure:	Not available	[Classification not possible]

Aspiration Hazard	Not available	[Classification not possible]
-------------------	---------------	-------------------------------

12. ECOLOGICAL INFORMATION

HAZARDOUS TO THE AQUATIC ENVIRONMENT

Acute: Ecotoxicity data do not meet the criteria for classification.	[Not classified]
Chronic: Contains Dinotefuran. (Category 1, M=10)	[Category 1]

ECOTOXICITY:

Carp	LC ₅₀ (96hr)	399 mg/L
<i>Daphnia magna</i>	EC ₅₀ (48hr)	196 mg/L
Algae (<i>Pseudokirchneriella subcapitata</i>)	ErC ₅₀ (0-72hr)	456 mg/L
	NOErC (0-72hr)	20 mg/L
[Dinotefuran]		
Chironomid (<i>Chironomus riparius</i> , water spiked study)	NOEC(27d)	0.00288 mg/L

HAZARDOUS TO THE OZONE LAYER

This product does not contain $\geq 0.1\%$ of at least one ingredient listed in the Annexes to the Montreal Protocol. [Classification not possible]

OTHER HAZARD

Toxic to silkworm. Very toxic to bees.

13. DISPOSAL CONSIDERATIONS

WASTE FROM RESIDUES

Waste must be disposed of in accordance with federal, state, local, national and international regulations.

CONTAMINATED PACKAGING

Empty the container completely before disposal.

14. TRANSPORT INFORMATION

UN

Hazard Class:	9
UN Number:	UN3077
Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (Dinotefuran mixture)
Packing Group:	III
Marine Pollutant:	Yes

SPECIAL PRECAUTIONS FOR TRANSPORT

Make sure that the containers have no puncture or leakage. Avoid rough handling and dropping. Prevent collapse of cargo piles.

15. REGULATORY INFORMATION

This product is an insecticide.

Responsibility for compliance with applicable laws and regulations is with the user.

16. OTHER INFORMATION

References: In-house data

To the best of our knowledge, the information contained herein is accurate.

However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Date: May, 22 2017
Serial No.: AGH10007C2_02

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME **Dinotefuran Technical**

USE OF PRODUCT Active ingredient of insecticide

COMPANY IDENTIFICATION

Mitsui Chemicals Agro, Inc.
Nihonbashi Dia Building, 1-19-1, Nihonbashi, Chuo-ku, Tokyo
103-0027, JAPAN
Telephone: +81-3-5290-2810
Telefax: +81-3-3231-1183

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Acute toxicity	
Oral	Category 4
Skin corrosion/irritation	Not classified
Serious eye damage/eye irritation	Not classified
Skin sensitization	Not classified
Germ cell mutagenicity	Not classified.
Carcinogenicity	Not classified.
Toxic to reproduction	Not classified.
Aquatic hazard	
Acute	Category 1 (M=10)
Chronic	Category 1 (M=10)

GHS LABEL ELEMENTS

Hazard Pictograms



Signal Word

Warning

Hazard Statements

H302: Harmful if swallowed
H400: Very toxic to aquatic life
H410: Very toxic to aquatic life with long lasting effects

Precautionary Statements

Prevention

P264: Wash hands and face thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.

Response

P301+P312+P330:
IF SWALLOWED: Rinse mouth. Call a Poison Center or doctor/physician if you feel unwell.

P391: Collect spillage.

Disposal

P501: Dispose of contents or container in accordance with local, regional, national and international regulations.

OTHER HAZARDS

Toxic to bees.
 Dinotefuran is self-reactive under high temperatures.
 Exposure to heat may promote violent decomposition.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	%	CAS No.
Dinotefuran*	≥99.1	165252-70-0

* *N*-methyl-*N'*-nitro-*N''*-((tetrahydro-3-furyl)methyl)guanidine

* (*RS*)-1-methyl-2-nitro-3-(tetrahydro-3-furylmethyl)guanidine

Occupational exposure limits are, if available, listed in Section 8.

4. FIRST AID MEASURES**INGESTION**

Rinse mouth with water. Get medical attention immediately. Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious or convulsing person.

INHALATION

If you feel unwell, move to fresh air immediately. Get medical attention if cough or other symptoms develop. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT

Immediately remove contaminated clothing and shoes. Flush skin and clean off with large amounts of water. Get medical attention if symptoms develop.

EYE CONTACT

Immediately flush with plenty of water. Part eyelids with fingers to assure complete flushing. Check for and remove contact lenses if easily possible. Get medical attention if irritation persists.

5. FIREFIGHTING MEASURES**SUITABLE EXTINGUISHING MEDIA**

Foam, water.

UNSUITABLE EXTINGUISHING MEDIA

CO₂ or dry chemical are not effective to extinguish.

GENERAL HAZARD

Emits toxic fumes in fire condition.

This product is not expected to burn or explode in normal conditions. But Dinotefuran is self-reactive under high temperatures and will burn violently if involved in fire. Exposure to heat may promote violent decomposition.

HAZARDOUS COMBUSTION PRODUCTS

Nitrogen oxides.

FIREFIGHTING INSTRUCTIONS

Keep unnecessary and unprotected personnel away. Shut off supply if possible. Remove containers to safe place if possible. Keep containers and surroundings cool by spraying with water. Fight fire from an upwind position.

FIREFIGHTING EQUIPMENT

Respiratory and eye protection is required for firefighting personnel.

Full protective equipment and self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires.

6. ACCIDENTAL RELEASE MEASURES**PERSONAL PRECAUTIONS AND EMERGENCY PROCEDURES**

Warn and evacuate in the neighborhood as necessary. Keep unnecessary and unprotected personnel away. Wear appropriate personal protective equipment as specified in Section 8. Remove all sources of ignition. Stop leak if possible without personal risk.

ENVIRONMENTAL PRECAUTIONS

Do not let this product enter the environment.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Use non-sparking tools and equipment.

Scoop or sweep up the spilled product and place it in a disposal container.

Use appropriate tools. Avoid dispersal of dust in the air.

7. HANDLING AND STORAGE**HANDLING****Technical Measures**

Use only with adequate ventilation.

Where there may be potential of fire or explosion hazard, use explosion-proof electrical equipment and take precautions against build-up of electrostatic charges.

Wear appropriate personal protective equipment. Keep away from heat, sparks, open flames and hot surfaces.

Precautions

Handle with care. This product decomposes at high temperature. Avoid high temperature exceeding 110°C. Do not breathe dust. Avoid contact with eyes, skin and clothing. Take precautionary measures against static discharge.

Advice on general occupational hygiene

Provide hand and eye wash station near work area. Wash hands thoroughly after use. Take off contaminated protective equipment before entering rest areas. Do not eat, drink or smoke when using this product.

STORAGE**Storage Conditions**

Keep away from heat, flame, all sources of ignition and combustible material. Store in a cool, dark and well-ventilated area. Keep container tightly closed and sealed until ready for use.

Do not contaminate other pesticides, fertilizers, water, foodstuffs or feed by storage and disposal.

Packaging Materials

Metal drum or conductive container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**OCCUPATIONAL EXPOSURE LIMIT VALUES**

[Particulates (Not otherwise specified)]

OSHA-PEL (US): 15 mg/m³, 8 Hr. TWA as total dust
~~5 mg/m³, 8 Hr. TWA as respirable dust~~

ACGIH-TLV (US): 10 mg/m³, 8 Hr. TWA as inhalable dust
3 mg/m³, 8 Hr. TWA as respirable dust

ENGINEERING CONTROLS

Provide general ventilation. Using closed system or local exhaust ventilation is recommended.
Provide safety shower and eye wash station near work area.

PERSONAL PROTECTION

Eye/face protection:	Safety glasses, goggles, face shield.
Skin Protection:	
Hand protection:	Chemical resistant gloves.
Body Protection:	Safety helmet, protective clothing, safety boots.
Respiratory protection:	Dust respirator

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White crystalline powder.
Odour:	None.
pH (1%, 25°C):	5.6
Melting point:	107.5°C (225.5°F)
Initial boiling point and boiling range:	Not applicable (decomposes)
Flash point:	Not available
Auto-ignition temperature:	350°C
Upper/lower flammability or explosive limits	
Minimum explosive concentration:	45 mg/L
Limiting oxygen concentration:	11%
Minimum ignition energy:	81 mJ
Vapour pressure:	$<1.7 \times 10^{-6}$ Pa (30°C (86 °F))
Density (20°C):	1.40 g/mL
Solubilities (20°C):	40 g/L in water 57 g/L in methanol 9.0×10^{-6} g/L in hexane
Partition coefficient	
n-octanol/water (25°C):	Log Pow -0.549
Exothermic onset temperature:	217°C 111.5°C (by ARC test)

10. STABILITY AND REACTIVITY**CHEMICAL STABILITY**

Stable under normal conditions.

HAZARDOUS REACTIONS

Risk of dust explosion.
Dinotefuran is self-reactive under high temperatures.
Exposure to heat may promote violent decomposition.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID

Exposure to heat, ignition sources.
Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

Oral:	Rat (male)	LD ₅₀	2804 mg/kg	
	Rat (female)	LD ₅₀	2000 mg/kg	[Category 4]
Dermal:	Rat	LD ₅₀	>2000 mg/kg	[Classification not possible]
Inhalation:	Rat	LC ₅₀	>4.09 mg/L/4hr	[Classification not possible]

Skin Corrosion/Irritation Rabbit	Mild Irritant	[Not classified]
Serious Eye Damage/Irritation Rabbit	Mild irritant	[Not classified]
Respiratory Sensitization	Not available	[Classification not possible]
Skin Sensitization Guinea pig	Not a skin sensitizer.	[Not classified]
Germ Cell Mutagenicity <i>in vitro</i> test		
Ames test:	Negative	
Chromosomal aberration:	Negative	
<i>in vivo</i> test		
Micronucleus test:	Negative	[Not classified]
Carcinogenicity Rat, Mouse	Non carcinogen	[Not classified]
Reproductive Toxicity Rat, Rabbit	No reproductive toxicity	[Not classified]
Specific Target Organ Toxicity		
Single Exposure:	Not available	[Classification not possible]
Repeated Exposure:	Not available	[Classification not possible]
Aspiration Hazard	Not available	[Classification not possible]

12. ECOLOGICAL INFORMATION

HAZARDOUS TO THE AQUATIC ENVIRONMENT

Acute:

Classified as category 1 based on the LC₅₀ for Chironomid. [Category 1, M=10]

Chronic:

Classified as category 1 based on the NOEC for Chironomid. [Category 1, M=10]

ECOTOXICITY:

Carp	LC ₅₀ (96hr)	>100 mg/L
<i>Daphnia magna</i>	EC ₅₀ (48hr)	>1000 mg/L
Saltwater mysid		
<i>Mysidopsis bahia</i>	LC ₅₀ (96hr)	0.79 mg/L
<i>Americamysis bahia</i>	NOEC	0.089 mg/L
Chironomid (<i>Chironomus riparius</i> , water spiked study)		
	LC ₅₀ (48hr)	0.0721 mg/L
	NOEC(27d)	0.00288 mg/L
Algae (<i>Pseudokirchneriella subcapitata</i>)	ErC ₅₀ (0-72hr)	>100 mg/L

PERSISTENCE/DEGRADABILITY:

Biodegradation:	Degree of degradation 0% (28 days)
Hydrolytic half-life:	1 year or more (at 25°C, pH 4, 7, 9)
Photolytic half-life in water:	3.8hr (at 25°C, 400 W/m ² , 300-800 nm)

BIOACCUMULATION: Unlikely.

MOBILITY IN SOIL: Not available.

13. DISPOSAL CONSIDERATIONS**WASTE FROM RESIDUES**

Waste must be disposed of in accordance with federal, state, local, national and international regulations.

CONTAMINATED PACKAGING

Empty the container completely before disposal.

14. TRANSPORT INFORMATION**UN**

Hazard Class:	9
UN Number:	UN3077
Shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (Dinotefuran)
Packing group:	III
Marine Pollutant:	Yes

SPECIAL PRECAUTIONS FOR TRANSPORT

Make sure that the containers have no puncture or leakage. Avoid rough handling or dropping. Prevent collapse of cargo piles.

15. REGULATORY INFORMATION

This product is an active ingredient of insecticide.

Responsibility for compliance with applicable laws and regulations is with the user.

16. OTHER INFORMATION

References: In-house data

To the best of our knowledge, the information contained herein is accurate.

However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.