



## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Senator® 600 FS  
**EPA Reg. No.:** 228-522  
**Product Type:** Insecticide for Seed Treatment  
**Company Name:** Nufarm Americas Inc.  
 11901 S. Austin Avenue  
 Alsip, IL 60803  
 1-800-345-3330

**Telephone Numbers:** For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,  
 Call CHEMTREC Day or Night: 1-800-424-9300  
 For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

## 2. HAZARDS IDENTIFICATION

### PHYSICAL HAZARDS:

None known.

### HEALTH HAZARDS:

Acute toxicity, oral	Category 4
Acute toxicity, inhalation	Category 4
Specific target organ toxicity – Repeated exposure	Category 2
Skin corrosion/irritation	Category 2

### ENVIRONMENTAL HAZARDS:

Hazardous to the aquatic environment, acute	Category 1
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### SIGNAL WORD:

WARNING

### HAZARD STATEMENTS:

Harmful if swallowed. Harmful if inhaled. May cause damage to organs (heart, liver, blood chemistry, and thyroid) through prolonged or repeated exposure. Causes skin irritation. Very toxic to aquatic life.



### PRECAUTIONARY STATEMENTS

Wash hands and exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid breathing mist or spray. Use only outdoors or in a well ventilated area. Wear protective gloves made of any waterproof material such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC) or viton.

IF SWALLOWED: call a poison center/doctor if you feel unwell. See Product Label and Section 5 First Aid for medical advice. Rinse mouth.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. See Product Label and Section 5 First Aid for medical advice.

IF ON SKIN: Wash with plenty of water. Specific treatment, See Product Label and Section 5 First Aid for medical advice. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/container in accordance with local/regional/national/international regulations.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Imidacloprid	138261-41-3	47.2 – 50.1
Propylene Glycol	57-55-6	4.7 – 5.3
Silica (amorphous, precipitated)	112926-00-8	0.1 – 0.9
Other ingredients	Trade Secret	Trade Secret

**Synonyms:** 1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

### 4. FIRST AID MEASURES

**If Inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

**If Swallowed:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person

**If in Eyes:** Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If on Skin or Clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

**Most Important symptoms/effects, acute and delayed:** Eye contact may cause moderate irritation. Skin contact may cause slight irritation.

**Indication of Immediate medical attention and special treatment if needed, if necessary:** None expected.

### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Water, carbon dioxide, dry chemical or foam.

**Special Fire Fighting Procedures:** Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

**Unusual Fire and Explosion Hazards:** If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

**Hazardous Decomposition Materials (Under Fire Conditions):** May produce gases such as hydrogen chloride, hydrogen cyanide, and oxides of carbon and nitrogen.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

**Environmental Precautions:** Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

**Methods for Containment:** Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

**Methods for Cleanup and Disposal:** Pump any free liquid into an appropriate closed container. Absorb and place into container for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

**Other Information:** Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

## 7. HANDLING AND STORAGE

**HANDLING:**

Harmful if inhaled. Harmful if swallowed. Causes moderate eye irritation. Avoid breathing spray mist. Remove and wash contaminated clothing before reuse. Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**STORAGE:**

Store in a cool place. Do Not store in direct sunlight. Protect from freezing temperatures.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering Controls:**

Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

**Eye/Face Protection:** Not normally required. To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.

**Skin Protection:** To avoid contact with skin, wear long pants, long-sleeved shirt, socks, shoes and chemical-resistant gloves made of any waterproof material such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC) or viton. An emergency shower or water supply should be readily accessible to the work area.

**Respiratory Protection:** Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

**General Hygiene Considerations:** Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

**Exposure Guidelines:**

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Imidacloprid	NE	NE	NE	NE	NE
Propylene Glycol	10 (WEEL)	NE	NE	NE	mg/m <sup>3</sup>
Silica-Amorphous	20 million particles per cubic foot*	NE	10	NE	mg/m <sup>3</sup>
Other Ingredients	NE	NE	NE	NE	

NE = Not Established

\* 80 mg/m<sup>3</sup>/% SiO<sub>2</sub>. See 29 CFR 1910.100 Table Z-3 Mineral Dusts

WEEL = AIHA Workplace Environmental Exposure Level

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	White aqueous suspension
<b>Odor:</b>	Sweet odor
<b>Odor threshold:</b>	No data available
<b>pH:</b>	6.9 (1% w/v suspension in DIW)
<b>Melting point/freezing point:</b>	No data available
<b>Initial boiling point and boiling range</b>	No data available
<b>Flash point:</b>	>103.2° C (> 217.7° F)
<b>Evaporation rate:</b>	No data available
<b>Flammability (solid, gas):</b>	No data available
<b>Upper/lower flammability or explosive limits:</b>	No data available
<b>Vapor pressure:</b>	No data available
<b>Vapor density:</b>	No data available
<b>Relative density:</b>	1.275 g/mL @ 20° C
<b>Solubility(ies):</b>	Soluble in water (Not miscible in hydrocarbon oil)
<b>Partition coefficient: n-octanol/water:</b>	No data available

<b>Autoignition temperature:</b>	No data available
<b>Decomposition temperature:</b>	No data available
<b>Viscosity:</b>	278.5 cSt @ 20° C
<b>VOC Emission Potential(%):</b>	7.22

**Note:** Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

## 10. STABILITY AND REACTIVITY

**Reactivity:** Stable under normal conditions of use.

**Chemical Stability:** This material is stable under normal handling and storage conditions.

**Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.

**Conditions to Avoid:** Excessive heat. For imidacloprid, strong exothermal reaction above 200° C.

**Incompatible Materials:** Not known.

**Hazardous Decomposition Products:** Under fire conditions, may produce gases such as hydrogen chloride, hydrogen cyanide, and oxides of carbon and nitrogen.

## 11. TOXICOLOGICAL INFORMATION

**Likely Routes of Exposure:** Eye contact, Skin contact

**Symptoms of Exposure:**

**Eye Contact:** Moderately irritating based on toxicity studies.

**Skin Contact:** Minimally toxic and slightly irritating based on toxicity studies.

**Ingestion:** Moderately toxic based on toxicity studies.

**Inhalation:** Moderate to low inhalation toxicity based on toxicity studies.

**Delayed, immediate and chronic effects of exposure:** None reported.

**Toxicological Data:**

Data from laboratory studies conducted are summarized below:

**Oral:** Rat LD<sub>50</sub>: 1,139 mg/kg

**Dermal:** Rat LD<sub>50</sub>: >5,000 mg/kg

**Inhalation:** Rat 4-hr LC<sub>50</sub>: <2.02 mg/L

**Eye Irritation:** Rabbit: Mildly irritating

**Skin Irritation:** Rabbit: Slightly irritating

**Skin Sensitization:** Not a contact sensitizer in guinea pigs following repeated skin exposure.

**Subchronic (Target Organ) Effects:** Repeated overexposure to imidacloprid, may effect heart, thyroid, blood chemistry, and liver. Ingestion of large amounts of propylene glycol has resulted in symptoms of reversible central nervous system depression including stupor, rapid breathing and heartbeat, profuse sweating and seizures.

**Carcinogenicity / Chronic Health Effects:** Prolonged overexposure to imidacloprid can cause effects to the thyroid. Repeated overexposure to propylene glycol can produce central nervous system depression, hemolysis and minimal kidney damage. Imidacloprid did not cause cancer in laboratory animal studies. The U.S. EPA has given imidacloprid a Group E classification (evidence of non-carcinogenicity in humans).

**Reproductive Toxicity:** In a two-generation reproduction study in rats, imidacloprid produced reduced mean body weights and body weight gains. No other reproductive effects were observed.

**Developmental Toxicity:** Rat and rabbit studies on imidacloprid resulted in skeletal abnormalities, increased resorptions (rabbits) and reduced body weight gains at doses that were also toxic to mother animals.

**Genotoxicity:** The imidacloprid mutagenicity studies, taken collectively, demonstrate that imidacloprid is not genotoxic or mutagenic.

**Assessment Carcinogenicity:** None listed with ACGIH, IARC, NTP or OSHA. Amorphous silica is listed by IARC as Group 3: not classifiable as to its carcinogenicity to humans.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity:**

Data on Imidacloprid Technical:

96-hour LC <sub>50</sub> Rainbow Trout:	211 mg/l	Japanese Quail Oral LD <sub>50</sub> :	31 mg/kg
48-hour EC <sub>50</sub> Daphnia:	85 mg/l	Bobwhite Quail Oral LD <sub>50</sub> :	152 mg/kg
96-hour LC <sub>50</sub> Mysid:	0.038 ppm	House Sparrow Oral LD <sub>50</sub> :	41 mg/kg
48-hour Honey Bee Contact LD <sub>50</sub> :	0.078 µg/bee	48-hour Honey Bee Oral LD <sub>50</sub> :	0.0039 µg/bee

**Environmental Fate:**

Hydrolysis half-life of imidacloprid is greater than 30 days at pH 7 and 25°C. The aqueous photolysis half-life is less than 3 hours. The soil surface photolysis of imidacloprid has a half-life of 39 days, and in soil, the half-life ranged from 26 to 229 days.

**13. DISPOSAL CONSIDERATIONS****Waste Disposal Method:**

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide is a violation of Federal law.

**Container Handling and Disposal:****Nonrefillable Containers 5 Gallons or Less:**

Nonrefillable container. DO NOT reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

**Nonrefillable containers larger than 5 gallons:**

Nonrefillable container. DO NOT reuse or refill this container. Offer for recycling if available. If recycling or reconditioning not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure-rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

**Refillable containers larger than 5 gallons:**

Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. For final disposal, offer for recycling if available. If recycling or reconditioning not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

**14. TRANSPORTATION INFORMATION****DOT**

<119 gallons per completed container:  
Non Regulated

≥119 gallons per completed container:

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (Imidacloprid), 9, III, Marine Pollutant

**IMDG**

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (Imidacloprid), 9, III, Marine Pollutant

**IATA**

Non Regulated

**15. REGULATORY INFORMATION****EPA FIFRA INFORMATION**

This chemical is a pesticide product registered by the United States 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 (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION. Harmful if inhaled. Harmful if swallowed. Causes moderate eye irritation. Avoid breathing spray mist. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Avoid contact with eyes or clothing. Wear protective eye wear. Wear long sleeved shirt and long pants, socks, shoes, and chemical resistant gloves made of waterproof material such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC) or viton.

**U.S. FEDERAL REGULATIONS**

**TSCA Inventory:** This product is exempted from TSCA because it is solely for FIFRA regulated use.

**SARA Hazard Notification/Reporting:****Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):**

Immediate

**Section 313 Toxic Chemical(s):**

None

**Reportable Quantity (RQ) under U.S. CERCLA:**

None

**RCRA Waste Code:**

Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

**State Information:**

Other state regulations may apply. Check individual state requirements.

**California Proposition 65:** Not Listed.

**16. OTHER INFORMATION****National Fire Protection Association (NFPA) Hazard Rating:**

**Rating for this product: Health: 2 Flammability: 1 Reactivity: 0**

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

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