

SAFETY DATA SHEET

Dyna Flo 12-0-0 Turf and Ornamental

Date Prepared: 6/11/2014

Replaces: All Previous

SECTION 1. IDENTIFICATION

Product Name: Dyna Flo 12-0-0 Turf and Ornamental
 Synonyms: FLO12006
 Use: Agricultural, Liquid Micronutrient Fertilizer
 Manufacturer: Chemical Dynamics, Inc.
 4206 Business Lane
 Plant City FL 33566
 Phone: 813-752-4950
 Chemtrec (Emergency) Phone: 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Pictogram	Signal Word	Hazard Class	Hazard Category	Hazard Statement
	DANGER	Skin Corrosion Eye Damage Corrosive to Metals	Cat 1	Causes severe skin burns and serious eye damage. May be Corrosive to Metals
		STOT: repeat exposure	Cat 2	May cause damage to central nervous system and lungs through prolonged or repeat exposure
Precautionary Statements:	Prevention: Do not breathe vapors, mists or sprays. Wash thoroughly after handling. Wear protective gloves, protective clothing, chemical splash proof goggles, and face protection. Keep in original container. Response: <u>If swallowed:</u> rinse mouth, Do NOT induce vomiting. Immediately call doctor. <u>If on skin (or hair):</u> Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Immediately call doctor. <u>If inhaled:</u> Remove person to fresh air and keep comfortable for breathing. Immediately call doctor. <u>If in eyes:</u> Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call doctor. Absorb spillage to prevent material damage. Storage: Store locked up. Store in corrosive resistant container (polyethylene, polypropylene, see Section 7 of SDS). Disposal: Dispose of contents/containers in accordance with local/regional/national regulations (See Section 13 of SDS). Containers may be triple rinsed and offered for recycling.			

SECTION 3. COMPOSITION

Material	CAS #	EINECS #	%WT
Ferric Sulfate	10028-22-5	233-072-9	10%
Ferrous Sulfate	7720-78-7	231-753-5	14%
Manganese Sulfate	10034-96-5	232-089-9	6%
Urea	57-13-6	200-315-5	Proprietary Blend of Materials not Classified as Hazardous
Magnesium Sulfate	7487-88-9	231-298-2	
Ferric Glucoheptonate	unassigned	unassigned	
Water	7732-18-5	231-791-2	

See product label for guaranteed analysis.

SECTION 4. FIRST AID MEASURES

Ingestion:	Rinse mouth. Do NOT induce vomiting. Drink large amounts of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact:	Take off immediately all contaminated clothing and rinse skin with water/shower. Wash contaminated clothing before reuse. Get medical attention immediately.
Inhalation:	Remove person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration. Seek prompt medical attention.
Eye Contact:	Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing eyes during transport to hospital.
Acute Exposure Symptoms:	Harmful if swallowed or inhaled. Immediately seek medical attention. This product is corrosive to all tissues with which it comes in contact. Contact with skin does not normally cause immediate irritation but prolonged contact may result in redness, swelling, skin burns and severe damage. Inhalation of the vapor or mist can cause eye, nose, throat, and respiratory irritation or coughing. When ingested, it can produce nausea, vomiting, abdominal pain, diarrhea, and irritation or burns of the oropharyngeal mucosa, esophagus, and stomach.
Chronic Exposure Symptoms:	Manganese may lead to neurotoxicity that resembles Parkinson disease. These patients may have bradykinesia, resting tremor, psychiatric disturbances, and shuffling gait.

SECTION 5. FIRE FIGHTING MEASURES

Extinguishing Media:	This product is non-flammable. Use appropriate media for surrounding fire. Cool containers with water spray to avoid rupture due to thermal expansion.
Specific Hazards:	This product is an aqueous mixture and is not flammable. If material is exposed to prolonged heat in a fire, material may release oxides of carbon, sulfur, nitrogen, manganese, magnesium and iron. For safety, avoid water spray with full jet to prevent spread of product. Exposure to metals can produce highly flammable hydrogen gas.
Protective Equipment and Precautions for Fire-Fighters:	Wear self-contained breathing apparatus (SCBA) and full protective gear. Avoid inhaling combustion products. Fire run-off should be contained to prevent possible environmental damage.
NFPA Rating:	Health: 3, Fire: 0, Reactivity: 1

SECTION 6. ACCIDENTAL RELEASE MEASURES	
Precautions:	Corrosive liquid. Isolate area. Keep unnecessary personnel away. Avoid splashing or spraying. Do not touch or walk through spilled material.
Protective Equipment:	Impervious gloves (rubber, neoprene or nitrile), chemical resistant suit, chemical splash-proof goggles, face shield. Chemical resistant apron and/or rubber boots may be needed. Use NIOSH approved respirator if vapors or mists exceed applicable concentration limits.
Containment:	Stop flow of material if safe to do so. Dike area with diatomaceous earth or sand and maximize recovery. Prevent spillage from entering drains or open bodies of water. Any release to the environment may be subject to reporting requirements.
Clean Up:	Pump into a suitable tank or absorb with diatomaceous earth or sand. Residue can be neutralized slowly with lime. Recover and dispose of residue. Sweep up and place into suitable containers for agronomical land application at recommended rates or dispose of in accordance with local/regional/national regulations (See Section 13 of SDS).

SECTION 7. HANDLING AND STORAGE	
Precautions for safe handling:	Open containers carefully. Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Do not eat, drink or use tobacco products when handling this material. Apply product in open areas. Keep away from children and pets. Do not contaminate feed, seed or any water sources. Launder work clothes frequently and separate from other laundry. When diluting always pour product into water and not vice versa
Conditions for safe storage:	Store locked up. Store in a well-ventilated, cool, dry place, away from sources of intense heat, or where freezing is possible. Keep away from incompatible materials. Large storage tanks should have secondary containment and electrically grounded. Polyethylene and polypropylene are acceptable materials for storage containers. Reacts with metals producing highly flammable hydrogen gas. Tanks should be vented and painted white or in light heat-reflecting colors. Ensure that all pumps, valves, meters, gaskets, etc., are of compatible materials. Keep containers tightly closed when not in use. Do not let product go below 32°F. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.
Incompatibilities:	Strong oxidants, strong bases, combustibles and reducing substances, metals.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION			
Component Exposure Limits:	Urea	Not Established	PEL, OSHA
		10 mg/m ³	TWA, ACGIH
		Not Established	IDLH, NIOSH
		Not Established	REL, NIOSH
		Not Established	STEL, NIOSH
		Not Established	PEL, OSHA

	Ferrous Sulfate FeSO ₄ , Ferric Sulfate Fe ₂ (SO ₄) ₃ and Ferric Glucoheptonate	1 mg/m ³	PEL, OSHA (as Fe soluble salts)
		Not Established	STEL, OSHA
		1 mg/m ³	TLV, ACGIH (as Fe soluble salts)
		Not Established	IDLH, NIOSH
		Not Established	REL, NIOSH
		Not Established	STEL, NIOSH
	Manganese Sulfate MnSO ₄	5 mg/m ³	PEL, OSHA (as Mn compounds)
		Not Established	STEL, OSHA
		0.2 mg/m ³	TLV, ACGIH (as Mn compounds)
		500 mg/m ³	IDLH, NIOSH (as Mn)
		1 mg/m ³	TWA, NIOSH (as Mn)
		3 mg/m ³	STEL, NIOSH (as Mn)
	Magnesium Sulfate MgSO ₄	Not Established	PEL, OSHA
		Not Established	STEL, OSHA
		Not Established	TLV, ACGIH
		Not Established	IDLH, NIOSH
		Not Established	TWA, NIOSH
		Not Established	STEL, NIOSH
Engineering Controls:	Provide local exhaust ventilation and wash facilities. Eye wash stations and safety showers required.		
Personal Protective Equipment:	<u>Eyes</u> : Chemical splash-proof goggles and face shield <u>Skin</u> : Impervious gloves (rubber, neoprene or nitrile), long sleeved clothing. Chemically resistant apron is recommended. <u>Respiratory</u> : None required for ambient air concentrations (i.e. in the open under normal agronomic conditions) not exceeding occupational exposure limits. Respiratory protection may be required in the event of a spill in an enclosed area. Wear NIOSH approved respiratory protective equipment when vapor or mists may exist as well as a chemical suit.		

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES			
Appearance:	Clear, dark brown liquid		
Odor:	Odorless	UEL / LEL:	Not Applicable
Odor Threshold:	Not Available	Vapor Pressure:	Not Available
pH:	1.6 to 2.3	Density:	1.38 to 1.41 g/cm ³
Melting/Freezing Point:	< 0°C (32°F)	Solubility:	Water
Boiling Point:	>100°C (212°F)	Log_{ow}:	Not Available
Flash Point:	Not Applicable	Auto Ignition Temp:	Not Applicable
Evaporation Rate:	Similar to water	Decomposition Temp:	Not Available
Flammability (Solid/Gas):	Not Applicable	Viscosity	Not Available

SECTION 10. STABILITY AND REACTIVITY	
Reactivity:	Product is acidic.
Chemical Stability:	Stable under normal conditions. Reacts with most metals to form flammable hydrogen gas.
Possibility of Hazardous Reactions:	Hazardous polymerization will not occur.
Conditions to avoid:	High temperatures. Heating can evolve irritating and toxic sulfur oxides.
Incompatible Materials:	Strong oxidants, strong bases, combustibles and reducing substances, most metals.
Hazardous Decomposition Products:	Carbon dioxide, oxides of nitrogen, iron, manganese, magnesium and sulfur

SECTION 11. TOXICOLOGICAL INFORMATION	
Acute Toxicity:	Urea, Manganese Sulfate and Magnesium Sulfate: LD50 oral (rat): > 2000 mg/kg Ferric Sulfate LD50 oral (rat): >500 mg/kg (500 to 2000 mg/kg) Ferrous Sulfate LD50 oral (rat): 1520 mg/kg
Likely Routes of Exposure:	Inhalation of mist, eye, and skin contact.
Symptoms and Signs of Exposure:	<u>Eyes:</u> Contact causes severe irritation and tissue damage; Eye burns, watering eyes. <u>Skin:</u> Contact with skin does not normally cause immediate irritation. But prolonged contact may result in redness, swelling, skin burns and severe damage. <u>Ingestion:</u> Corrosive if swallowed. Burning, choking, nausea, vomiting, severe pain; Danger of perforation of esophagus and stomach. Neurotoxicity is the primary manifestation of manganese toxicity. Symptoms include develop headaches, dizziness, memory loss, emotional instability, hyperreflexia, and a mild tremor. <u>Inhalation:</u> Severe irritation and burning of the nose, throat and respiratory tract.
Chronic Effects:	Prolonged or repeated overexposures to this product by inhalation or skin or eye contact may result in severe irritation or corrosive effects. The mucus membranes, the respiratory tract and the digestive system are subject to irritation and corrosive effects from chronic exposure. Changes in pulmonary function may occur, along with chronic bronchitis and emphysema. Manganese may lead to neurotoxicity that resembles Parkinson disease. These patients may have bradykinesia, resting tremor, psychiatric disturbances, and shuffling gait. Also, chronic excess manganese inhalational exposures may lead to pulmonary inflammation and subsequent reactive airway disease.

Carcinogenetic:	None of this product's components are listed by ACGIH, OSHA, IARC, NIOSH, NTP or California Prop 65 as carcinogenic.
Mutagenicity:	Not Classified
Reproductive Toxicity:	Not Classified

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity:	May be harmful to fish, livestock and wildlife. Non-persistent and non-cumulative when properly applied agronomically. A toxic hazard to fish. Avoid spills or releases to watercourses. The products of degradation are less toxic than the product itself.
Other Adverse Effects:	Not harmful to ozone layer
Ecotoxicity:	Urea: LC50 – <i>Poecilia reticulata</i> (guppy): 17,500 mg/L for 96 hrs Ferric Glucoheptonate Not available Ferric Sulfate: LC50 <i>Gambusia affinis</i> (Western mosquitofish) 37.2 mg/L/24, 48, 96 hr; static Ferrous Sulfate: LC50 <i>Cyprinus carpio</i> (Common carp, juvenile) 560 ug/L/96 hr; renewal Manganese Sulfate LC50 <i>Daphnia magna</i> (Water Flea): 15200 ug/L/48 hr; static LC50 <i>Canthocamptus</i> sp (Harpacticoid Copepod): 150 ug/L/48 hr; static LC50 <i>Pimephales promelas</i> (Fathead Minnow): 30600 ug/L/96 hr; flow through Magnesium Sulfate: LC50 <i>Pimephales promelas</i> (Fathead Minnow): 680 mg/L/96 hr; LC50 <i>Daphnia magna</i> (Water Flea): 720 mg/L/48 hr

SECTION 13. DISPOSAL CONSIDERATIONS

General Information:	As packaged, this product is a D002 corrosive waste per 40 CFR 261; applicable to wastes containing this product. Containers may be triple rinsed and offered for recycling.
Disposal Instructions:	Agronomical land application at recommended rates or dispose of in accordance with local/regional/national regulations. Container contents should be completely used and the containers rinsed prior to discard. Rinsate should be treated as a corrosive material. Dispose of in accordance with product characteristics at time of disposal.

SECTION 14. TRANSPORT INFORMATION	
This material is hazardous as defined by 49 CFR 172.101 by the US Department of Transportation	
Proper Shipping Name:	Corrosive Liquid, acidic, inorganic, N.O.S. (Ferric Sulfate Solution)
Hazard Class:	8
UN Identification #:	3264
Packing Group:	III
Required Label(s):	Corrosive
Emergency Response Guide Number:	154
Marine Pollutant:	Yes (Manganese)
Note:	Not regulated by the Hazardous Materials Regulations and not subject to placarding when transported by motor vehicle or railcar in packaging constructed of materials that will not react dangerously with or be degraded by the corrosive material. – 49 CFR 173.154(d).

SECTION 15. REGULATORY INFORMATION	
TSCA Inventory Status	All intentional ingredients listed on the TSCA inventory.
DSCL (EEC) Status	All intentional ingredients listed on the DSCL inventory.
United States – SARA Hazard Category:	This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act (SARA) and is considered, under applicable definitions, to meet the following categories: Fire – No, Pressure – No, Acute – Yes, Chronic – No, Reactive – No
SARA Title III Information:	This product contains the following substances subject to the reporting requirements of Title III (EPCRA) of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:
Urea CAS No. 57-13-6, Magnesium Sulfate CAS No. 7487-88-9	CERCLA RQ (pounds): No SARA Reporting, 302: No SARA Reporting, 304: No SARA Reporting, 313: No
Ferric Sulfate CAS No. 10028-22-5	CERCLA RQ (pounds): 1000 lbs (100% Basis) SARA Reporting, 302: No SARA Reporting, 304: No SARA Reporting, 313: No
Ferrous Sulfate CAS No. 7720-78-7	CERCLA RQ (pounds): 1000 lbs (100% Basis) SARA Reporting, 302: No SARA Reporting, 304: No SARA Reporting, 313: No
Manganese Sulfate CAS No. 10034-96-5	CERCLA RQ (pounds): No RQ is assigned to this generic or broad class, (Manganese compounds) although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985). SARA Reporting, 302: No SARA Reporting, 304: No SARA Reporting, 313: Yes (Manganese Compounds, N450)

Federal Insecticide, Fungicide, and Rodenticide Act	This product is not a pesticide.
State Regulations:	Other state regulations may apply. Check individual state requirements.

SECTION 16. OTHER INFORMATION	
Date of Revision:	6/11/2014, revision prepared in accordance with 29 CFR 1910.1200 Appendix D to meet Global Harmonization Standards.
Disclaimer:	The information contained in this SDS refers only to the specific material designated and does not relate to any process or use with any other materials. This information is based on data believed to be accurate and reliable as of the date hereof. It is intended for use by persons possessing technical knowledge at their own discretion and risk. Because safety standards and regulations are subject to change and because Chemical Dynamics, Inc. has no continuing control over the material, those handling, storing or using the material should satisfy themselves that they have current information regarding the particular way the material is handled, stored or used and that the same is done in accordance with federal, state and local law. No warranty, expressed or implied, and no liability is assumed by Chemical Dynamics, Inc. in conjunction with the use of this information. Nothing herein is to be construed as a recommendation to infringe any patents.