

1. Identification

Product identifier	MEHLICH III EXTRACTANT SOLUTION for SOIL ANALYSIS	
Other means of identification		
Product code	5606	
Recommended use	professional, scientific and technical activities: scientific research and development	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Company name	GFS Chemicals, Inc.	
Address	P.O. Box 245 Powell OH 43065 US	
Telephone	Phone	740-881-5501
	Toll Free	800-858-9682
	Fax	740-881-5989
Website	www.gfschemicals.com	
E-mail	service@gfschemicals.com	
Emergency phone number	Emergency Assistance	Chemtrec 800-424-9300

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Reproductive toxicity	Category 2
OSHA hazard(s)	Not classified.	
Label elements		



Signal word	Warning	
Hazard statement	Suspected of damaging fertility or the unborn child.	
Precautionary statement		
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.	
Response	If exposed or concerned: Get medical advice/attention.	
Storage	Store locked up.	
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.	
Hazard(s) not otherwise classified (HNOC)	Not classified.	

3. Composition/information on ingredients

Mixtures

Hazardous components Chemical name	CAS number	%
AMMONIUM FLUORIDE	12125-01-8	<1
ETHYLENEDIAMINETETRA ACETIC ACID	60-00-4	<1
ACETIC ACID	64-19-7	<0.1
NITRIC ACID	7697-37-2	< 0.1

Non-hazardous components

Chemical name	CAS number	%
AMMONIUM NITRATE	6484-52-2	<0.1
WATER	7732-18-5	balance

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Not available.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention.

5. Fire-fighting measures

Suitable extinguishing media	Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Not applicable.
Special protective equipment and precautions for firefighters	Wear suitable protective equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Wear appropriate personal protective equipment.
Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. Large Spills: Dike the spilled material, where this is possible. Flush into sewer with plenty of water. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use. For waste disposal, see section 13 of the MSDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact during pregnancy/while nursing. Use personal protective equipment as required. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in a cool, dry place out of direct sunlight.

8. Exposure controls/personal protection

Occupational exposure limits

U.S. - OSHA Components	Type	Value
ACETIC ACID (CAS 64-19-7)	PEL	25 mg/m3 10 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
AMMONIUM FLUORIDE (CAS 12125-01-8)	PEL	2.5 mg/m3
NITRIC ACID (CAS 7697-37-2)	PEL	5 mg/m3
		2 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value	Form
AMMONIUM FLUORIDE (CAS 12125-01-8)	TWA	2.5 mg/m3	Dust.

ACGIH

Components	Type	Value
ACETIC ACID (CAS 64-19-7)	STEL	15 ppm
	TWA	10 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
AMMONIUM FLUORIDE (CAS 12125-01-8)	TWA	2.5 mg/m3
NITRIC ACID (CAS 7697-37-2)	STEL	4 ppm
	TWA	2 ppm

U.S. - NIOSH

Components	Type	Value
ACETIC ACID (CAS 64-19-7)	REL	25 mg/m3
		10 ppm
	STEL	37 mg/m3
		15 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
AMMONIUM FLUORIDE (CAS 12125-01-8)	TWA	2.5 mg/m3
NITRIC ACID (CAS 7697-37-2)	STEL	10 mg/m3
		4 ppm
	TWA	5 mg/m3
		2 ppm

Biological limit values

US. ACGIH. BEIs. Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
AMMONIUM FLUORIDE (CAS 12125-01-8)	3 mg/l	Fluoride	Urine	*
	2 mg/l	Fluoride	Urine	*

* - For sampling details, please see the source document.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear protective gloves.

Other

Normal work clothing (long sleeved shirts and long pants) is recommended.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Thermal hazards

Not available.

General hygiene considerations

When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	Clear.
Physical state	Liquid.
Form	Liquid.
Color	Colorless.
Odor	Not available.
Odor threshold	Not available.
pH	2.5
Melting point/freezing point	32 °F (0 °C) estimated
Initial boiling point and boiling range	> 212 °F (> 100 °C)
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	1.00 g/cm ³ estimated
Percent volatile	> 98 % estimated
Specific gravity	1.00 estimated

10. Stability and reactivity

Reactivity	Not available.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	None under normal conditions.
Incompatible materials	None known.
Hazardous decomposition products	Nitrogen oxides (NO _x).

11. Toxicological information

Information on likely routes of exposure

Ingestion	Based on available data, the classification criteria are not met.
Inhalation	Due to lack of data the classification is not possible.
Skin contact	Due to lack of data the classification is not possible. May be irritating to the skin.
Eye contact	Due to lack of data the classification is not possible. May be irritating to eyes.
Symptoms related to the physical, chemical and toxicological characteristics	Not available.

Information on toxicological effects**Acute toxicity**

Product	Species	Test Results
MEHLICH III EXTRACTANT SOLUTION for SOIL ANALYSIS (CAS Mixture)		
Acute		
<i>Inhalation</i>		
LC50	Rat	98697.7109 mg/l, 4 Hours, estimated
<i>Oral</i>		
LD50	Mouse	5952.3809 mg/kg, estimated
<i>Other</i>		
LD50	Mouse	49603.1758 mg/kg, estimated
	Rat	78769.8438 mg/kg, estimated
Components	Species	Test Results

ACETIC ACID (CAS 64-19-7)

Acute*Dermal*

LD50	Rabbit	1060 mg/kg
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Inhalation

LC50	Guinea pig	5000 mg/l, 1 Hours
	Mouse	5620 mg/l, 1 Hours
	Rat	11.4 mg/l, 4 Hours

Oral

LD50	Mouse	4960 mg/kg
	Rabbit	1200 mg/kg
	Rat	3.53 g/kg
		3.31 g/kg

Other

LD50	Mouse	525 mg/kg
	Rabbit	1200 mg/kg

AMMONIUM NITRATE (CAS 6484-52-2)

Acute*Inhalation*

LC50	Rat	> 88.8 mg/l, 4 Hours
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Oral

LD50	Rat	4500 mg/kg
		2217 mg/kg

ETHYLENEDIAMINETETRAACETIC ACID (CAS 60-00-4)

Acute*Oral*

LD50	Mouse	30 mg/kg
	Rat	2580 mg/kg

Other

LD50	Mouse	250 mg/kg
	Rat	397 mg/kg

NITRIC ACID (CAS 7697-37-2)

Acute*Inhalation*

LC50	Mouse	244 mg/l, 30 Minutes
		67 mg/l, 4 Hours
	Rat	334 mg/l, 30 Minutes
		244 mg/l, 30 Minutes
		138 mg/l, 30 Minutes

Components	Species	Test Results
		65 mg/l, 4 Hours

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Due to lack of data the classification is not possible.
Serious eye damage/eye irritation	Due to lack of data the classification is not possible.
Respiratory sensitization	Due to lack of data the classification is not possible.
Skin sensitization	Due to lack of data the classification is not possible.
Germ cell mutagenicity	Due to lack of data the classification is not possible.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Reproductive toxicity	Suspected of damaging fertility or the unborn child.
Specific target organ toxicity - single exposure	Due to lack of data the classification is not possible.
Specific target organ toxicity - repeated exposure	Due to lack of data the classification is not possible.
Aspiration hazard	Due to lack of data the classification is not possible.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Contains a substance which causes risk of hazardous effects to the environment.

Product	Species	Test Results
MEHLICH III EXTRACTANT SOLUTION for SOIL ANALYSIS (CAS Mixture)		
Crustacea	EC50 Daphnia	22420.6348 mg/l, 48 hours, estimated
Fish	LC50 Fish	33143.7383 mg/l, 96 hours, estimated

Components	Species	Test Results
ACETIC ACID (CAS 64-19-7)		
Crustacea	LC50 Green or European shore crab (<i>Carcinus maenas</i>)	180 mg/l, 48 hours
Aquatic		
Crustacea	EC50 liver elimia, river snail (<i>Elimia livescens</i>)	640 mg/l, 24 hours 460 mg/l, 48 hours
	Pond snail (<i>Lymnaea emarginata angulata</i>)	390 mg/l, 24 hours 320 mg/l, 48 hours
	Water flea (<i>Daphnia magna</i>)	71 mg/l, 24 hours 65 mg/l, 48 hours
	LC50 Common shrimp, sand shrimp (<i>Crangon crangon</i>)	100 - 330 mg/l, 48 hours
	Water flea (<i>Daphnia magna</i>)	426 mg/l, 100 hours 47 mg/l, 24 hours
Fish	LC50 Bluegill (<i>Lepomis macrochirus</i>)	100 - 1000 mg/l, 24 hours 75 mg/l, 96 hours
	Carp (<i>Cyprinus carpio</i>)	69 mg/l, 24 hours 49 mg/l, 48 hours
	Carp (<i>Leuciscus idus melanotus</i>)	410 mg/l, 48 hours
	Channel catfish (<i>Ictalurus punctatus</i>)	889 mg/l, 1 hours 446 mg/l, 2 hours 446 mg/l, 24 hours 446 mg/l, 4 hours 446 mg/l, 48 hours 446 mg/l, 72 hours

Components	Species	Test Results
		446 mg/l, 8 hours
	Fathead minnow (<i>Pimephales promelas</i>)	> 315 mg/l, 1 hours
		175 mg/l, 1 hours
		122 mg/l, 24 hours
		106 mg/l, 24 hours
		106 mg/l, 48 hours
		92 mg/l, 48 hours
		88 mg/l, 72 hours
		88 mg/l, 96 hours
		79 mg/l, 72 hours
		79 mg/l, 96 hours
	Western mosquitofish (<i>Gambusia affinis</i>)	251 mg/l, 24 hours
		251 mg/l, 48 hours
		251 mg/l, 96 hours
AMMONIUM NITRATE (CAS 6484-52-2)		
Aquatic		
Fish	LC50	Carp (<i>Cyprinus carpio</i>)
		65 - 85 mg/l, 48 hours
		61 - 104 mg/l, 48 hours
ETHYLENEDIAMINETETRAACETIC ACID (CAS 60-00-4)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)
		122 mg/l, 24 hours
		113 mg/l, 48 hours
	LC50	Water flea (<i>Daphnia magna</i>)
		625 mg/l, 24 hours
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>)
		473 - 598 mg/l, 96 hours
		136 - 204 mg/l, 96 hours
		34 - 62 mg/l, 96 hours
		34 - 62 mg/l, 96 hours
		Channel catfish (<i>Ictalurus punctatus</i>)
		> 500 mg/l, 1 hours
		> 500 mg/l, 2 hours
		359 mg/l, 4 hours
		167 mg/l, 24 hours
		133 mg/l, 48 hours
		133 mg/l, 72 hours
		129 mg/l, 96 hours
		Fathead minnow (<i>Pimephales promelas</i>)
		44.2 - 76.5 mg/l, 96 hours
NITRIC ACID (CAS 7697-37-2)		
Crustacea	LC50	Green or European shore crab (<i>Carcinus maenas</i>)
		180 mg/l, 48 hours
Aquatic		
Crustacea	LC50	Cockle (<i>Cerastoderma edule</i>)
		330 - 1000 mg/l, 48 hours
Fish	LC50	Starfish (<i>Asterias rubens</i>)
		100 - 330 mg/l, 48 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

ACETIC ACID -0.17

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dilute waste in large quantities of water and flush into sewer connected to wastewater treatment system in compliance with applicable laws and regulations. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Not available.
Hazardous waste code	Not regulated.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as a hazardous material by DOT.

IATA

Not regulated as a dangerous good.

IMDG

Not regulated as a dangerous good.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available.

15. Regulatory information

US federal regulations All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not on regulatory list.

CERCLA Hazardous Substance List (40 CFR 302.4)

ACETIC ACID (CAS 64-19-7)	LISTED
AMMONIUM FLUORIDE (CAS 12125-01-8)	LISTED
ETHYLENEDIAMINETETRAACETIC ACID (CAS 60-00-4)	LISTED
NITRIC ACID (CAS 7697-37-2)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance No

SARA 311/312 Hazardous chemical No

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

NITRIC ACID (CAS 7697-37-2)

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not regulated.

DEA Exempt Chemical Mixtures Code Number

Not regulated.

Food and Drug Administration (FDA)

Not regulated.

US state regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US. Massachusetts RTK - Substance List

ACETIC ACID (CAS 64-19-7)
 AMMONIUM FLUORIDE (CAS 12125-01-8)
 AMMONIUM NITRATE (CAS 6484-52-2)
 ETHYLENEDIAMINETETRAACETIC ACID (CAS 60-00-4)
 NITRIC ACID (CAS 7697-37-2)

US. New Jersey Worker and Community Right-to-Know Act

NITRIC ACID (CAS 7697-37-2) 500 LBS

US. Pennsylvania RTK - Hazardous Substances

ACETIC ACID (CAS 64-19-7)
 AMMONIUM FLUORIDE (CAS 12125-01-8)
 AMMONIUM NITRATE (CAS 6484-52-2)
 ETHYLENEDIAMINETETRAACETIC ACID (CAS 60-00-4)
 NITRIC ACID (CAS 7697-37-2)

US. Rhode Island RTK

ACETIC ACID (CAS 64-19-7)
 AMMONIUM FLUORIDE (CAS 12125-01-8)
 AMMONIUM NITRATE (CAS 6484-52-2)
 NITRIC ACID (CAS 7697-37-2)

US. California Proposition 65**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Not listed.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

16. Other information, including date of preparation or last revision**Issue date** February-22-2013**Version #** 01**Further information** Not available.

Disclaimer The information in the sheet was written based on the best knowledge and experience currently available. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.