

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Dissolvine® H-FE-5.5-GS  
**Chemical Name:** HEDTA Iron salt complexes in water  
**Synonym:** Iron HEDTA in water  
**C.A.S. Registry No.:** Mixture  
**Chemical Formula:** Mixture  
**Product Use:** Sequestering agent for H<sub>2</sub>S Gas Scrubbing

### Manufacturer / Supplier

Akzo Nobel Functional Chemicals LLC  
Chelates Americas  
525 West Van Buren St., Chicago, IL, USA 60607  
Tel. 1-800-906-7979

### Emergency Telephone Numbers

**FOR CHEMICAL EMERGENCY** (Spill, Leak, Fire, Exposure or Accident)

- **CHEMTREC (24-hr):** (800) 424-9300 (Toll-free in the U.S., Canada, and the U.S. Virgin Islands)  
(703) 527-3887 (For calls originating elsewhere / collect calls are accepted)
- **CANUTEC (Canada):** (613) 996-6666

**FOR MEDICAL / HANDLING EMERGENCIES:** 1-914-693-6946 [AkzoNobel - USA]

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## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

*This material is considered hazardous by the OSHA Hazard Communication Standard [29 CFR 1910.1200].*  
**WARNING !**

- **May cause skin, eye and respiratory tract irritation.**
- **Contains an impurity that may cause kidney damage and cancer in laboratory animals.**

**Appearance and odor:** Clear red-brown liquid with a slight ammonia odor.

### POTENTIAL HEALTH EFFECTS (see section 11 for additional information)

**Primary Route(s) of Exposure:** Skin contact, eye contact, inhalation and ingestion.

#### **Acute Exposure**

- **Inhalation:** Inhalation of vapors, mist, fumes or aerosol may cause irritation of the respiratory system.
- **Skin Contact:** Skin contact may cause irritation.
- **Eye Contact:** Eye contact may cause irritation.
- **Ingestion:** Ingestion may irritate the mouth, throat and stomach and cause nausea and vomiting.

**Carcinogenicity:** IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen. However, nitrilotriacetic acid (NTA) and its salts were determined to be "possibly carcinogenic to humans" (Group 2B) by IARC, a compound which "may reasonably be anticipated to be a carcinogen" by NTP and a "select carcinogen" by OSHA. Nitrilotriacetic acid is listed on California's Proposition 65 as a chemical known to cause cancer.

## **2. HAZARDS IDENTIFICATION** (CONTINUED)

**Medical conditions aggravated:** There are no data available that address medical conditions that are generally recognized as being aggravated by exposure to this product.

**POTENTIAL ENVIRONMENTAL EFFECTS** [See Section 12 for additional information]

This product is not considered to be harmful to aquatic life, based on available data.

## **3. COMPOSITION / INFORMATION ON INGREDIENTS**

<b><u>INGREDIENTS</u></b> [See section 8 for exposure limits]	<b><u>% (w/w)</u></b>	<b><u>CAS Number</u></b>
Ferric HEDTA	32 – 34	17084-02-5
Ferrous sodium HEDTA	4 – 6	16485-47-5
Nitrilotriacetic acid (NTA)	0.5 – 1.5	139-13-9
Ammonium nitrate	4 – 6	6484-52-2
Sodium nitrate	10 – 12	7631-99-4
Sodium formate	1.5 – 2.5	141-53-7
Water	40 – 45 (balance)	7732-18-5

## **4. FIRST AID MEASURES**

**Inhalation:** Remove victim to fresh air. If breathing becomes difficult, oxygen may be given, preferably under physician's advice. If breathing has stopped, give artificial respiration. Get medical attention.

**Skin Contact:** Remove contaminated clothing, shoes and equipment. Wash all affected areas with soap and plenty of water for at least 15 minutes. Do not attempt to neutralize with chemical agents. Wash contaminated clothing and shoes before reuse. Get medical attention if irritation occurs or persists.

**Eye Contact:** Flush eyes with large quantities of running water for a minimum of 15 minutes. If easy to do, remove contact lenses, if worn. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. Do not let victim rub eye(s). Do not attempt to neutralize with chemical agents. Get medical attention if eye irritation occurs.

**Ingestion:** Call a physician immediately. ONLY induce vomiting at the instructions of a physician. If victim is conscious, rinse mouth and give water to drink. Never give anything by mouth to an unconscious person.

**Note to Physician:** Attending physician should treat exposed patients symptomatically.

## **5. FIRE FIGHTING MEASURES**

<b>Conditions of Flammability:</b>	not flammable or combustible
<b>Flash Point (Method):</b>	not applicable
<b>Upper Flammable Limit (% by volume):</b>	not determined
<b>Lower Flammable Limit (% by volume):</b>	not determined
<b>Auto-Ignition Temperature:</b>	not determined

**Extinguishing Media:** This product is not flammable or combustible. If involved in a fire, use water fog or spray, dry chemical, foam or carbon dioxide extinguishing agents.

**Fire Fighting Procedures:** As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate all non-essential personnel from the fire area. Fire fighters should wear full-face, self-contained breathing apparatus and impervious protective clothing.

## 5. FIRE FIGHTING MEASURES (CONTINUED)

**Fire & Explosion Hazards:** This product is not defined as flammable or combustible and should not be a fire hazard. Under fire conditions, it does not contribute any unusual hazards.

**Hazardous Combustion Products:** Thermal decomposition products may release toxic and/or hazardous fumes and gases, including nitrogen oxides, carbon oxides and ammonia.

**NFPA Hazard Rating – Health:** 1      **Fire:** 0      **Instability:** 0      **Other:** None  
[ 0 – Minimal      1 - Slight      2 - Moderate      3 - High      4 - Extreme ]

## 6. ACCIDENTAL RELEASE MEASURES

**Spill / Leaks:** Safely stop source of spill. Restrict non-essential personnel from area. All personnel involved in spill cleanup should avoid skin and eye contact by wearing appropriate personal protective equipment.

**Cleanup:** Soak up liquid with a suitable absorbent such as clay, sawdust or kitty litter. Sweep up absorbed material and place in a chemical waste container for disposal according to local, state or federal regulations. Flush remainder with water and dispose accordingly. Do not allow water to enter water systems or water sheds.

## 7. HANDLING AND STORAGE

**Handling:** Avoid inhalation and prolonged and/or repeated skin and eye contact.

**Storage:** Keep containers closed and dry. This material is suitable for any general chemical storage area. Isolate from strong oxidizers. Store in PVC, PE, stainless steel or bituminized tanks. Avoid contact with aluminum, copper, copper alloys, nickel and zinc. Exposure to sunlight may cause degradation of the product.

**Maximum Storage Temperature:** Store in a cool and dry place at ambient temperature (below 25°C / 77°F) but greater than 0°F (-18°C) where product freezes or phase separates.

**General Comments:** Containers should not be opened until ready for use. It is advised to re-test the material after one year of storage.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure Limits:** Other than any exposure limits which may be displayed below, there are no other known exposure limits applicable to this product or its components.

Chemical Name	OSHA – PELs (mg / m <sup>3</sup> )		ACGIH – TLVs (mg / m <sup>3</sup> )		NIOSH – RELs (mg / m <sup>3</sup> )		AIHA – WEELs (mg / m <sup>3</sup> )	
	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)
Ferric HEDTA	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Ferrous sodium HEDTA	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
NTA	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Ammonium nitrate	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Sodium nitrate	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Sodium formate	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Water	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D

[Ref: ACGIH Guide to Occupational Exposure Values, 2008 Edition]

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION (CONTINUED)

### Legend :

CEIL:	Ceiling Exposure Limit	PEL:	Permissible Exposure Limit	REL:	Recommended Exposure Limit
STEL:	Short Term Exposure Limit	TLV:	Threshold Limit Value	TWA:	Time-Weighted Average
N/D:	Not Determined	WEEL:	Workplace Environmental Exposure Level		
ACGIH:	American Conference of Governmental Industrial Hygienists				
AIHA:	American Industrial Hygiene Association				
NIOSH:	National Institute for Occupational Safety and Health				
OSHA:	Occupational Safety and Health Administration				

**Engineering Controls - Ventilation:** Special ventilation is usually not required under normal use conditions. Ensure that existing ventilation is sufficient to prevent the circulation and/or accumulation of vapor in the air.

### Personal Protective Equipment (PPE)

- **Respiratory Protection:** Use of respiratory protection is generally not required. However, if use conditions generate vapors, aerosols or fumes, (e.g., elevated temperatures), use a NIOSH-approved organic vapor respirator with HEPA (high efficiency particulate air) filters to reduce potential for inhalation exposure. Where exposure potential necessitates a higher level of protection, use a NIOSH-approved, positive-pressure, pressure-demand, air-supplied respirator. When using respirator cartridges or canisters, they must be changed frequently (following each use or at the end of the work shift) to assure breakthrough exposure does not occur.
- **Skin Protection:** Skin contact with the product should be minimized or prevented through the use of suitable protective clothing, gloves and footwear selected according to use condition exposure potential.
- **Eye Protection:** If the possibility of splashing or spraying of this material exists, chemical goggles and/or a full-face shield should be worn when handling this product.

**Other Protection – General Hygiene Considerations:** All food and smoking materials should be kept in a separate area away from the storage/use location. Eating, drinking and smoking should be prohibited in areas where there is a potential for significant exposure to this material. Before eating, drinking and smoking, hands and face should be thoroughly washed.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State / Appearance / Odor:</b>	clear red-brown liquid with a slight ammonia odor
<b>Boiling Point:</b>	222.8°F (106°C)
<b>Bulk Density:</b>	not applicable
<b>Cloud Point:</b>	not determined
<b>Evaporation Rate (Butyl Acetate=1):</b>	not determined
<b>Melting Point:</b>	- 0.4°F (- 18°C) / freezing point
<b>Odor Threshold:</b>	not determined
<b>pH:</b>	6.5 – 7.5 (1% solution)
<b>Partition Coefficient (n-octanol/water):</b>	not determined
<b>Pour Point:</b>	not determined
<b>Solubility in water:</b>	miscible
<b>Solubility in other solvents:</b>	not determined
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	≈ 1.36
<b>Vapor Density (Air = 1):</b>	same as water
<b>Vapor Pressure:</b>	same as water
<b>Viscosity:</b>	16 cP at 20°C (68°F)
<b>Volatiles (% by weight):</b>	not determined
<b>Other:</b>	not applicable
<b>Conditions of Flammability:</b>	not flammable or combustible
<b>Flash Point (Method):</b>	not applicable
<b>Upper Flammable Limit (% by volume):</b>	not applicable
<b>Lower Flammable Limit (% by volume):</b>	not applicable
<b>Auto-Ignition Temperature:</b>	not applicable

< : less than    > : greater than    ≈ : approximately

## 10. STABILITY AND REACTIVITY

**Stability:** This product is stable at ambient temperatures and atmospheric pressures. It is not self-reactive and is not sensitive to physical impact.

**Incompatibilities / Conditions to avoid:** This product is incompatible with strong alkalis. Contact with strong alkalis may release ammonia. Avoid contact with aluminum, copper, copper alloys, nickel and zinc.

**Polymerization:** Hazardous polymerization is not expected to occur under normal temperatures and pressures.

**Decomposition Products:** Under fire conditions the product may support combustion and decomposes to give off carbon oxides fumes (CO, CO<sub>2</sub>), nitrogen oxides, ammonia and water vapor.

## 11. TOXICOLOGICAL INFORMATION

### **INHALATION**

**Acute exposure:** The acute LC<sub>50</sub> for this product is not available. Exposure to an excessive concentration of vapor, mist or aerosol may cause respiratory tract discomfort and/or irritation.

**Chronic exposure:** No known effects for the mixture.

### **SKIN**

**Acute contact:** Dermal toxicity for this product is not available. This product may cause skin irritation (based on tests with related products and/or individual components of the mixture).

**Chronic contact:** No known effects for the mixture.

**EYES:** This mixture may cause eye irritation (based on tests with related products and/or individual components of the mixture).

### **INGESTION**

**Acute exposure:** The oral LD<sub>50</sub> is expected to be greater than 2,000 mg/kg (rat), based on tests with structurally related products and/or components of this mixture. A related product containing 32% Ferric HEDTA, when administered orally to rats, caused G.I. tract irritation and slight liver congestion at doses of 3.98 g/kg. No abnormalities were noted at lower doses.

**Chronic exposure:** Chronic ingestion of NTA has been shown to cause kidney toxicity.

**SENSITIZATION:** No data available for the mixture.

**CARCINOGENICITY:** IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen. However, nitrilotriacetic acid (NTA) and its salts were determined to be "possibly carcinogenic to humans" (Group 2B) by IARC, a compound which "may reasonably be anticipated to be a carcinogen" by NTP and a "select carcinogen" by OSHA. It is also listed on California's Proposition 65 as a "chemical known to the State to cause cancer".

**MUTAGENICITY:** No data available for the mixture. A related product (containing 40% Trisodium HEDTA) gave negative results in the Ames Assay. NTA was not genotoxic in experimental systems in vivo. Neither the acid nor its salts were genotoxic in mammalian cells in vitro and they were not mutagenic to bacteria.

**REPRODUCTIVE TOXICITY:** No known effects for the mixture. NTA is not teratogenic and did not induce reproductive toxicity.

**OTHER TOXICOLOGICAL EFFECTS:** None known.

**TARGET ORGANS:** Eyes, skin, respiratory system and kidneys and bladder.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity:** No data available on the mixture. The following data is available for related products:

Substance	Test	Exposure / Duration	Test Results
Trisodium HEDTA (40%)	Fish (unknown species)	96-h	LC <sub>50</sub> = > 4640 mg/L
	Daphnia Magna	48-h	EC <sub>50</sub> = > 500 mg/L
	Algae	72-h	EC <sub>50</sub> = 26.1 mg/L
	Bacteria ( <i>Pseudomonas putida</i> )	7-h	EC <sub>50</sub> = 0.64 mg/L
Ferric HEDTA	Fish ( <i>Iepomis machrochirus</i> )	96-h	LC <sub>50</sub> = 8100 mg/L (27-30% ferric HEDTA) LC <sub>50</sub> = 2155 mg/L (100% ferric HEDTA)

**Biodegradation:** This product is not readily biodegradable (based on tests with structurally related products).

**Chemical Fate:** The substance is not expected to undergo hydrolysis and is also not expected to enter the atmosphere significantly based on its high water solubility.

**Other Ecotoxicity information:** Bioaccumulation: Log P<sub>ow</sub> = - 6.35 (based on structurally related product)

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal:** In its unused condition, this product is not considered to be a RCRA-defined hazardous waste by characteristics or listings. It is the responsibility of the waste generator to evaluate whether his wastes are hazardous by characteristic or listing. Dispose in accordance with all local, state and federal regulations. NOTE – State and local regulations may be more stringent than federal regulations.

**Container Disposal:** Containers should be cleaned of residual product before disposal or return. Since emptied containers retain product residue, follow label warnings even after container is emptied. Empty containers should be disposed of or shipped in accordance with all applicable laws and regulations.

## 14. TRANSPORT INFORMATION

**Shipping Information:** Not regulated for transport.

**Required Labels:** No transport label required.

**Environmentally Hazardous Substances [49 CFR 172.101, Appendix A]:** None

## 15. REGULATORY INFORMATION

**Regulatory Lists:** The components are subject to the following regulatory lists and inventories:

Chemical Name	CAA	CERCLA	IARC	US STATE RIGHT-TO-KNOW LISTS	CA PROP 65	SARA
Ferric HEDTA	N/R	N/R	N/R	N/R	N/R	N/R
Ferrous sodium HEDTA	N/R	N/R	N/R	N/R	N/R	N/R
NTA	N/R	N/R	X (Gr. 2B)	CA / FL / IL / MA / MN / NJ / PA	X	X 313
Ammonium nitrate	N/R	N/R	N/R	MA / NJ / PA / RI	N/R	X 313 (see note 1)
Sodium nitrate	N/R	N/R	N/R	MA / NJ / PA / RI	N/R	X 313 (see note 1)
Sodium formate	N/R	N/R	N/R	N/R	N/R	N/R
Water	N/R	N/R	N/R	N/R	N/R	N/R

## 15. REGULATORY INFORMATION (CONTINUED)

1. The nitrate compounds in this product are subject to SARA Title III, Section 313 supplier notification/release reporting requirements under the "Nitrate Compounds" category (Code N511 – water dissociable nitrate; reportable only when in aqueous solution). This product contains approximately 11% sodium nitrate and 5% ammonium nitrate.

### National Chemical Inventories Status:

Substance Name	US TSCA	Canada		EU EINECS	Australia AICS	New Zealand NZIoC	Japan ENCS	Korea KECI	Philippines PICCS	China IECSC
		DSL	NDSL							
Ferric HEDTA	X		X	X	X					X
Ferrous sodium HEDTA	X	X		X	X	X			X	X
NTA	X	X		X	X	X	X	X	X	X
Ammonium nitrate	X	X		X	X	X	X	X	X	X
Sodium Nitrate	X	X		X	X	X	X	X	X	X
Sodium formate	X	X		X	X	X	X	X	X	X
Water	X	X		X	X	X	X	X	X	X

N/R = Non Regulated

X = Listed / Regulated

#### Legend

AICS	Australian Inventory of Chemical Substances
CA List	California – Directors List of Hazardous Substances
CA Prop 65	California Proposition 65
CAA	Clean Air Act, Section 112
CERCLA	CERCLA Hazardous Substances
DSL	Domestic Substances List – Canada
EINECS	European Inventory of Existing Commercial Chemical Substances
ENCS	Japan Existing and New Chemical Substances
FL List	Florida – Substance List
IARC	International Agency for Research on Cancer – Carcinogens – Groups 1, 2A or 2B
IECSC	China – Inventory of Existing Chemical Substances
IL List	Illinois Toxic Substances Disclosure to Employees Act
KECI	Korea Existing Chemicals Inventory
LA List	Louisiana Right-to-Know Reporting List
MA List	Massachusetts – R-T-K Substance List
MN List	Minnesota – Hazardous Substance List
NDSL	Non-Domestic Substances List – Canada
NJ R-T-K	New Jersey – R-T-K Hazard List
PA List	Pennsylvania Hazardous Substance List
PICCS	Philippines Inventory of Chemicals and Chemical Substances
RI List	Rhode Island – Hazardous Substance List
SARA	SARA Title III, Section 302 / 313
TSCA	Toxic Substances Control Act – USA

### CANADA – WHMIS (Workplace Hazardous Materials Information System):

- **D2A , D2B** [Materials causing other toxic effects]

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* (CPR) and the MSDS contains all the information required by the CPR.

### Other Regulatory Information:

- **WARNING** – This product contains a chemical known to the State of California to cause cancer.

## 16. OTHER INFORMATION

**HMIS RATING – Health:** 1\*    **Flammability:** 0    **Physical Hazards:** 0    **Other:** none  
 [ 0 – Minimal    1 - Slight    2 - Moderate    3 - High    4 - Extreme    \* - Chronic Health Hazard (see Section 11)]

**Other Information:** Dissolvine® is a registered trademark of Akzo Nobel Chemicals B.V.

## **16. OTHER INFORMATION** (CONTINUED)

**Prepared by:** AkzoNobel [ Technology & Engineering, SHERA - Regulatory Toxicology ]  
Tel. 613-273-8095

**Changes:** See Sections 1, 15, 16 / Logo / Format

The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. Akzo Nobel Functional Chemicals LLC makes no warranty, express or implied as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. Nothing contained herein shall be construed as granting or extending any license under any patent. Buyer shall determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date of this document is more than three years old, please call to ensure that this sheet is current.

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