



SAFETY DATA SHEET

(according to (EC) 1907/2006)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Ammonium Formate Solution

Synonyms:

Formic acid, ammonium salt

1.2. Relevant identified uses of the substance or mixture and uses advised against

Plant intermediate

1.3. Details of the supplier of the safety data sheet

Vertellus Health & Specialty Products LLC

P.O. Box 730

Route 611

Delaware Water Gap, PA 18327 USA

1-800-344-3426

e-mail Address: msds@vertellus.com

1.4. Emergency telephone number

Vertellus: 1-800-344-3426

CHEMTREC (USA): 1-800-424-9300 (collect calls accepted); (Int'l): 1-703-527-3887 (collect calls accepted; 011 prefix not needed)

SECTION 2: Hazards identification

HMIS Rating	
HEALTH	2
FLAMMABILITY	1
REACTIVITY	0

2.1. Classification of the substance or mixture

(According to Regulation (EC) No 1272/2008)

Skin Corrosion/Irritation Category 2

Serious Eye Damage/Eye Irritation Category 2

(According to Directive 67/548/EEC)

Symbol: Xi

Risk Phrases: R36/38: Irritating to eyes and skin.

Safety Phrases: S25: Avoid contact with the eyes.

S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.

2.2. Label elements

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Hazard Symbols (Pictogram):



Signal Word:

Warning

Hazard Precautions:

H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

Prevention Precautionary Statements:

P264 - Wash hands thoroughly after handling.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Precautionary Statements:

P302+P352 - IF ON SKIN: Wash with plenty of soap and water.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P321 - Specific treatment (see supplemental information on this label).

P332+P313 - If skin irritation occurs: Get medical advice/attention.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P362 - Take off contaminated clothing and wash before reuse.

Storage Precautionary Statements:

Not required.

Disposal Precautionary Statements:

Not required.

2.3. Other hazards

Signs and Symptoms of Potential Overexposure: May cause irritation to the respiratory tract. Can cause eye irritation, including redness and tearing. Can cause skin irritation. Harmful if swallowed. Expected to cause gastrointestinal tract irritation with nausea and vomiting.

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

Medical Conditions Aggravated by Exposure:

SECTION 3: Composition/information on ingredients

3.1. Substances or 3.2. Mixtures

Ingredient	CAS Number	Concentration	EINECS /	CLP Inventory/	EU DSD	EU CLP Classification
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		(%)	ELINCS	Annex VI	Classification (67/548/EEC)	(1272/2008)
Ammonium Formate	540-69-2	45 - 50	208-753-9	Not listed.	Xi R36- R38	Eye Irrit. 2; H319 Skin Irrit. 2; H315
Water	7732-18-5	50 - 55	231-791-2	Not listed.	N/A Not applicable	

NOTE: See Section 8 of this MSDS for exposure limit data for these ingredients.
See Section 15 of this MSDS for trade secret information (where applicable).
See Section 16 of this MSDS for the full text of the R-phrases above.

SECTION 4: First aid measures

4.1. Description of first aid measures

- Skin Contact:** Wash with soap and water. Get medical attention if irritation develops or persists.
- Eye Contact:** Rinse eyes immediately with large amounts of water for at least 15 minutes, occasionally lifting the eyelids. GET MEDICAL ATTENTION. Flush eyes with water for at least 15 minutes; if irritation occurs seek medical attention.
- Inhalation:** Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. Get medical attention immediately.
- Ingestion:** If the material is swallowed, get immediate medical attention or advice -- Do not induce vomiting. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person. Get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

- Acute:** May cause irritation to the respiratory tract. Can cause eye irritation, including redness and tearing. Can cause skin irritation. Harmful if swallowed. Expected to cause gastrointestinal tract irritation with nausea and vomiting.
- Delayed Effects:** None known.

4.3. Indication of any immediate medical attention and special treatment needed

- Thermal Exposure:** Not applicable.
- Note to Physician:** No specific indications. Treatment should be based on the judgment of the physician in response to the reactions of the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Appropriate Extinguishing Media: Dry chemical Water spray Carbon dioxide Alcohol foam

5.2. Special hazards arising from the substance or mixture

- Hazardous Products of Combustion:** May generate ammonia gas when heated to decomposition. Carbon dioxide, Carbon monoxide
During a fire, irritating and toxic gases, fumes and vapors may be generated.
- Potential for Dust Explosion:** Not known to be sensitive to mechanical impact or static discharges.

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Special Flammability Hazards: May generate ammonia gas when heated to decomposition.

5.3. Advice for firefighters

Basic Fire Fighting Guidance: Evacuate area and fight fire from a safe distance.
 As in any fire, wear pressure-demand self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
 Use NIOSH approved chemical cartridge-respirator or self-contained breathing apparatus.
 Material will burn in a fire.

Flammability Classification (OSHA): Not applicable.

NFPA Rating



SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuation Procedures: Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Special Instructions: Remove all contaminated clothing to prevent further absorption. Decontaminate affected personnel using the first aid procedures in Section 4. Leather shoes that have been saturated must be discarded.

6.2. Environmental precautions

Prevent releases to soils, drains, sewers, and waterways.

6.3. Methods and material for containment and cleaning up

Containment Techniques and Clean-up Procedures: LARGE SPILLS: Shut off leak if safe to do so. Contain spilled liquid with sand clay. DO NOT use combustible materials such as sawdust. Retain all contaminated water for treatment.

Special Reporting Requirements: Not applicable.

6.4. Reference to other sections

Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent and clean up material disposal instructions.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for Unique Hazards: Not applicable.

Practices to Minimize Risk: Wear appropriate protective equipment when performing maintenance on contaminated equipment.
 Wash hands thoroughly before eating or smoking after handling this material.

Special Handling Equipment: Not applicable.



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7.2. Conditions for safe storage, including any incompatibilities

Storage Precautions & Recommendations:	Keep container closed when not in use.
Dangerous Incompatibility Reactions:	Strong acids. Strong alkalis Keep away from halocarbons, halogens, combustible materials and oxidizing agents.
Incompatibilities with Materials of Construction:	none known

7.3. Specific end use(s)

If a chemical safety assessment has been completed an exposure scenario is attached as an annex to this Safety Data Sheet. Refer to this annex for the specific exposure scenario control parameters for uses identified in subsection 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits (United States):	OSHA PEL: Not established	ACGIH TLV: Not established
Exposure Limits (UK):	Not established	

8.2. Exposure controls

Also see the annex to this SDS (if applicable) for specific exposure scenario controls.

Personal Protective Equipment:	Use chemical goggles, faceshields, boots and impervious clothing, if conditions involve potential for splashing or spraying.
Respirator Caution:	Observe OSHA regulations for respirator use (29 CFR 1910.134). Air-purifying respirators must not be used in oxygen-deficient atmospheres.
Ventilation:	All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.
Other Engineering Controls:	All appropriate engineering controls should be used to minimize exposure potential. Use exhaust ventilation to keep airborne concentrations below exposure limits.
Thermal Hazards:	Not applicable.
Additive or Synergistic Effects:	None known.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance, State & Odor (ambient temperature):	Clear Ammonia-like Colorless Liquid		
Molecular Formula:	Not applicable	Molecular Weight:	Not applicable



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Vapor Pressure:	Not applicable	Evaporation Rate:	Not determined
Specific Gravity or Density:	1.1	Vapor Density (air = 1):	1.1@77F
Boiling Point:	No data available.	Freezing / Melting Point:	241 °F
Solubility in Water:	Miscible	Octanol / Water Coefficient:	Not applicable
pH:	No data available.	Odor Threshold:	Not applicable
Viscosity:	Not applicable	Autoignition Temperature:	Not applicable
Flash Point and Method:	Not applicable (Not applicable) Not applicable	Flammable Limits:	Not applicable (LEL) – Not applicable (UEL)

9.2. Other information

Not applicable.

SECTION 10: Stability and reactivity

<u>10.1. Reactivity</u>	Not classified as dangerously reactive.
<u>10.2. Chemical stability</u>	Stable
<u>10.3. Possibility of hazardous reactions</u>	Hazardous polymerization will not occur
<u>10.4. Conditions to avoid</u>	Avoid static discharge and uncontrolled exposure to high temperatures. Ferrous metals. Do not allow oil soaked materials to dry.
<u>10.5. Incompatible materials</u>	Strong acids.; Strong alkalies; Keep away from halocarbons, halogens, combustible materials and oxidizing agents.
<u>10.6. Hazardous decomposition products</u>	Products of incomplete combustion may include CO, CO ₂ , NO _x , and dense smoke.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Oral LD ₅₀ :	Oral LD50 (rat) > 90000 mg/kg Oral LD50 (mouse) 2250 mg/kg	Water Ammonium Formate
Acute Dermal LD ₅₀ :	No data available.	
Acute Inhalation LC ₅₀ :	No data available.	
Skin Irritation:	No data available.	
Skin Sensitization:	No data available.	
Eye Irritation:	No data available.	
Target Organs:	No data available.	
Carcinogenicity:	No data available.	
Teratogenicity:	No data available.	
Reproduction:	No data available.	



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Neurotoxicity: No data available.
Mutagenicity: No data available.
Additional Toxicity Information: No data available.

SECTION 12: Ecological information

<u>12.1. Toxicity</u>	No data available.	Ammonium Formate
<u>12.2. Persistence and degradability</u>	No data available	
<u>12.3. Bioaccumulative potential</u>	No data available	
<u>12.4. Mobility in soil</u>	No data available	
<u>12.5. Results of PBT and vPvB assessment</u>	No data available.	
<u>12.6. Other adverse effects</u>	No data available.	

German Water Hazard Classification: ID Number 7573, hazard class 1 - low hazard to waters

Component Name:
Ammoniumformiat

SECTION 13: Disposal considerations

13.1. Waste treatment methods

US EPA Waste Number: Non-Hazardous

Waste Disposal: Dispose of this material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable international, national, regional, state or local laws. Do NOT dump into any sewers, on the ground, or into any body of water. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used. Note that disposal regulations may also apply to empty containers and equipment rinsates.

SECTION 14: Transport information

<u>14.1. UN number</u>	Not applicable
<u>14.2. UN proper shipping name</u>	Chemicals, n.o.s. (Ammonium Formate Solution)
<u>14.3. Transport hazard class(es)</u>	Not applicable
<u>14.4. Packing group</u>	Not applicable
<u>14.5. Environmental hazards</u>	Not applicable
<u>14.6. Special precautions for user</u>	No data available.
NA Emergency Guidebook Numbers:	Not applicable
	IMDG EMS: Not applicable
<u>14.7. Transport in bulk according to Annex II of</u>	Not applicable.



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MARPOL73/78 and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

OSHA Hazards: Health: Irritant. Physical: Not applicable.

WHMIS Classification: Class D, Division 2, Subdivision B: Irritant.

Chemical Inventory Lists:

Status

TSCA:	Present
EINECS:	231-791-2 208-753-9
Canada(DSL/NDSL):	DSL
Japan:	(2)-670; (1)-391
Korea:	Present KE-35400 Present KE-17235
Australia:	Present
New Zealand:	Present
China:	Present
Philippines:	Present
Switzerland:	Not listed.

New Zealand GHS Classification: Not classified by this country.

Japan GHS Classification: Not classified by this country.

Korea (MOL) GHS Classification: Not classified by this country.

Australia GHS Classification: Not classified by this country.

Taiwan GHS Classification: Not classified by this country.

Indonesia GHS Classification: Not classified by this country.

SARA 313: Not listed.

Component Name:
Not listed.

15.2. Chemical safety assessment

Not applicable.



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SECTION 16: Other information

Full text of R phrases in Section 3: R36: Irritating to the eyes.
R38: Irritating to the skin.

Legend of abbreviations: ACGIH = American Conference on Governmental Industrial Hygienists.
CAS = Chemical Abstracts Service.
CERCLA = Comprehensive Environmental, Response, Compensation and Liability Act (1990).
CFR = Code of Federal Regulations.
DSL/NDSL = Domestic Substances List/Non-Domestic Substances List.
EC = European Community.
EEC = European Economic Community.
EINECS = European Inventory of Existing Commercial chemical Substances.
ELINCS = European List of Notified Chemical Substances.
EU = European Union.
GHS = Globally Harmonized System.
LC = Lethal concentration.
LD = Lethal dose.
MOL = Ministry of Labor.
NEMA = National Emergency Management Agency.
NFPA = National Fire Protection Association.
NIOSH = National Institute of Occupational Safety and Health.
NTP = National Toxicological Program.
OSHA = Occupational Safety and Health Administration
PEL = Permissible exposure limit.
RQ = Reportable quantity.
SARA = Superfund Amendments and Reauthorization Act of 1986.
TLV = Threshold limit value.
WHMIS = Workplace Hazardous Materials Information System.

Important Note: Please note that the information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. The information contained herein may change without prior notice. THIS SAFETY DATA SHEET SUPERSEDES ALL PREVIOUS EDITIONS.

Revision Date: May 03, 2013 **Original Date of Issue:** 9-Jan-03
Issued By: Regulatory Management Department
Revision Details: Revised Specific Gravity or Density to 1.1 in Section 9.1.