



SAFETY DATA SHEET

CONTINUUM* AT4505

1. Product and Company Identification

Material name CONTINUUM AT4505
Version # 2.0
Revision date Dec-08-2014
Supersedes date Sep-20-2013
Chemical description Aqueous alkaline solution of organic and inorganic salts
CAS # Mixture
Product application Corrosion inhibitor

Company/undertaking identification

GE Betz, Inc.
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Emergency telephone

(800) 877 1940

2. Hazards Identification

Emergency overview Corrosive to skin. Corrosive to the eyes. Irritating to respiratory system. May be corrosive to metals.

Potential health effects

Eyes Corrosive to the eyes and may cause severe damage including blindness.
Skin Causes severe skin burns.
Inhalation Inhalation of vapor or mist may cause severe nose, throat, and respiratory tract irritation.
Ingestion May cause gastrointestinal irritation and abdominal pain. In solution, material may become corrosive to tissues.

Medical conditions aggravated by exposure None known.

3. Composition / Information on Ingredients

Hazardous components	CAS #	Percent
Tetrasodium (1-hydroxyethylidene)bisphosphonate	3794-83-0	10 - 20
Chlorotolyltriazole sodium salt	202420-04-0	1 - 2.5
Sodium hydroxide	1310-73-2	1 - 2.5
Non-hazardous components	CAS #	
Water	7732-18-5	
2-Propenoic acid, polymer with 2-hydroxy-3-(2-propenyloxy)- 1-propanesulfonic acid monosodium salt and α -sulfo-w-(2-propenyloxy)poly (oxy-1,2-ethanediyl) ammonium salt, sodium salt	903573-39-7	

Composition comments

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Keep eyelids apart. Get medical attention immediately.
Skin contact	Wash off with soap and water. Get medical attention immediately. Take off contaminated clothing and wash before reuse.
Inhalation	Move to fresh air. If breathing stops, provide artificial respiration. For breathing difficulties, oxygen may be necessary. Get medical attention immediately.
Ingestion	Do NOT induce vomiting! Rinse mouth with water. Never give anything by mouth to a victim who is unconscious or is having convulsions. Dilute contents of stomach using 2-8 fluid ounces (60-240ml) of milk or water. Call a physician or poison control center immediately.

Notes to physician

Corrosive material It may not be advisable to induce vomiting. Possible mucosal damage may contraindicate the use of gastric lavage.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Dry chemical, CO₂, water spray or regular foam.

Protection of firefighters

Protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions

In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.

6. Accidental Release Measures

Personal precautions

Wear appropriate protective equipment and clothing during clean-up. Avoid contact with spilled material. See Section 8 of the MSDS for Personal Protective Equipment.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Water contaminated with this product may be sent to a sanitary sewer treatment facility, or a permitted waste treatment facility, in accordance with any local agreements.

Methods for cleaning up

Ventilate the area. Flush with plenty of water. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wet area may be slippery. Spread sand/grit.

7. Handling and Storage

Handling

Alkaline. Do not mix with acidic material.

Storage

Keep container tightly closed in a dry and well-ventilated place. Do not freeze. Avoid moisture contamination. Avoid atmospheric exposure. Avoid high temperatures.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m ³

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

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m ³

Biological limit values

No biological exposure limits noted for the ingredient(s).

Engineering controls

Explosion-proof general and local exhaust ventilation. 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.

Personal protective equipment

Eye / face protection

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection	Wear suitable protective clothing. Chemical resistant gloves. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Chemical resistant apron. Glove selection must take into account any solvents and other hazards present.
Respiratory protection	A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE. If air-purifying respirator use is appropriate, use organic vapor cartridges and any of the following particulate respirators: R95, R99, R100, P95, P99 or P100.

9. Physical & Chemical Properties

Appearance

Physical state	Liquid
Color	Amber
Odor	Slight ammonia
Odor threshold	Not available.
pH (concentrated product)	13.3
pH in aqueous solution	12.1 (5% SOL.)
Vapor pressure	18 mm Hg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1 (Air = 1)
Boiling point	220 °F (104 °C)
Melting point/Freezing point	23 °F (-5 °C)
Solubility (water)	100 %
Specific gravity (70°F, 21°C)	1.2
Flash point	Not applicable.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Auto-ignition temperature	Not available.
Evaporation rate	< 1 (Ether = 1)
Viscosity	38 cps
Viscosity temperature	70 °F (21 °C)
Percent volatile	0 (Estimated)
Pour point	28 °F (-2 °C)

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Protect from freezing.
Incompatible materials	Avoid contact with strong acids and oxidisers.
Hazardous decomposition products	Oxides of carbon, nitrogen and phosphorus evolved in fire. Hydrogen chloride gas (HCl).
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Species	Test Results
CONTINUUM AT4505 (CAS Mixture)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 5000 mg/kg, (Calculated according to GHS additivity formula)

Product	Species	Test Results
Oral LD50	Rat	> 5000 mg/kg, (Calculated according to GHS additivity formula)
Components	Species	Test Results
Chlorotolyltriazole sodium salt (CAS 202420-04-0)		
Acute		
Dermal LD50	Rat	> 5000 mg/kg
Oral LD50	Rat	3100 mg/kg
Sodium hydroxide (CAS 1310-73-2)		
Acute		
Dermal LD50	Rabbit	1350 mg/kg
Oral LD50	Rabbit	> 500 mg/kg
Tetrasodium (1-hydroxyethylidene)bisphosphonate (CAS 3794-83-0)		
Acute		
Dermal LD50	Rabbit	> 5000 mg/kg
Oral LD50	Rat	990 mg/kg

Carcinogenicity

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

12. Ecological Information

Ecotoxicity

Product	Species	Test Results
CONTINUUM AT4505 (CAS Mixture)		
LC50	Ceriodaphnia	1167 mg/L, Acute Toxicity, 48 hour, (Estimated)
	Fathead Minnow	426 mg/L, Acute Toxicity, 96 hour, (Estimated)
NOEL	Fathead Minnow	185 mg/L, Acute Toxicity, 96 hour, (Estimated)
Crustacea LC50	Daphnia magna	1231 mg/L, Acute Toxicity, 48 hour, (Estimated)
	Daphnia magna	775 mg/L, Acute Toxicity, 48 hour, (Estimated)
Components	Species	Test Results
Chlorotolyltriazole sodium salt (CAS 202420-04-0)		
Algae EbC50	Algae	6.84 mg/l
	ErC50	18.6 mg/l

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

Persistence and degradability

- COD (mgO2/g) 233 (calculated data)
- BOD 5 (mgO2/g) 7 (calculated data)
- BOD 28 (mgO2/g) 17 (calculated data)

- Closed Bottle Test (% Degradation in 28 days) 7 (calculated data)
- TOC (mg C/g) 67 (calculated data)

13. Disposal Considerations

Waste codes	The complete waste code should be assigned in discussion with the waste disposal company.
Waste from residues / unused products	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

DOT

UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (Sodium hydroxide, HALOGENATED AROMATIC HETEROCYCLE SODIUM SALT)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Special precautions for user	Not available.
ERG number	154

Some containers may be DOT exempt, please check BOL for exact container classification.

IATA

UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (Sodium hydroxide, HALOGENATED AROMATIC HETEROCYCLE SODIUM SALT)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	154
Special precautions for user	Not available.

IMDG

UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (Sodium hydroxide, HALOGENATED AROMATIC HETEROCYCLE SODIUM SALT)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	Not available.
Special precautions for user	Not available.

TDG

UN number	UN3266
UN proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (Sodium hydroxide, HALOGENATED AROMATIC HETEROCYCLE SODIUM SALT)
Hazard class	8
Packing group	III
ERG code	154

DOT



IATA; IMDG; TDG



15. Regulatory Information

US federal regulations

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

None listed.

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

Not regulated.

CERCLA (Superfund) reportable quantity, lbs

Sodium hydroxide: 1000 lbs

Superfund Amendments and Reauthorization Act of 1986 (SARA)

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

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

State regulations

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

1,4-DIOXANE (CAS 123-91-1) Listed: January 1, 1988 Carcinogenic.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

No ingredient listed.

US - Massachusetts RTK - Substance List

Sodium hydroxide (CAS 1310-73-2)

Material name: CONTINUUM* AT4505

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US - New Jersey RTK - Substances: Listed substance

Sodium hydroxide (CAS 1310-73-2) Listed.

US - Pennsylvania RTK - Hazardous Substances

Sodium hydroxide (CAS 1310-73-2) Listed.

US - Rhode Island RTK

Sodium hydroxide (CAS 1310-73-2)

16. Other Information

List of abbreviations

CAS: Chemical Abstract Service Registration Number
TWA: Time Weighted Average
STEL: Short Term Exposure Limit
LD50: Lethal Dose, 50%
LC50: Lethal Concentration, 50%
NOEL: No Observed Effect Level
COD: Chemical Oxygen Demand
BOD: Biochemical Oxygen Demand
TOC: Total Organic Carbon
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods Code
NFPA: National Fire Protection Association
ACGIH: American Conference of Governmental Industrial Hygienists
TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.

HMIS® ratings

Health: 3
Flammability: 1
Physical hazard: 0
Personal protection: B

NFPA ratings

Health: 3
Flammability: 1
Instability: 0
Special hazards: ALK

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. 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.

This data sheet contains changes from the previous version in section(s):

Product and Company Identification: Product and Company Identification
Composition / Information on Ingredients: Disclosure Overrides
Transport Information: Material Transportation Information
Material Attributes & Uses; Experimental Data: Experimental Data
GHS: Classification

Prepared by

This MSDS has been prepared by GE Water & Process Technologies Regulatory Department (1-215-355-3300).

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