Version: 2.0 Effective Date: Jan-19-2016 Previous Date: Oct-22-2015



SAFETY DATA SHEET STEAMATE* HRSG04

1. Identification

Product identifier STEAMATE HRSG04

Other means of identification None.

Recommended use Steam condensate treatment.

Recommended restrictions None known.

Company/undertaking identification

GE Betz, Inc. 4636 Somerton Road Trevose, PA 19053 T 215 355 3300, F 215 953 5524

Emergency telephone

(800) 877 1940

2. Hazard(s) identification

| Physical hazards | Flammable liquids | Category 3 |
|------------------|-----------------------------------|-------------|
| Health hazards | Acute toxicity, oral | Category 4 |
| | Acute toxicity, dermal | Category 4 |
| | Skin corrosion/irritation | Category 1B |
| | Serious eye damage/eye irritation | Category 1 |
| | Carcinogenicity | Category 2 |

Reproductive toxicity (fertility)

Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

Category 2

Specific target organ toxicity, repeated Category 1

exposure

Aspiration hazard Category 1

OSHA defined hazards

Not classified.

Label elements



Signal word Danger

Hazard statement

Flammable liquid and vapor. May be fatal if swallowed and enters airways. Harmful if swallowed.

Harmful in contact with skin. Causes severe skin burns and eye damage. Causes serious eye damage.

May cause respiratory irritation. Suspected of causing cancer. Suspected of damaging fertility. Causes

damage to organs through prolonged or repeated exposure.

Precautionary statement

Obtain special instructions before use. Do not handle until all safety precautions have been read and Prevention

understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container

tightly closed. Ground/bond container and receiving equipment. Use explosion-proof

electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective

gloves/protective clothing/eye protection/face protection.

Response If swallowed: Immediately call a poison center/doctor. If swallowed: Rinse mouth. Do NOT induce

> vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Do NOT induce vomiting. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.

Storage Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep

cool. Store locked up.

Disposal Dispose of contents/container to an approved facility.

Hazard(s) not otherwise classified (HNOC)

Supplemental information

None known.

None.

3. Composition/information on ingredients

Mixtures

| Components | CAS# | Percent | |
|----------------------|-----------|----------|--|
| Cyclohexylamine | 108-91-8 | 10 - 20 | |
| Ethanolamine | 141-43-5 | 10 - 20 | |
| Alkyl diaminopropane | 7173-62-8 | 2.5 - 10 | |
| Oleylamine | 112-90-3 | 1 - 2.5 | |
| Diethanolamine | 111-42-2 | 0.1 - 1 | |

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 SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON

CENTER or doctor/physician if you feel unwell.

Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison Skin contact

control center immediately. Chemical burns must be treated by a physician. Wash contaminated

clothing before reuse.

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present Eye contact

and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting

occurs, keep head low so that stomach content doesn't get into the lungs.

Most important

symptoms/effects, acute and

delayed

Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Prolonged exposure may cause chronic effects.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be

General information

Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2). Suitable extinguishing media

Material name: STEAMATE* HRSG04

Version number: 2.0

Unsuitable extinguishing media

Specific hazards arising from the

chemical

Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.

Special 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. Move containers from fire area if you can do so without risk. Use standard firefighting procedures and consider the hazards of other involved materials. Cool containers / tanks with water spray.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

Do not use water jet as an extinguisher, as this will spread the fire.

General fire hazards Flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Large Spills: Stop the flow of material, if this is without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Environmental precautions

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. 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.

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. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS). Store in accordance with local/regional/national/international regulation. Do not freeze. If frozen, thaw completely and mix thoroughly prior to use.

8. Exposure controls/personal protection

Occupational exposure limits

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

| Components | Туре | Value | | |
|----------------------------------|------|---------|------|--|
| Ethanolamine (CAS 141-43-5) | PEL | 6 mg/m3 | | |
| | | 3 ppm | | |
| US. ACGIH Threshold Limit Values | | | | |
| Components | Туре | Value | Form | |
| Cyclohexylamine (CAS | TWA | 10 ppm | | |

Material name: STEAMATE* HRSG04

Page: 3 / 10

108-91-8)

US. ACGIH Threshold Limit Values

| Components | Туре | Value | Form |
|-------------------------------------|---------|----------|-------------------------------|
| Diethanolamine (CAS 111-42-2) | TWA | 1 mg/m3 | Inhalable fraction and vapor. |
| Ethanolamine (CAS 141-43-5) | STEL | 6 ppm | |
| | TWA | 3 ppm | |
| US. NIOSH: Pocket Guide to Chemical | Hazards | | |
| Components | Туре | Value | |
| Cyclohexylamine (CAS 108-91-8) | TWA | 40 mg/m3 | |
| | | 10 ppm | |
| Diethanolamine (CAS 111-42-2) | TWA | 15 mg/m3 | |
| | | 3 ppm | |
| Ethanolamine (CAS 141-43-5) | STEL | 15 mg/m3 | |
| | | 6 ppm | |
| | TWA | 8 mg/m3 | |
| | | 3 ppm | |

Biological limit values

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

Exposure guidelines

US ACGIH Threshold Limit Values: Skin designation

Diethanolamine (CAS 111-42-2)

Can be absorbed through the skin.

Appropriate 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. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Splash proof chemical goggles. Face shield.

Skin protection

Hand protection Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend

on its material but also on other quality features and is different from one producer to the other. Glove

selection must take into account any solvents and other hazards present.

Other Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits

(where applicable) or to an acceptable level (in countries where exposure limits have not been

established), an approved respirator must be worn. 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.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as

washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work

clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Color Light yellow
Physical state Liquid
Odor Amine
Odor threshold Not available.

pH (concentrated product) 12.8

pH in aqueous solution 11.8 (5% EMULSION) Melting point/freezing point $< 41 \, ^{\circ}\text{F} (< 5 \, ^{\circ}\text{C})$ Initial boiling point and boiling Not available.

range

Flash point 133 °F (56 °C) P-M(CC)

Material name: STEAMATE* HRSG04 Page: 4 / 10

Evaporation rate < 1 (Ether = 1)
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 pressure18 mm HgVapor pressure temp.70 °F (21 °C)Vapor density< 1 (Air = 1)Relative density0.98

Relative density temperature 70 °F (21 °C)

Solubility(ies)

Solubility (water) Not available.

Partition coefficient Not available.

(n-octanol/water)

Auto-ignition temperatureNot available.Decomposition temperatureNot available.Viscosity24 cps

Viscosity temperature 70 °F (21 °C)

Other information

Percent volatile 40 (Estimated)

Specific gravity 0.98

10. Stability and reactivity

ReactivityThe product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stabilityMaterial is stable under normal conditions. **Possibility of hazardous reactions**Hazardous polymerization does not occur.

Conditions to avoid Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash

point. Protect from freezing.

Incompatible materials Strong acids. Strong oxidizing agents.

Hazardous decomposition

products

Oxides of carbon and nitrogen evolved in fire.

11. Toxicological information

Information on likely routes of exposure

Inhalation May cause damage to organs through prolonged or repeated exposure by inhalation. May cause

irritation to the respiratory system. Prolonged inhalation may be harmful.

Skin contact Causes severe skin burns. Harmful in contact with skin.

Prolonged or repeated exposure may cause liver and kidney damage. These effects have not been

observed in humans.

Eye contact Causes serious eye damage.

Ingestion Causes digestive tract burns. Harmful if swallowed. Droplets of the product aspirated into the lungs

through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms related to the physical, chemical and toxicological

characteristics

Burning pain and severe corrosive skin damage. Aspiration may cause pulmonary edema and pneumonitis. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways. Harmful in contact with skin. May cause respiratory

irritation.

Material name: STEAMATE* HRSG04

Version number: 2.0

| STEAMATE HRSG04 (CAS Mixture) | Product | Species | Test Results |
|--|-----------------------------|-----------|---|
| Dermal 1050 Robbit 1097 mg/kg, [Colculated according to GHS additivity formulal 1097 mg/kg, [Colculated according to GHS additivity formulal 1050 1050 Rat 1050 | STEAMATE HRSG04 (CAS Mixt | ture) | |
| LD50 | Acute | | |
| Coral | Dermal | | |
| LD50 Rat 638 mg/kg, (Colculated according to GHS additivity formulal | LD50 | Rabbit | |
| Components Species Test Results Alkyl diaminopropane (CAS 7173-62-8) *** Acute Oral *** LD50 Rat 500 mg/kg Cyclohexylamine (CAS 108-91-8) *** Acute *** Dermal LD50 Rabbit 277 mg/kg Oral LD50 Rat 156 mg/kg Diethanolamine (CAS 111-42-2) *** *** Acute Dermal 4000 mg/kg *** LD50 Rat 1600 mg/kg *** Ethanolamine (CAS 141-43-5) *** *** Acute Dermal *** *** LD50 Rabbit 1025 mg/kg *** LD50 Rabbit 1025 mg/kg *** LD50 Rabbit 1025 mg/kg *** LD50 Rat >*** *** LD50 Rat *** *** LD50 Rat *** *** LD50 Rat *** *** | | | |
| Acute Oral LD50 Rat 500 mg/kg Cyclohexylamine (CAS 108-91-8) Acute Dermal LD50 Rat 277 mg/kg Oral LD50 Rat 156 mg/kg Diethanolamine (CAS 111-42-2) Acute Dermal LD50 Rabbit 4000 mg/kg Diethanolamine (CAS 111-42-3) Acute Dermal LD50 Rabbit 4000 mg/kg Dermal LD50 Rat 1600 mg/kg Oral LD50 Rat 1600 mg/kg Coral LD50 Rat 1600 mg/kg Ethanolamine (CAS 141-43-5) Acute Dermal LD50 Rat 1600 mg/kg Coral LD50 Rat 1600 mg/kg Oral LD50 Rat 1025 mg/kg Oral LD50 Rat 1720 mg/kg | LD50 | Rat | 638 mg/kg, (Calculated according to GHS additivity formula) |
| Acute | Components | Species | Test Results |
| Oral LD50 Rot 500 mg/kg Cyclohexylamine (CAS 108-91-8) Acute Dermal LD50 Robbit 277 mg/kg LD50 Rot 156 mg/kg Diethanolamine (CAS 111-42-2) Kacute Dermal LD50 Robbit 4000 mg/kg LD50 Rot 1600 mg/kg Ethanolamine (CAS 141-43-5) Kacute Dermal LD50 Rot 1000 mg/kg LD50 Robbit 1025 mg/kg Inhalation LD50 Robbit 1025 mg/kg Inhalation LC50 Rot > 1.5 mg/l, 4 Hour Oral LD50 Rot 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral 1720 mg/kg | Alkyl diaminopropane (CAS 7 | 173-62-8) | |
| LD50 Rat 500 mg/kg Cyclohexylamine (CAS 108-91-8) Acute 277 mg/kg LD50 Rabbit 277 mg/kg Oral LD50 Rat 156 mg/kg Diethanolamine (CAS 111-42-2) Femal 4000 mg/kg LD50 Rabbit 4000 mg/kg Oral 1500 Rat 1600 mg/kg Ethanolamine (CAS 141-43-5) Acute Poermal LD50 Rabbit 1025 mg/kg Inhalation 125 mg/kg LC50 Rat > 1.5 mg/l, 4 Hour Oral 1050 Rat Acute 0ral 1720 mg/kg Oleylamine (CAS 112-90-3) Acute 0ral Acute 0ral 1720 mg/kg | Acute | | |
| Acute | | | |
| Acute Dermal 277 mg/kg LD50 Rabbit 277 mg/kg DEMANOLOMIC LD50 Rat 156 mg/kg Determal LD50 Rabbit 4000 mg/kg LD50 Rabbit 4000 mg/kg Drad LD50 Rat Ethanolamine (CAS 141-43-5) Facute Dermal LD50 Rabbit 1025 mg/kg LD50 Rabbit 1025 mg/kg Inhalation LC50 Rat > 1.5 mg/l, 4 Hour Oral LD50 Rat 1720 mg/kg Cleylamine (CAS 112-90-3) Acute Oral 1720 mg/kg | LD50 | Rat | 500 mg/kg |
| Dermal | Cyclohexylamine (CAS 108-9 | 1-8) | |
| LD50 Robbit 277 mg/kg Oral LD50 Rat 156 mg/kg Diethanolamine (CAS 111-42-2) Facute Facute <td< td=""><td>Acute</td><td></td><td></td></td<> | Acute | | |
| Oral LD50 | | | |
| LD50 Rat 156 mg/kg Diethanolamine (CAS 111-42-2) France Acute France France Dermal 4000 mg/kg LD50 Rat 1600 mg/kg Ethanolamine (CAS 141-43-5) France France Dermal 1025 mg/kg LD50 Rabbit 1025 mg/kg Inhalation France France LC50 Rat > 1.5 mg/l, 4 Hour Oral LD50 Rat Acute 1720 mg/kg Oral France France Acute Oral | LD50 | Rabbit | 277 mg/kg |
| Diethanolamine (CAS 111-42-2) Acute Dermal 4000 mg/kg LD50 Rabbit 4000 mg/kg Dcral LD50 Rat 1600 mg/kg Ethanolamine (CAS 141-43-5) Testa to the standard of the sta | | | |
| Acute Dermal LD50 Rabbit 4000 mg/kg Oral LD50 Rat LD50 Rat 1600 mg/kg Ethanolomine (CAS 141-43-5) **** **** | LD50 | Rat | 156 mg/kg |
| Dermal LD50 Rabbit 4000 mg/kg 4000 | Diethanolamine (CAS 111-42 | 2-2) | |
| LD50 Rabbit 4000 mg/kg Oral LD50 Rat 1600 mg/kg Ethanolamine (CAS 141-43-5) Fermal Fermal LD50 Rabbit 1025 mg/kg Inhalation LC50 Rat > 1.5 mg/l, 4 Hour Oral LD50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral Oral Coral Ferman Ferman | Acute | | |
| Oral LD50 Rat 1600 mg/kg Ethanolamine (CAS 141-43-5) Fermal Fermal <t< td=""><td></td><td></td><td></td></t<> | | | |
| LD50 Rat 1600 mg/kg Ethanolamine (CAS 141-43-5) Februar Acute Februar Februar Dermal Dermal 1025 mg/kg LD50 Rat \$ 1.5 mg/l, 4 Hour Oral LD50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral Oral Februar Februar Februar | | Rabbit | 4000 mg/kg |
| Ethanolamine (CAS 141-43-5) Acute Dermal LD50 Rabbit 1025 mg/kg Inhalation LC50 Rat > 1.5 mg/l, 4 Hour Oral LD50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral Oral | | | |
| Acute Dermal 1025 mg/kg LD50 Rabbit 1025 mg/kg Inhalation > 1.5 mg/l, 4 Hour C50 Rat > 1.720 mg/kg D50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral Oral Coral Coral | | | 1600 mg/kg |
| Dermal LD50 Rabbit 1025 mg/kg Inhalation Value Value LC50 Rat > 1.5 mg/l, 4 Hour Oral LD50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral | | 5) | |
| LD50 Rabbit 1025 mg/kg Inhalation C50 Rat > 1.5 mg/l, 4 Hour Oral LD50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral Oral Oral Temperature | | | |
| Inhalation LC50 | | 0.11.7 | 4005 |
| LC50 Rat > 1.5 mg/l, 4 Hour Oral LD50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral Oral Oral | | Rabbit | 1025 mg/kg |
| Oral LD50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral | | | |
| LD50 Rat 1720 mg/kg Oleylamine (CAS 112-90-3) Acute Oral | | Rat | > 1.5 mg/l, 4 Hour |
| Oleylamine (CAS 112-90-3) Acute Oral | | | 4-00 |
| Acute Oral | | Rat | 1/20 mg/kg |
| Oral | | | |
| | | | |
| LU50 Rat 1950 mg/kg | | 0.1 | 4050 " |
| | LD50 | Kat | 1950 mg/kg |

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

Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicityNo data available to indicate product or any components present at greater than 0.1% are mutagenic or

genotoxic.

Carcinogenicity Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Diethanolamine (CAS 111-42-2) 2B Possibly carcinogenic to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Material name: STEAMATE* HRSG04 Page: 6 / 10

US. National Toxicology Program (NTP) Report on Carcinogens

Not available.

Reproductive toxicity Suspected of damaging fertility.

Specific target organ toxicity -

single exposure

May cause respiratory irritation.

Specific target organ toxicity -

repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard Aspiration of this product may cause the same corrosiveness/irritation impacts as if it were ingested.

Chronic effects Causes damage to organs through prolonged or repeated exposure. May be harmful if absorbed

through skin. Prolonged inhalation may be harmful.

Prolonged or repeated exposure may cause liver and kidney damage. These effects have not been

observed in humans.

12. Ecological information

Ecotoxicity

| Product | | Species | Test Results |
|-------------------------------|------|----------------|---|
| STEAMATE HRSG04 (CAS Mixture) | | | |
| | LC50 | Fathead Minnow | 1.59 mg/l, Acute Toxicity, 96 hour, (Estimated) |
| Aquatic | | | |
| Crustacea | LC50 | Daphnia magna | 1.3 mg/l, Acute Toxicity, 48 hour, (Estimated) |

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

Bioaccumulative potential

Ethanolamine

Partition coefficient n-octanol / water (log Kow)

1.49 Cyclohexylamine Diethanolamine -1.43Ethanolamine -1.31Bioconcentration factor (BCF) Diethanolamine 3

No data available. Mobility in soil Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the

> material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in

accordance with local/regional/national/international regulations.

3

Local disposal regulations

Hazardous waste code

Dispose in accordance with all applicable regulations.

D001: Waste Flammable material with a flash point <140 F

D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]

The waste code should be assigned in discussion between the user, the producer and the waste disposal

company.

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

UN number UN2734

UN proper shipping name Transport hazard class(es) AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S. (CYCLOHEXYLAMINE, MONOETHANOLAMINE)

8 Class

Material name: STEAMATE* HRSG04 Version number: 2.0

Page: 7 / 10

 $\begin{array}{ccc} \textbf{Subsidiary risk} & & 3 \\ \textbf{Packing group} & & \text{II} \end{array}$

Special precautions for user Not available.

ERG number 132

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

Classification

IATA

UN number UN2734

UN proper shipping name AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S. (CYCLOHEXYLAMINE, MONOETHANOLAMINE)

Transport hazard class(es)

Class 8
Subsidiary risk 3
Packing group II
Environmental hazards No.

Special precautions for user Not available.

IMDG

UN number UN2734

UN proper shipping name AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S. (CYCLOHEXYLAMINE, MONOETHANOLAMINE)

Transport hazard class(es)

Class 8
Subsidiary risk 3
Packing group ||
Environmental hazards

Marine pollutantNo.EmSF-E, S-CSpecial precautions for userNot available.

DOT



IATA; IMDG



15. Regulatory information

US federal regulationsThis product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Cyclohexylamine (CAS 108-91-8) Listed.
Diethanolamine (CAS 111-42-2) Listed.

SARA 304 Emergency release notification

Cyclohexylamine (CAS 108-91-8) 10000 LBS

Material name: STEAMATE* HRSG04 Page: 8 / 10

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reguthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes

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

SARA 302 Extremely hazardous substance

Chemical name CAS number Reportable Threshold planning Threshold planning quantity quantity, lower quantity, upper value value

Cyclohexylamine 108-91-8 10000 10000 lbs

SARA 311/312 Hazardous

Yes

chemical

SARA 313 (TRI reporting)

| Chemical name | CAS number | % by wt. |
|--------------------|------------|----------|
| Diethanolamine | 111-42-2 | 0.1 - 1 |

Other federal regulations

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

Diethanolamine (CAS 111-42-2)

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

Cyclohexylamine (CAS 108-91-8)

Safe Drinking Water Act

Not regulated.

(SDWA)

Inventory status

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|---|------------------------|
| Canada | Domestic Substances List (DSL) | No |
| Canada | Non-Domestic Substances List (NDSL) | Yes |
| 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).

US state regulations

US - Massachusetts RTK - Substance List

Cyclohexylamine (CAS 108-91-8) Diethanolamine (CAS 111-42-2) Ethanolamine (CAS 141-43-5)

US - Pennsylvania RTK - Hazardous Substances

Cyclohexylamine (CAS 108-91-8) Diethanolamine (CAS 111-42-2) Ethanolamine (CAS 141-43-5)

US - Rhode Island RTK

Cyclohexylamine (CAS 108-91-8) Diethanolamine (CAS 111-42-2)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Diethanolamine (CAS 111-42-2)

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

Cyclohexylamine (CAS 108-91-8) Diethanolamine (CAS 111-42-2) Ethanolamine (CAS 141-43-5)

US. Pennsylvania Worker and Community Right-to-Know Law

Cyclohexylamine (CAS 108-91-8) Diethanolamine (CAS 111-42-2) Ethanolamine (CAS 141-43-5)

Material name: STEAMATE* HRSG04 Page: 9 / 10

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

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

Aniline (CAS 62-53-3) Listed: January 1, 1990 Diethanolamine (CAS 111-42-2) Listed: June 22, 2012

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.

16. Other information, including date of preparation or last revision

Issue dateOct-22-2015Revision dateJan-19-2016

Version # 2.0

List of abbreviations CAS: Chemical Abstract Service Registration Number

TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.

ACGIH: American Conference of Governmental Industrial Hygienists

NOEL: No Observed Effect Level STEL: Short Term Exposure Limit LC50: Lethal Concentration, 50% TWA: Time Weighted Average BOD: Biochemical Oxygen Demand COD: Chemical Oxygen Demand TOC: Total Organic Carbon

IATA: International Air Transport Association

IMDG: International Maritime Dangerous Goods Code

LD50: Lethal Dose, 50%

References: No data available

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.

Prepared by This SDS has been prepared by GE Water & Process Technologies Regulatory Department

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Material name: STEAMATE* HRSG04 Page: 10 / 10

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