

Section 1. Identification

Product name : MAGNACIDE™ H HERBICIDE
Product code : XCH

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

Identified uses : Herbicide

Print date : 3/20/2015.

Validation date : 3/20/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY: ORAL - Category 2
ACUTE TOXICITY: SKIN - Category 3
ACUTE TOXICITY: INHALATION - Category 1
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
SKIN SENSITIZATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

Section 2. Hazards identification

- Hazard statements** :
- Highly flammable liquid and vapor.
 - Fatal if swallowed or if inhaled.
 - Toxic in contact with skin.
 - Causes serious eye irritation.
 - Causes skin irritation.
 - May cause an allergic skin reaction.
 - Very toxic to aquatic life.
 - Harmful to aquatic life with long lasting effects.

Precautionary statements

- Prevention** :
- Wear protective gloves. Wear eye or face protection. Wear respiratory protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

- Response** :
- Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Take off contaminated clothing. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

- Storage** :
- Store locked up. Store in a well-ventilated place. Keep cool.

- Disposal** :
- Dispose of contents and container in accordance with all local, regional, national and international regulations.

- Hazards not otherwise classified** :
- None known.

Additional information

Overexposure to vapors may be fatal. Inhalation exposure studies have determined the rat LC50 to be 26 ppm at one hour exposure and at four hour exposure to be 8.3 ppm. The NIOSH IDLH (Immediately Dangerous to Life and Health) value is 2 ppm. The primary route of exposure is inhalation; acute exposure may result in lacrimation, tracheobronchitis, pneumonia, and lung injury (at 20 ppm). The low odor detection (0.03 – 0.21 ppm) and irritation threshold (0.25 - 0.5 ppm) and acutely irritating effects of acrolein usually prevent chronic toxicity effects. Splashes to the eye may result in blepharoconjunctivitis (bloodshot eyes), lid edema, fibrinous or pustular discharge, and deep or long-lasting corneal injury. See Section 11 for additional information.

Section 3. Composition/information on ingredients

- Substance/mixture** : Mixture

Ingredient name	%	CAS number
Acrolein	95	107-02-8
Hydroquinone	0.1 - 1	123-31-9

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 15-20 minutes while holding the eyelid(s) open. Remove contact lenses. Get medical attention immediately.
- Inhalation** : Remove to fresh air. Oxygen may be administered if breathing is difficult. If not breathing, administer artificial respiration and seek medical attention immediately.
- Skin contact** : Remove contaminated clothing and shoes immediately. Wash affected area with soap and mild detergent and large amounts of lukewarm, gently flowing water until no evidence of chemical remains (for at least 15-20 minutes). Get medical attention.
- Ingestion** : Get medical attention immediately. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Wash out mouth with water if person is conscious. If fully conscious promptly drink one to two glasses water. Never induce vomiting or give anything by mouth to a victim who is unconscious or having convulsions.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Fatal if inhaled.
- Skin contact** : Toxic in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : Fatal if swallowed. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : pain or irritation, watering, redness
- Inhalation** : No specific data.
- Skin contact** : irritation, redness
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treatment of the irritative effects of acrolein should be symptomatic and supportive. Following inhalation of acrolein, signs of respiratory dysfunction should be sought and hypoxia corrected. Specific treatment for bronchospasm and non-cardiogenic pulmonary edema may be necessary. Hypoxia may also occur following the ingestion of acrolein if there is pulmonary aspiration and/or laryngeal edema. The extent and severity of the corrosive effects on the upper gastrointestinal mucosa should be determined, for example, by endoscopy, and advice should be sought regarding the need for surgical intervention. Probable mucosal damage may contraindicate the use of gastric lavage.
- Specific treatments** : Treat exposed area as chemical burn.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Additional information

Persons exposed to vapors may have a delayed reaction and experience severe irritation of the respiratory tract and delayed pulmonary edema. Therefore, it is advisable to keep person exposed to high concentrations of vapor under observation for 24 hours following exposure. If fully conscious promptly drink one to two glasses of water. Get immediate medical attention. Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsion may be needed.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : In case of fire, use alcohol-resistant foam, dry chemicals, or CO2 fire extinguishers. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and public waterways. Note that flammable vapors may form an ignitable mixture with air. Vapors may travel considerable distances and flash back if ignited.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical

: Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is very toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products

: carbon dioxide, carbon monoxide, peroxides

Special protective actions for fire-fighters

: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark

: Toxic gases and vapors (such as carbon monoxide and peroxides) may be released in a fire involving acrolein. In the presence of sufficient oxygen and complete combustion, the combustion products further breakdown to carbon dioxide and water.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Evacuate all personnel to an upwind area and determine medical treatment needs. If qualified to do so through appropriate training contain or mitigate the spill as outlined below. Put on appropriate personal protective equipment. See Section 8 for information on use of respiratory protection appropriate for dealing with small spills. For large spills, wear fully encapsulating, vapor protective clothing (Level A Suit) and seek assistance from local fire department hazardous materials response team. Keep personnel removed and upwind of spill. Shut off all ignition sources; no flares, smoking, or flames in spill area. Approach release from upwind. Ventilate the release area.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Small spill** : Cover release with sodium carbonate (soda ash) and mix into spill with water. The soda ash and acrolein will form a solid by-product after addition of water. Alternately, absorb with paper towel, dry sand or other absorbent. For ground or surface contamination, remove contaminated media and dispose of properly. Contain all water for proper disposal. Waste must be disposed of in accordance with federal, provincial and local environmental control regulations.
- Large spill** : Vapor suppression: if available, blanket spill area with alcohol-resistant foam at 6% to reduce the vapor concentration. Reapply foam as needed to counteract the rapid breakdown of the foam blanket. Pump bulk fluid to appropriate storage containers for proper disposal. After recovery of the bulk fluid, neutralization of any remaining material can be accomplished by covering with sodium carbonate (soda ash) and mixing with water. Ratio is 20 pounds of soda ash to each gallon of acrolein followed by 5 gallons of water per gallon of acrolein. The soda ash and acrolein will form a solid by-product after addition of water. When reactivation is complete scoop the solid material into properly marked containers for disposal. Contain all water for proper disposal. Prevent runoff from entering drains, sewers or waterways.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment. Avoid contact with eyes, skin and clothing. Avoid breathing vapors or spray mists. Use only with adequate ventilation. Store in a secure and well ventilated area. Keep away from heat, sparks and flame. Keep away from incompatible materials. Keep container tightly closed when not in use. To avoid fire or explosion, ensure containers and equipment are properly bonded and grounded prior to transferring product. This is normally accomplished through the use of Baker Petrolite-specified standard application procedures. When using product under non-routine conditions (e.g., laboratory samples), ensure material and container are properly bonded and grounded.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Additional information

Do not reuse empty container. Return empty containers to Taft Manufacturing Company 19815 South Lake Road, Taft, CA 93268.

Section 8. Exposure controls/personal protection

Control parameters

Section 8. Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	Notations
Acrolein	US ACGIH	-	-	-	-	-	-	0.1	-	-	[1]
	OSHA PEL	0.1	0.25	-	-	-	-	-	-	-	
	OSHA PEL 1989	0.1	0.25	-	0.3	0.8	-	-	-	-	
Hydroquinone	US ACGIH	-	1	-	-	-	-	-	-	-	[3]
	OSHA PEL	-	2	-	-	-	-	-	-	-	
	OSHA PEL 1989	-	2	-	-	-	-	-	-	-	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Chemical safety goggles.

Hand protection : Chemical-resistant gloves. Butyl rubber gloves. Replace as needed.

Skin protection : Long sleeved shirts and work pants.

Respiratory protection : Full-face respirator use is required when connecting or disconnecting containers to application equipment, or any situations where the permissible exposure limit may be exceeded. As per NIOSH, full-face air-purifying respirators may be worn to protect personnel up to 2 ppm (IDLH) acrolein. The air purifying respirators should have organic vapor cartridge(s) or canister and a protection factor of 50. Exposure levels of unknown concentrations or greater than 2 ppm acrolein require the use of full-face positive pressure supplied-air breathing apparatus with a protection factor of 10,000.

Additional information

Persons exposed to vapors may have a delayed reaction and experience severe irritation of the respiratory tract and delayed pulmonary edema. Therefore, it is advisable to keep person exposed to high concentrations of vapor under observation for 24 hours following exposure.

The STEL of 0.3 ppm for acrolein was vacated by Court order, but it is still in effect in AK, CA, MI, MN, NC, TN and WA.. The OSHA permissible exposure levels shown above are the OSHA 1989 levels or from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Petrolite recommends that these lower exposure levels be observed as reasonable worker protection.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Colorless to light yellow.
Odor	: Aldehyde like.
Odor threshold	: Not available.
pH	: Not available.
Melting/freezing point	: -87°C (-124.6°F)
Boiling point	: 53°C (127.4°F)
Initial Boiling Point	: Not available.
Flash point	: Closed cup: -25°C (-13°F) [TCC]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: >1 (Ether (anhydrous) = 1)
Flammability (solid, gas)	: Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat. Toxic gases and vapors (such as carbon monoxide and peroxides) may be released in a fire involving acrolein. In the presence of sufficient oxygen and complete combustion, the combustion products further breakdown to carbon dioxide and water.
Lower and upper explosive (flammable) limits	: Lower: 2.8% Upper: 31%
Vapor pressure	: 31.3 kPa (234.9 mm Hg) @ 22°C
Vapor density	: 1.93 [Air = 1]
Relative density	: 0.85 (15.6°C)
Density	: 7.1 (lbs/gal)
Solubility in water	: Soluble (22% by weight @ 20°C)
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: 220°C (428°F)
Decomposition temperature	: Not available.
Viscosity	: Dynamic (20°C): 0.329 cP
VOC	: Not available.
Pour Point	: -86.7°C (-124.1°F)

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: This product is stable unless there is loss of inhibitor.
Possibility of hazardous reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use. Hazardous polymerization may occur. Loss of hydroquinone stabilizer may result in polymerization under certain conditions. Air introduced into closed containers may cause a slow polymerization, resulting in loss of product quality.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Section 10. Stability and reactivity

Incompatible materials : Reactive or incompatible with the following materials: .Alkalies, amines, light, and oxidizing materials. Alkaline or strong acid contamination can cause a reaction which can be rapid and violent. Prevent water contamination of acrolein storage containers.

Hazardous decomposition products : carbon oxides (CO, CO2) Peroxides.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Acrolein	LC50 Inhalation Gas.	Rat	8 ppm	4 hours
	LC50 Inhalation Vapor	Rat	26 ppm	1 hours
	LC50 Inhalation Vapor	Rat	18 mg/m ³	4 hours
	LC50 Inhalation Vapor	Rat	8.3 ppm	4 hours
	LD50 Dermal	Rabbit	160 mg/kg	-
	LD50 Dermal	Rabbit	231.4 mg/kg	-
	LD50 Oral	Rat	26 mg/kg	-
	LD50 Oral	Rat	29 mg/kg	-
	LD50 Oral	Rat	302 mg/kg	-
	LC50 Inhalation Vapor	Rat	26 ppm	1 hours
Hydroquinone XCH	LC50 Inhalation Vapor	Rat	8.3 ppm	4 hours
	LD50 Dermal	Rabbit	231.4 mg/kg	-
	LD50 Oral	Rat	29 mg/kg	-

Irritation/Corrosion

See additional information

Sensitization

No applicable toxicity data

Mutagenicity

See additional information

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Acrolein	-	3	-
Hydroquinone	-	3	-

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Inhalation (gases)	8.421 ppm
Inhalation (vapors)	0.01895 mg/l

Additional information

Irritation - Draize Test (Rabbit)

Skin - 2 mg/24H: Severe

Eye - 50 ug/24H: Severe

Skin - 15 ppm solution: Not irritating

A potential human health effect resulting from overexposure is the development of permanent lung damage in the form of decreased pulmonary (lung) function, and delayed pulmonary edema (fluid in the lungs) which can lead to chronic respiratory disease. As a highly reactive aldehyde, prolonged or repeated overexposures can produce long-term respiratory effects by significantly reducing ciliary action in the upper airways (i.e., interfering with the body's ability to clear mucous and foreign substances from the respiratory tract) and causing tissue damage throughout the lungs manifested as emphysema.

Acrolein levels of 0.4 to 4.9 ppm caused eye and nose irritation and structural changes in the respiratory system of hamsters, rats and rabbits (Ref. 1). Acrolein produced greater susceptibility to respiratory infections in mice (Ref. 2) and rats (Ref. 3).

Developmental/Reproduction studies

Acrolein has been tested for developmental and reproductive health effects. Results from developmental studies (Ref. 4, 5) indicated this material did not cause teratogenic effects in rats or rabbits at doses that caused maternal toxicity. A twogeneration rat reproductive study (Ref. 6) did not reveal any evidence of reproductive toxicity in either sex from any treatment group (maximum dose = 7.2 mg/kg). A second two-generation reproductive study in rats did not reveal any evidence of reproductive toxicity in either sex from any treatment group (maximum dose = 6 mg/kg) (Ref. 6).

Dermal Testing

In a 21 day dermal toxicity test in rabbits dosed at 7, 21 and 63 mg/kg of acrolein, toxicity was evidenced by slight to significant reduction in body weight gain, nasal mucous discharge, lethargy, slight to moderately lowered food consumption and increased frequency of lesions of the skin and lungs. Slight mortality in female rabbits dosed at 21 and 63 mg/kg was observed. No notable effects in hematology, blood chemistry, organ weights or organ weight ratios were observed (Ref. 7).

Section 11. Toxicological information

Chronic toxicity/Oncogenicity studies

In a 12-month chronic toxicity test in dogs (Ref. 9), the highest dose (2 mg/kg) tested resulted in changes in blood chemistry, but no compound-related tumors or lesions were observed. An 18-month oncogenicity study in mice (Ref. 10) did not reveal any compound-related tumors or lesions; the highest dose tested (4.5 mg/kg) resulted in increased mortality in the test group. A 24-month chronic toxicity/oncogenicity study in rats (Ref. 11) also did not reveal any compound related tumors or lesions. The high dose, 2.5 mg/kg, caused an increased mortality in the test group. No indications of cancer were found in the tests.

Other Studies

Mutagenicity studies

Effects of Acrolein on the In Vitro Induction of Chromosomal Aberrations in CHO Cells: No significant increase in the number of chromosomal aberrations above the background (Ref. 12). Effects of Acrolein on the In Vivo Induction of Chromosomal Aberrations in Rat Bone Marrow Cells: No significant increase in the number of chromosomal aberrations above the background (Ref. 13). Salmonella Liquid Suspension Mutant Fraction Assay: Acrolein did not induce concentration-dependent mutagenicity in any of the 5 Salmonella strains, either in the presence or absence of metabolic activation (Ref. 14). Metabolism Data

Metabolism studies in freshwater fish, shellfish, goats, hens, rats and leaf lettuce indicate that acrolein is metabolized and does not accumulate in the tissue (Ref. 15-19).

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Acrolein	Acute EC50 30 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.018 mg/l Marine water	Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 0.67 mg/l	Daphnia	96 hours
	Acute LC50 0.5 ppm	Daphnia	96 hours
	Acute LC50 0.016 mg/l	Fish	96 hours
	Acute LC50 0.02 mg/l	Fish	96 hours
	Acute LC50 0.57 ppm	Fish	96 hours
	Acute LC50 0.18 ppm	Fish	96 hours
	Acute LC50 14 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 9.1 µg/l Fresh water	Fish - Pimephales promelas	32 days
Hydroquinone	Acute LC50 162 µg/l Fresh water	Daphnia - Daphnia pulicaria	48 hours
XCH	Acute LC50 44 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute LC50 24 mg/l	Fish	96 hours

Persistence and degradability

Conclusion/Summary : In an aerobic aquatic metabolism study, the water phase revealed the rapid degradation of acrolein with all metabolites further mineralized to carbon dioxide. Results indicate hydration was an early step in acrolein degradation. The first-order kinetic half-life of acrolein was determined to be 33.7 hours in the water phase under laboratory conditions. Under field conditions, the half-life of acrolein in freshwater ranged from six to ten hours. In an aerobic soil metabolism study the half-life of acrolein was found to be 4.2 hours in soil-water mixtures and was ultimately transformed into carbon dioxide.

Other adverse effects : No known significant effects or critical hazards.

Additional information

Section 12. Ecological information

This product is very toxic to aquatic organisms:

Bluegill sunfish (*Lepomis macrochirus*), 96 hour LC50, 24 ppb

Rainbow trout (*Oncorhynchus mykiss*), 6 hour LC50, 24 ppb

Water flea (*Daphnia magna*), 48 hour LC50, 22 ppb

Eastern oysters (*Crassostrea virginica*), 96 hour EC50, 180 ppb

Mysid shrimp (*Mysidopsis bahia*), 96 hour LC50, 500 ppb

Mysid shrimp (*Holmesimysis costata*), 96 hour LC50, 790 ppb

Sheepshead minnows (*Cyprinodon variegatus*), 96 hour LC50, 570 ppb

Marine copepod (*Acartia tonsa*), 48 hour LC50, 55 ppb

Saltwater diatom (*Skeletonema costatum*), 120 hour EC50, 27 ppb

Section 13. Disposal considerations

Disposal methods

: Responsibility for proper waste disposal rests with the generator of the waste. Dispose of any waste material in accordance with all applicable federal, state and local regulations. Note that these regulations may also apply to empty containers, liners and rinsate. Processing, use, dilution or contamination of this product may cause its physical and chemical properties to change.

Do not clean or reuse empty container. Return empty containers to Taft Manufacturing Company,

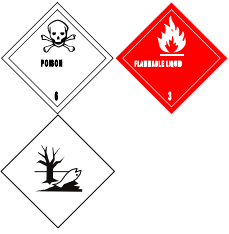
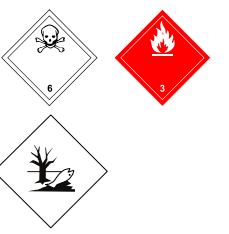
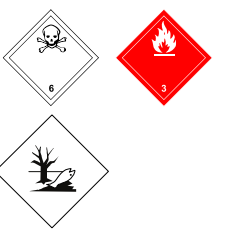
19815 South Lake Road, Taft, CA 93268

EPA Waste Code for acrolein is:

Waste Acrolein, stabilized

Waste Code - P003

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1092	UN1092	UN1092	
UN proper shipping name	Acrolein, stabilized	ACROLEIN, STABILIZED	Acrolein, stabilized	Forbidden
Transport hazard class(es)	6.1 (3) 	6.1 (3) 	6.1 (3) 	
Packing group	I	I	I	
Environmental hazards	Yes.	Yes.	Yes.	
Additional information	Special provisions Toxic-Inhalation Hazard, Zone A Remarks DOT SP 10705 (DOT SP 10705 applies only to mixed loads) DOT SP-14341 (DOT: SP-14341 applies only	Special provisions toxic by inhalation Remarks ERAP #: ERP2-0132 24 Hour Number: 1-866-334-1290 Equivalency Certificate No. SU 10922 Dangerous goods	Emergency schedules (EmS) F-E S-D	

Section 14. Transport information

	to 4BW welded cylinders.)	may be marked in accordance with 49 CFR		
--	---------------------------	-----------------------------------------	--	--

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Acrolein, 0.15 gal of this product.
Hydroquinone, 4401 gal of this product.

Marine pollutant Acrolein

North-America NAERG : 131P

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 4(a) final test rules:** Acetaldehyde
TSCA 12(b) one-time export: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Acrylaldehyde; Benzene
Clean Water Act (CWA) 311: Acrylaldehyde; Benzene; Acetaldehyde

Clean Air Act (CAA) 112 regulated toxic substances: Acrylaldehyde

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Acrolein	95	Yes.	500	71.4	1	0.14
Hydroquinone	0.1 - 1	Yes.	500 / 10000	-	100	-

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Acrolein	107-02-8	95

Canada

Canada (CEPA DSL): : All components are listed or exempted.
Additional information

Section 15. Regulatory information

References:

1. Feron, J.V. et al.; Toxicology 9 (1-2): 47-58 (1978).
2. Jakab, G.J.; Am Rev Resp Dis 1977 155:33-38.
3. Bouley, G.; Eur J Toxicol Eur Environ Hyg 1975: 8:291-297.
4. Parent, R.A., Caravello, H.E., Christian, M.S., and Hoberman, A.M.. Developmental Toxicity of Acrolein in New Zealand White Rabbits. Fundamental and Applied Toxicology. 20, 248-256 (1993).
5. Teratology Study of Acrolein in Rats, Bioassay Systems Corporation, Woburn, MA (1982) (Unpublished Study).
6. Parent, R.A., Caravello, H.E., and Hoberman, A.M.. Reproductive Study of Acrolein on Two Generations of Rats. Fundamental and Applied Toxicology. 19:228-237 (1992).
7. 21 Day Dermal Test of Acrolein in Rabbits, Bioassay Systems Corporation, Woburn, MA, 1982 (Unpublished Study).
8. A Sub-Chronic Inhalation Study of Fischer 344 Rats Exposed to 0, 0.4, 1.4, or 4.0 ppm Acrolein. Brookhaven National Laboratory, Upton, NY, 1981.
9. Parent, R.A., Caravello, H.E., Balmer, M.F., Shellenberger, T.E., and J.E. Long, One Year Chronic Toxicity of Orally Administered Acrolein to Beagle Dogs. J. Appl. Tox. 12(0): 1-9 (1992).
10. Parent, R.A., Caravello, H.E., and Long, J.E.. Oncogenicity Study of Acrolein in Mice. Journal of the American College of Toxicology. 10(6), 647-659 (1991).
11. Parent, R.A., Caravello, H.E. and Long, J.E.. Two-year Toxicity and Carcinogenicity Study of Acrolein in Rats. Journal of Applied Toxicology, Vol. 12(2), 131-139 (1992).
12. Effects of Acrolein on the In Vitro Induction of Chromosomal Aberrations in CHO Cells, Bioassay Systems, Woburn, MA, 1982 (Unpublished Study).
13. Effects of Acrolein on the In Vivo Induction of Chromosomal Aberrations in Rat Bone Marrow Cells, Bioassay Systems, Woburn, MA, 1982 (Unpublished Study).
14. Salmonella Liquid Suspension Mutant Fraction Assay, Bioassay Systems, Woburn, MA, 1980 (Unpublished Study).
15. Nordone, A.J., Dotson, T.A., Kovacs, M.F., Doane, R.A., and Biever, R.C.. Metabolism of [14C] Acrolein (MAGNACIDE® H Herbicide): Nature and Magnitude of Residues Using Freshwater Fish and Shellfish. Environ. Toxicol. And Chemistry. 17(2): 276-281 (1998).
16. Nordone, A.J., Dotson, T.A., Kovacs, and Doane, R.A.. [14C] Acrolein: Accumulation and Metabolism in Leaf Lettuce. Bull. Environ. Contam. Toxicol. (58):787-792 (1997).
17. Sharp, D.E., Berge, M.A., Paust, D.E., Talaat, R.E., Wilkes, L.C., Servatius, L.J., Loftus, M.L., Caravello, H.E., and Parent, R.A.. Metabolism and Distribution of [2,3-14C]Acrolein in Lactating Goats. J. of Agric. and Food Chem. 49(3): 1630-1638 (2001).
18. Sharp, D.E., Berge, M.A., Hennes, M.G., Wilkes, L.C., Servatius, L.J., Loftus, M.L., Caravello, H.E., and Parent, R.A.. Metabolism and Distribution of [2,3-14C]Acrolein in Laying Hens. J. of Agric. and Food Chem. 49(3): 1639-1647 (2001).
19. Parent, R.A., Caravello, H.E., and Sharp, D.E.. Metabolism and Distribution of [2,3-14C]Acrolein in Sprague-Dawley rats. Journal of Applied Toxicology, Vol 16(5), 449-457 (1994).
20. Smith, A.M., Mao, J., Doane, R.A., and Kovacs, M.F.. Metabolic Fate of [14C]Acrolein Under Aerobic and Anaerobic Aquatic Conditions. J. of Agric. and Food Chem. 43(9): 2497-2503 (1995).
21. Estimation of the Aerobic Biotransformation Rates of Acrolein (MAGNACIDE® H Herbicide, MAGNACIDE® B Biocide) in Soil, SRI International, Menlo Park, CA, (1990) (Unpublished Study).

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 3/20/2015.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.