

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 10/17/2013 Revision date: 04/30/2014 Supersedes: 10/17/2013

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

Product identifier

Product form : Mixture

: SHADOW® 3EC HERBICIDE Product name

Other means of identification : EPA Registration Number: 66330-414

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

Use of the substance/mixture : Herbicide

Details of the supplier of the safety data sheet

Arysta LifeScience North America LLC 15401 Weston Parkway, Suite 150

Cary, NC 27513 - USA

Emergency telephone number

Emergency number : Exposure Calls (PROSAR): +1-866-303-6952 or +1-651-603-3432 (international)

Spill Calls (CHEMTREC) (Contract # CCN1779): +1-800-424-9300 or +1-703-527-3887

Version: 2.0

(international)

SECTION 2: Hazards identification

Classification of the substance or mixture

GHS-US classification

Flam. Liq. 4 H227 Eye Irrit. 2B H320 Carc. 2 H351 STOT RE 2 H373 Asp. Tox. 1 H304

Label elements

GHS-US labelling

Hazard pictograms (GHS-US)



Signal word (GHS-US) : Danger.

Hazard statements (GHS-US) : H227 - Combustible liquid

H304 - May be fatal if swallowed and enters airways

H320 - Causes eye irritation

H351 - Suspected of causing cancer

H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary statements (GHS-US) P201 - Obtain special instructions before use

P202 - Do not handle until all safety precautions have been read and understood P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

P260 - Do not breathe mist/vapours/spray P264 - Wash hands thoroughly after handling

P280 - Wear protective gloves/protective clothing/eye protection/face protection P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor

P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact

lenses, if present and easy to do. Continue rinsing

P308+P313 - IF exposed or concerned: Get medical advice/attention

P314 - Get medical advice and attention if you feel unwell

P331 - If swallowed, do NOT induce vomiting

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

P370+P378 - In case of fire: Use carbon dioxide, dry powder, foam, or water fog for extinction

P403+P235 - Store in a cool and well-ventilated place

P405 - Store locked up

P501 - Dispose of contents/container in accordance with local and national regulations

Other hazards

No additional information available

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2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixture

Exact concentrations withheld as trade secret.

Full text of H-phrases: see section 16

Name	Product identifier	%	GHS-US classification
Heavy Aromatic Naptha Solvent	(CAS No) 64742-94-5	50 – 60	Flam. Liq. 4, H227 Asp. Tox. 1, H304
Clethodim	(CAS No) 99129-21-2	30 – 40	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Irrit. 2, H315 STOT RE 2, H373
1,2,4-trimethylbenzene	(CAS No) 95-63-6	1 – 7	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Aquatic Chronic 2, H411
Anionic/nonionic surfactant blend	(CAS No) trade secret	1 – 5	Skin Irrit. 2, H315 Eye Irrit. 2A, H319
naphthalene	(CAS No) 91-20-3	0.1 – 2	Acute Tox. 4 (Oral), H302 Carc. 2, H351 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a position

comfortable for breathing. Artificial respiration and/or oxygen if necessary. Call a POISON CENTER/doctor/physician if you feel unwell.

First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by

warm water rinse. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.

auvice/allerillori.

First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking or redness persist.

Do NOT induce vomiting unless directed to do so by medical personnel. Immediately call a

First-aid measures after ingestion : Do NOT induce vomiting unless directe POISON CENTER or doctor/physician.

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

Symptoms/injuries : Causes damage to organs. Suspected of causing cancer.

Symptoms/injuries after inhalation : Inhalation may cause: irritation, coughing, shortness of breath.

Symptoms/injuries after skin contact : May cause moderate irritation.

Symptoms/injuries after eye contact : Causes eye irritation.

Symptoms/injuries after ingestion : May be fatal if swallowed and enters airways.

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

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide. Dry powder. Foam. Water fog.

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Combustible liquid.

Explosion hazard : May form flammable/explosive vapour-air mixture.

Reactivity : Liquid evaporates and forms vapors/fumes that can catch fire and burn with explosive violence.

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5.3. Advice for firefighters

Firefighting instructions

: Exercise caution when fighting any chemical fire. Do not allow run-off from fire fighting to enter

drains or water courses. Use water spray or fog for cooling exposed containers.

Protection during firefighting

: Do not enter fire area without proper protective equipment, including respiratory protection. Wear fire/flame resistant/retardant clothing. Wear a self contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures

: Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking. Avoid all eyes and skin contact and do not breathe vapour and mist.

6.1.1. For non-emergency personnel

Protective equipment

: Wear suitable gloves. rubber. Chemical goggles or safety glasses.

Emergency procedures

: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment

: Wear suitable gloves. rubber. Chemical goggles or safety glasses.

Emergency procedures : Stop leak if safe to do so. Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Do not discharge into drains or the environment.

6.3. Methods and material for containment and cleaning up

For containment

: Absorb and/or contain spill with inert material, then place in suitable container. Contain any spills

with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible.

6.4. Reference to other sections

Section 13: disposal information. Section 7: safe handling. Section 8: personal protective equipment.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed

: Handle empty containers with care because residual vapours are flammable. Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Precautions for safe handling

: No naked lights. No smoking. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist/vapuors/spray.

Hygiene measures

: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures

: Proper grounding procedures to avoid static electricity should be followed.

Storage conditions

: Keep in fireproof place. Keep only in the original container in a cool well ventilated place. Keep

container closed when not in use.

Incompatible products : strong oxidizers. Strong acids. Strong bases.

Incompatible materials : Heat sources.

7.3. Specific end use(s)

Herbicide.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Heavy Aromatic Naptha Solvent (64742-94-5)		
USA ACGIH	ACGIH STEL (mg/m³)	10 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m3)	5 mg/m³
naphthalene (91-20-3)		
USA ACGIH	ACGIH TWA (mg/m³)	52 mg/m³
USA ACGIH	ACGIH TWA (ppm)	10 ppm
USA ACGIH	ACGIH STEL (mg/m³)	79 mg/m³
USA ACGIH	ACGIH STEL (ppm)	15 ppm
USA OSHA	OSHA PEL (TWA) (mg/m3)	50 mg/m³

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naphthalene (91-20-3)		
USA OSHA	OSHA PEL (TWA) (ppm)	10 ppm
1,2,4-trimethylbenzene (95-63-6)		
USA ACGIH	ACGIH TWA (mg/m³)	123 mg/m ³
USA ACGIH	ACGIH TWA (ppm)	25 ppm

Clethodim (99129-21-2)

None established.

Anionic/nonionic surfactant blend (trade secret)

None established.

8.2. Exposure controls

Appropriate engineering controls : Avoid creating mist or spray. Avoid splashing. Either local exhaust or general room ventilation is

usually required.

Hand protection : Wear suitable gloves resistant to chemical penetration. Nitrile rubber gloves.

Eye protection : In case of splashing or aerosol production: protective goggles.

Respiratory protection : Where exposure through inhalation may occur from use, respiratory protection equipment is

recommended. Use an approved respirator equipped with oil/mist cartridges.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Colour : Amber

Odour : Aromatic

Odour threshold : No data available

pH : 3.96 @ 25 °C

Relative evaporation rate (butylacetate=1) : No data available

: No data available Melting point Freezing point : No data available Boiling point : No data available Flash point 61 °C Closed Cup Self ignition temperature : No data available Decomposition temperature : No data available Flammability (solid, gas) : No data available Vapour pressure : No data available Relative vapour density at 20 °C No data available : 0.98 g/ml @ 20°C Relative density

Solubility : insoluble in water. Soluble in hydrocarbon solvents.

: 0.98 g/ml @ 20°C

Log Pow : No data available
Log Kow : No data available
Viscosity : 20 cP @ 25°C

Viscosity, kinematic : 20.408 cSt (calculated)
Viscosity, dynamic : No data available
Explosive properties : Product is not explosive.
Oxidising properties : No oxidizing properties.

Explosive limits : No data available

9.2. Other information

VOC content : 0 %

SECTION 10: Stability and reactivity

10.1. Reactivity

Density

Liquid evaporates and forms vapors/fumes that can catch fire and brun with explosive violence.

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10.2. Chemical stability

Combustible liquid. May form flammable/explosive vapour-air mixture.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

Open flame. Overheating. Direct sunlight. Heat. Sparks.

10.5. Incompatible materials

Strong acids. Strong oxidizers. Strong bases.

10.6. Hazardous decomposition products

May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

SHADOW® 3EC HERBICIDE		
LD50 oral rat	> 3129 mg/kg	
LD50 dermal rabbit	> 5050 mg/kg No mortality occurred during the study	
LC50 inhalation rat (mg/l)	> 2.23 mg/l/4h No mortality occurred during the study	

Clethodim (99129-21-2)	
LD50 oral rat	1360 (1360 - 1630) mg/kg (from SDS for Arysta Technical (≥93%) Clethodim)
LD50 dermal rat	> 5000 mg/kg
LD50 dermal rabbit	> 5 g/kg (from SDS for Arysta Technical (≥93%) Clethodim)
LC50 inhalation rat (mg/l)	3.9 mg/l/4h (from SDS for Arysta Technical (≥93%) Clethodim)
ATE (oral)	1360.000 mg/kg bodyweight
ATE (vapours)	3.900 mg/l/4h
ATE (dust,mist)	3.900 mg/l/4h

Heavy Aromatic Naptha Solvent (64742-94-5)		
LD50 oral rat	> 5000 mg/kg	
LD50 dermal rabbit	> 2000 mg/kg	
LC50 inhalation rat (mg/l)	> 5.28 mg/l/4h	

naphthalene (91-20-3)		
LD50 oral rat	490 mg/kg	
LD50 dermal rabbit	20 g/kg	
LC50 inhalation rat (mg/l)	> 340 mg/m³ 1 hour	
ATE (oral)	490.000 mg/kg bodyweight	
ATE (dermal)	20000.000 mg/kg bodyweight	

1,2,4-trimethylbenzene (95-63-6)		
LD50 oral rat	3415 mg/kg	
LD50 dermal rat	3440 mg/kg	
LC50 inhalation rat (ppm)	954 ppm	
ATE (oral)	3415.000 mg/kg bodyweight	
ATE (dermal)	3440.000 mg/kg bodyweight	
ATE (dust,mist)	1.500 mg/l/4h	

Skin corrosion/irritation : Not classified.

pH: 4 (1% emulsion)

A primary dermal irritation study was conducted on three albino rabbits. Slight was noticed upon initial observation, all effects were reversed by 72 hours. Maximum irritation score of 0.75. May be slightly irritating, but not sufficient for classification.

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Serious eye damage/irritation : Causes eye irritation.

pH: 4 (1% emulsion)

An acute eye irritation study was conducted on three albino rabbits. Cornea Opacity was seen in up to two animals at intervals of 1, 24, 48, and 72 hours. Iritis was seen in one animal at all time intervals. Conjunctivae Redness and chemosis were seen initially in all animals. All effects seen

were completely reversed by Day 4.

Respiratory or skin sensitisation : Not classified

Produced no skin irritation and did not elicit a skin sensitizing reaction in guinea pigs.

Germ cell mutagenicity : Not classified

Carcinogenicity : Suspected of causing cancer.

Reproductive toxicity : Not classified Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated

exposure)

: May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : May be fatal if swallowed and enters airways.

Symptoms/injuries after inhalation : Inhalation may cause: irritation, coughing, shortness of breath.

Symptoms/injuries after skin contact : May cause moderate irritation.

Symptoms/injuries after eye contact : Causes eye irritation.

Symptoms/injuries after ingestion : May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

12.1. Toxicity

Clethodim (99129-21-2)	
LC50 fishes 1	> 33 mg/l Lepomis macrochirus (Bluegill) - 96 hr 83.3% purity
EC50 Daphnia 1	20.2 mg/l
ErC50 (algae)	11.4 mg/l Green Algae

naphthalene (91-20-3)	
LC50 fishes 1	> 0.91 (0.91 - 2.82) mg/l Oncornhynchus mykiss (From Koppers SDS)
EC50 Daphnia 1	>= 1.96 mg/l From Koppers SDS
EC50 other aquatic organisms 1	33 mg/l From Sigma-Aldrich SDS
LC50 fish 2	> 1 (1 - 6.5) mg/l Pimpephales promelas (From Sigma-Aldrich SDS)
LOEC (acute)	3.2 mg/l From Sigma-Aldrich SDS
NOEC (acute)	1.8 mg/l From Sigma-Aldrich SDS

1,2,4-trimethylbenzene (95-63-6)		
LC50 fishes 1	7.72 mg/l	
LC50 other aquatic organisms 1	3.6 mg/l	
EC50 other aquatic organisms 1	2.356 mg/l	

12.2. Persistence and degradability

Heavy Aromatic Naptha Solvent (64742-94-5)		
Persistence and degradability	Not rapidly degradable.	
Biodegradation	39 %	

12.3. Bioaccumulative potential

naphthalene (91-20-3)	
BCF fish 1	>= 427 (427 - 1158)

12.4. Mobility in soil

Heavy Aromatic Naptha Solvent (64742-94-5)	
Mobility in soil	Migrates to soil.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

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Additional information : Handle empty containers with care because residual vapours are flammable.

Ecology - waste materials : Hazardous waste due to toxicity.

SECTION 14: Transport information

In accordance with 49CFR US DOT (Land)

Non-bulk (≤ 119 gallons) : Not regulated

Bulk (>119 but <624 gallons) : NA1993 Combustible liquid, n.o.s. (Heavy aromatic naphtha solvent), 3, III

RQ Bulk (≥624 gallons) : NA1993 Combustible liquid, n.o.s. (Heavy aromatic naphtha solvent), 3, III, RQ(Naphthalene)

ERG : 128

Additional information

Other information : No supplementary information available.

ADR

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

Clethodim (99129-21-2)

Not listed on the United States TSCA (Toxic Substances Control Act) inventory.

Exempt under FIFRA Section 3 (2)(B)(ii) when used as a pesticide.

naphthalene (91-20-3)

SARA Section 311/312 Hazard Classes

Delayed (chronic) health hazard
Immediate (acute) health hazard

1,2,4-trimethylbenzene (95-63-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

SHADOW [®] 3EC HERBICIDE	
WHMIS Classification	Class B Division 3 - Combustible Liquid Class D Division 1 Subdivision B - Toxic material causing immediate and serious toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

Clethodim (99129-21-2)

Not listed on the Canadian DSL (Domestic Substances List) inventory.

1,2,4-trimethylbenzene (95-63-6)

Listed on the Canadian DSL (Domestic Substances List) inventory.

EU-Regulations

Clethodim (99129-21-2)

Not listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.

1,2,4-trimethylbenzene (95-63-6)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Carc. 2 H351 STOT RE 2 H373 Asp. Tox. 1 H304 Aquatic Chronic 3 H412

Full text of H-phrases: see section 16

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Classification according to Directive 67/548/EEC or 1999/45/EC

Xn; R20 Xn; R65 R52/53

15.2.2. National regulations

No additional information available

15.3. US State regulations

Not listed on any state Right-to-Know Hazardous Chemicals lists.

15.4. US EPA - FIFRA Regulations

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

Signal word (FIFRA)

: Caution.

Hazard statements (FIFRA)

: Harmful if swallowed. Causes moderate eye irritation. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Avoid contact with eyes or clothing. Wear protective eyewear, long-sleeved shirt and long pants, socks, shoes and chemical resistant gloves (such as Barrier Laminate, Butyl Rubber, Nitrile Rubber, Viton, Selection Category F, G).

Environmental hazards

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Do not apply where weather conditions favor drift from areas treated. Do not contaminate water when disposing of equipment washwater or rinsate.

The use of this product may pose a hazard to the federally designated endangered species of Solano Grass and Wild Rice. Use of this product is prohibited in the following areas where the species are known to exist:

Solano Grass: Solano County, California: the vernal lakes area bounded by the Union Pacific Railroad and Hastings Road to the north, Highway 113 to the east, Highway 12 to the south, and

Travis Air Force Base to the west. **Wild Rice:** Hays County, Texas..

Physical or Chemical hazards

Abbreviations and acronyms

: Combustible: Do not store near heat or open flame.

SECTION 16: Other information

Indication of changes

Data sources

: Original Document.

: ACGIH 2000.

European Chemicals Agency (ECHA) Registered Substances list. Accessed at http://echa.europa.eu/.

Krister Forsberg and S.Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition.

National Fire Protection Association; Fire Protection Guide to Hazardous Materials; 10th edition.

OSHA 29CFR 1910.1200 Hazard Communication Standard.

TSCA Chemical Substance Inventory. Accessed at

http://www.epa.gov/oppt/existingchemicals/pubs/tscainventory/howto.html.

: ACGIH (American Conference of Government Industrial Hygienists).

ATE: Acute Toxicity Estimate.

CAS (Chemical Abstracts Service) number. CLP: Classification, Labelling, Packaging.

EC50: Environmental Concentration associated with a response by 50% of the test population.

GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).

LD50: Lethal Dose for 50% of the test population.

OSHA: Occupational Safety & Health Administration.

STEL: Short Term Exposure Limits.
TSCA: Toxic Substances Control Act.

TWA: Time Weight Average.

Full text of H-phrases: see section 16:

Acute Tox. 4 (Inhalation)

Acute toxicity (inhalation) Category 4

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Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Asp. Tox. 1	Aspiration hazard Category 1
Carc. 2	Carcinogenicity Category 2
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Eye Irrit. 2B	Serious eye damage/eye irritation Category 2B
Flam. Liq. 3	Flammable liquids Category 3
Flam. Liq. 4	Flammable liquids Category 4
Skin Irrit. 2	skin corrosion/irritation Category 2
Skin Irrit. Not classified	Skin corrosion/irritation Not classified
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H226	Flammable liquid and vapour
H227	Combustible liquid
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H319	Causes serious eye irritation
H320	Causes eye irritation
H332	Harmful if inhaled
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects

NFPA health hazard : 1 - Exposure could cause irritation but only minor residual

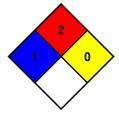
injury even if no treatment is given.

NFPA fire hazard : 2 - Must be moderately heated or exposed to relatively high

temperature before ignition can occur.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions,

and not reactive with water.



SDS US (GHS HazCom 2012)

SDS Prepared by: The Redstone Group, LLC.

6397 Emerald Pkwy

Suite 200

Dublin, Ohio, USA 43016

614.923.7472

www.redstonegrp.com

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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