

1 Identification

- **Product identifier**
- **Trade name:** KMPR® Series Resists
- **Product number:** Y211029, Y211045, Y211055, Y211060, Y211064, Y211066, Y211067
- **Application of the substance / the mixture** Photoresist
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
 Kayaku Advanced Materials
 200 Flanders Road
 Westborough, MA 01581
 Tel: (617) 965-5511
 Fax: (617) 965-5818
- **Information department:**
 Product Safety
 Email: productsafety@kayakuAM.com
- **Emergency telephone number:**
 Kayaku Advanced Materials : 617-965-5511
 Chemtrec USA Emergency : 800-424-9300
 Chemtrec International Emergency : 703-527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 3 H226 Flammable liquid and vapor.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

Aquatic Acute 3 H402 Harmful to aquatic life.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02 GHS07

- **Signal word** Warning
- **Hazard-determining components of labeling:**
 Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)
 Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2)

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· Hazard statements

- H226 Flammable liquid and vapor.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H317 May cause an allergic skin reaction.
- H402 Harmful to aquatic life.
- H412 Harmful to aquatic life with long lasting effects.

· Precautionary statements

- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P301+P310 If swallowed: Immediately call a poison center/doctor.
- P302+P352 If on skin: Wash with plenty of soap and water.
- P304+P341 If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P370+P378 In case of fire: Use for extinction: Alcohol resistant foam.
- P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.
- P370+P378 In case of fire: Use for extinction: Carbon dioxide.
- P403+P235 Store in a well-ventilated place. Keep cool.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· Additional information:

- 52.1 % of the mixture consists of component(s) of unknown toxicity.

· Classification system:
· NFPA ratings (scale 0 - 4)


Health = 2
 Fire = 3
 Reactivity = 0

· HMIS-ratings (scale 0 - 4)


Health = 2
 Fire = 3
 Reactivity = 0

· Other hazards
· Results of PBT and vPvB assessment

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients
· Chemical characterization: Mixtures

- **Description:** Mixture of the substances listed below with nonhazardous additions.

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· Dangerous components:		
120-92-3	Cyclopentanone ⚠ Flam. Liq. 3, H226; ⚠ Skin Irrit. 2, H315; Eye Irrit. 2A, H319	25-50%
107-98-2	1-methoxy-2-propanol ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	1-10%
108-32-7	Propylene carbonate ⚠ Skin Irrit. 2, H315; Eye Irrit. 2A, H319	1-5%
89452-37-9	Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2) ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410; ⚠ Skin Sens. 1, H317	1-5%
71449-78-0	Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1) ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410; ⚠ Skin Sens. 1, H317	1-5%
· Additional Components:		
Epoxy Resin (CAS Proprietary)		40-70%

4 First-aid measures

· **Description of first aid measures**

· **General information:**

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Immediately remove any clothing soiled by the product.

· **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

· **After eye contact:**

Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (about 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.

· **After swallowing:**

Do not induce vomiting; immediately call for medical help.
Wash out mouth.

· **Information for doctor:**

· **Most important symptoms and effects, both acute and delayed** No further relevant information available.

· **Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

5 Fire-fighting measures

· **Extinguishing media**

· **Suitable extinguishing agents:**

Alcohol resistant foam

Fire-extinguishing powder

Carbon dioxide

· **For safety reasons unsuitable extinguishing agents:**

Water with full jet

Water

· **Special hazards arising from the substance or mixture** No further relevant information available.

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- **Advice for firefighters**
- **Protective equipment:** Wear SCBA.

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6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
 - Ensure adequate ventilation
 - Keep away from ignition sources
 - Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
 - Inform respective authorities in case of seepage into water course or sewage system.
 - Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
 - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
 - Ensure adequate ventilation.
 - Do not flush with water or aqueous cleansing agents
- **Reference to other sections**
 - See Section 7 for information on safe handling.
 - See Section 8 for information on personal protection equipment.
 - See Section 13 for disposal information.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
 - Store in cool, dry place in tightly closed containers.
 - Keep away from heat and direct sunlight.
 - Ensure good ventilation/exhaust at the workplace.
 - Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
 - Use explosion-proof apparatus / fittings and spark-proof tools.
 - Keep ignition sources away - Do not smoke.
 - Protect from heat.
 - Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and containers:**
 - Due to photo-sensitivity, store product in brown-glass or stainless steel receptacles.
- **Information about storage in one common storage facility:**
 - Do not store together with amines.
 - Do not store together with alkalis (caustic solutions).
 - Do not store together with oxidizing and acidic materials.
 - Store away from reducing agents.
- **Further information about storage conditions:**
 - Protect from exposure to the light.
 - Store under lock and key and with access restricted to technical experts or their assistants only.
 - Keep container tightly sealed.
 - Protect from heat and direct sunlight.

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 · **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

 · **Additional information about design of technical systems:** No further data; see item 7.

 · **Control parameters**

 · **Components with limit values that require monitoring at the workplace:**

108-65-6 1-Methoxy-2-propanol acetate

WEEL	Long-term value: 50 ppm
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107-98-2 1-methoxy-2-propanol

REL	Short-term value: 540 mg/m ³ , 150 ppm Long-term value: 360 mg/m ³ , 100 ppm
TLV	Short-term value: 369 mg/m ³ , 100 ppm Long-term value: 184 mg/m ³ , 50 ppm

89452-37-9 Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2)

ACGIH TLV TWA	Long-term value: 0.5 mg/m ³
NIOSH IDLH	Long-term value: 50 mg/m ³
OSHA PEL	Long-term value: 0.5 mg/m ³

71449-78-0 Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)

	ACGIH TLV TWA: Long-term value: 0.5 mg/m ³
NIOSH IDLH	Long-term value: 50 mg/m ³
OSHA PEL	Long-term value: 0.5 mg/m ³

 · **Additional information:** The lists that were valid during the creation were used as basis.

 · **Exposure controls**

 · **Personal protective equipment:**

 · **General protective and hygienic measures:**

Do not eat or drink while working.

Keep away from food and beverages.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

 · **Respiratory equipment:**

In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.

 · **Protection of hands:**


Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

 · **Material of gloves**

Nitrile rubber, NBR

Butyl rubber, BR

 · **Penetration time of glove material** Contact glove manufacture for break-through time.

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· Eye protection:



Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Fluid
Color:	Clear to light yellow
Odor:	Etheral
Odor threshold:	Not determined.

· pH-value: Not determined.

· Change in condition

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	130 °C (266 °F)

· Flash point: 30 °C (86 °F)

· Flammability (solid, gaseous): Not applicable.

· Ignition temperature: 270 °C (518 °F)

· Decomposition temperature: Not determined.

· Auto igniting: Product is not selfigniting.

· Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· Explosion limits:

Lower:	1.3 Vol %
Upper:	Not determined.

· Vapor pressure at 20 °C (68 °F): 11 hPa (8.3 mm Hg)

· Density: See other information

· Vapor density: Not determined.

· Evaporation rate: 1.6-2.3 (BuAc=1)

· Solubility in / Miscibility with

Water: Water miscible No

· Partition coefficient (n-octanol/water): Not determined.

· Viscosity:

Dynamic:	Not determined.
Kinematic:	Not determined.

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- **Solvent content:**
- **VOC content:**
- **Other information**

9.5 %

`Table 1. Product specific gravity and VOC data.

Name	Number	Sp. Grav.	Vol. (%by wt.)	VOC (g/L)
KMPR 1002	Y211029	1.02	69-72	710
KMPR 1005	Y211045	1.07	54-56	550
KMPR 1010	Y211055	1.10	44-46	450
KMPR 1015	Y211060	1.12	39-44	400
KMPR 1025	Y211064	1.20	35-37	360
KMPR 1035	Y211066	1.21	33-35	340
KMPR 1050	Y211067	1.22	32-35	340

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability** Stable
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** Exothermic polymerization.
- **Conditions to avoid**
Heat, flames and sparks. Extremes of temperature and direct sunlight.
Contact with incompatible materials.
- **Incompatible materials:** Strong Oxidizing Agents, Strong Bases, Strong Acids, Amines
- **Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Corrosive gases/vapors
Danger of toxic pyrolysis products.
Antimony oxide

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

 · **LD/LC50 values that are relevant for classification:**

120-92-3 Cyclopentanone

Oral	LD50	1820 mg/kg (Rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LC50/4 h	19.5 mg/l (Rat)

107-98-2 1-methoxy-2-propanol

Oral	LD50	5660 mg/kg (Rat)
Dermal	LD50	13000 mg/kg (rabbit)
Inhalative	LC50/4 h	54.6 mg/l (Rat)

108-32-7 Propylene carbonate

Oral	LD50	>5000 mg/kg (Rat)
Dermal	LD50	>2000 mg/kg (rabbit)

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.

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- **on the eye:** Irritating effect.
- **Sensitization:** Sensitization possible through skin contact.
- **Experience with humans:** No further relevant information available.
- **Additional toxicological information:**
 The product shows the following dangers according to internally approved calculation methods for preparations:
 Harmful
 Irritant
- **Carcinogenic categories**

· IARC (International Agency for Research on Cancer)

None of the ingredients are listed.

· NTP (National Toxicology Program)
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None of the ingredients are listed.

· OSHA-Ca (Occupational Safety & Health Administration)
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None of the ingredients are listed.

12 Ecological information

- **Toxicity**

- **Aquatic toxicity:**

89452-37-9 Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2)	
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LC50/24 h	4.4 mg/l (daphnia)
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LC50/48 hr	0.68 mg/L (daphnia)
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71449-78-0 Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)	
--	--

LC50/24 h	4.4 mg/l (daphnia)
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LC50/48 hr	0.68 mg/L (daphnia)
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- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information:**
- **General notes:**
 Water hazard class 1 (Self-assessment): slightly hazardous for water
 Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
 Also poisonous for fish and plankton in water bodies.
 Toxic for aquatic organisms
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
 Disposal must be made in accordance with Federal, State, and Local regulations.

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Must not be disposed of as regular garbage/trash. Do not allow product to reach sewage system.

 · **Uncleaned packagings:**

 · **Recommendation:** Disposal must be made in accordance with Federal, State, and Local regulations.

14 Transport information

 · **UN-Number**

 · **DOT, ADR, IMDG, IATA**

UN1866

 · **UN proper shipping name**

 · **DOT**

Resin solution

 · **ADR, IMDG, IATA**

RESIN SOLUTION

 · **Transport hazard class(es)**

 · **DOT**

 · **Class**

3 Flammable liquids

 · **Label**

3

 · **ADR, IMDG, IATA**

 · **Class**

3 Flammable liquids

 · **Label**

3

 · **Packing group**

 · **DOT, ADR, IMDG, IATA**

III

 · **Environmental hazards:**

 · **Marine pollutant:**

Yes

 · **Special precautions for user**

Warning: Flammable liquids

 · **Danger code (Kemler):**

30

 · **EMS Number:**

F-E, S-E

 · **Stowage Category**

A

 · **Transport in bulk according to Annex II of**
MARPOL73/78 and the IBC Code

Not applicable.

 · **Transport/Additional information:**

 · **DOT**

 · **Quantity limitations**

On passenger aircraft/rail: 60 L

On cargo aircraft only: 220 L

 · **ADR**

 · **Excepted quantities (EQ)**

Code: E1

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 1000 ml

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- | | |
|--|--|
| <ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) | 5L
Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml |
| <ul style="list-style-type: none"> · UN "Model Regulation": | UN 1866 RESIN SOLUTION, 3, III |

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**

· Section 355 (extremely hazardous substances):

None of the ingredients are listed.

· Section 313 (Specific toxic chemical listings):

89452-37-9	Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2)
71449-78-0	Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)

· TSCA (Toxic Substances Control Act):

Epoxy Resin (CAS Proprietary)

Cyclopentanone

1-methoxy-2-propanol

Propylene carbonate

Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2)

Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)

Proprietary surfactant

· Proposition 65

· Chemicals known to cause cancer:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

· Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

· Carcinogenic categories

· EPA (Environmental Protection Agency)

None of the ingredients are listed.

· TLV (Threshold Limit Value established by ACGIH)

None of the ingredients are listed.

· NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients are listed.

· Massachusetts State Right To Know List

120-92-3	Cyclopentanone
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107-98-2	1-methoxy-2-propanol
· New Jersey State Right To Know List	
120-92-3	Cyclopentanone
107-98-2	1-methoxy-2-propanol
· Pennsylvania Hazardous Substances List	
120-92-3	Cyclopentanone
107-98-2	1-methoxy-2-propanol

- **California SCAQMD Rule 443.1 VOC's:** See Table 1 - Section 9
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02 GHS07

- **Signal word** Warning

- **Hazard-determining components of labeling:**

Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)
 Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2)]

- **Hazard statements**

H226 Flammable liquid and vapor.
 H315 Causes skin irritation.
 H319 Causes serious eye irritation.
 H317 May cause an allergic skin reaction.
 H402 Harmful to aquatic life.
 H412 Harmful to aquatic life with long lasting effects.

- **Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P261 Avoid breathing dust/fume/gas/mist/vapors/spray
 P273 Avoid release to the environment.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P301+P310 If swallowed: Immediately call a poison center/doctor.
 P302+P352 If on skin: Wash with plenty of soap and water.
 P304+P341 If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
 P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
 P337+P313 If eye irritation persists: Get medical advice/attention.
 P370+P378 In case of fire: Use for extinction: Alcohol resistant foam.
 P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.
 P370+P378 In case of fire: Use for extinction: Carbon dioxide.
 P403+P235 Store in a well-ventilated place. Keep cool.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

US

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16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:** Product safety department
- **Contact:** Tom Cole, EHS Manager (tcole@kayakuAM)

- **Revision History:**

The manufacturer's information in Section 1, the product hazard information in Section 2 and the component hazard information in Section 3 have been updated.

- **Date of preparation / last revision** 08/16/2019 / 6

- **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Flam. Liq. 3: Flammable liquids – Category 3

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

Skin Sens. 1: Skin sensitisation – Category 1

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard – Category 3

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

- *** Data compared to the previous version altered.**