

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

SECTION 1. IDENTIFICATION

Product name : NOROX AZOX

Manufacturer or supplier's details

Company name of supplier : United Initiators, Inc.

Address : 555 Garden Street
Elyria OH 44035

Telephone : +1-440-323-3112

Telefax : +1-440-323-2659

Emergency telephone : CHEMTREC US (24h): +1-800-424-9300
CHEMTREC WORLD (24h): +1-703-527-3887

E-mail address of person responsible for the SDS : cs-initiators.nafta@united-in.com

Recommended use of the chemical and restrictions on use

Recommended use : polymerization initiators

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids : Category 4

Organic peroxides : Type D

Skin corrosion : Category 1A

Serious eye damage : Category 1

Skin sensitization : Category 1

Reproductive toxicity : Category 1B

Specific target organ systemic toxicity - single exposure : Category 3 (Respiratory system)

Acute aquatic toxicity : Category 2

GHS label elements

Hazard pictograms :



SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Signal Word : Danger

Hazard Statements : H227 Combustible liquid.
H242 Heating may cause a fire.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H360 May damage fertility or the unborn child.
H401 Toxic to aquatic life.

Precautionary Statements : **Prevention:**
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.
P220 Keep/Store away from clothing/ strong acids, bases, heavy metal salts and other reducing substances /combustible materials.
P234 Keep only in original container.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310 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.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

Storage:

P403 + P233 **Store in a well-ventilated place. Keep container tightly closed.**
P405 **Store locked up.**
P410 **Protect from sunlight.**
P411 + P235 **Store at temperatures not exceeding < 100 °F/**

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

< 38 °C. Keep cool.
P420 Store away from other materials.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
Chemical nature : Organic Peroxide
Liquid mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
2,4-Pentanedione, peroxide	37187-22-7	>= 25 - < 30
N-Methyl-2-pyrrolidone	872-50-4	>= 25 - < 30
Hydrogen peroxide	7722-84-1	>= 10 - < 15
Acetylacetone	123-54-6	>= 1 - < 5

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
Symptoms of poisoning may appear several hours later.
Call a physician immediately.

If inhaled : Call a physician or poison control center immediately.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
If breathed in, move person into fresh air.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash contaminated clothing before re-use.
If on skin, rinse well with water.
If on clothes, remove clothes.
If symptoms persist, call a physician.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.

SAFETY DATA SHEET

NOROX AZOX



Version 1.4	Revision Date: 09/21/2017	SDS Number: 600000000076	Print Date: 01/23/2018
----------------	------------------------------	-----------------------------	---------------------------

- Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Call a physician immediately.
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : May cause an allergic skin reaction.
Causes serious eye damage.
May cause respiratory irritation.
May damage fertility or the unborn child.
Causes severe burns.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
- Notes to physician : Treat symptomatically and supportively.
-

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire fighting : Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.
- Flash back possible over considerable distance.
Vapors may form explosive mixtures with air.
Cool closed containers exposed to fire with water spray.
- Specific extinguishing methods : Do not use a solid water stream as it may scatter and spread fire.
Remove undamaged containers from fire area if it is safe to do so.
Use water spray to cool unopened containers.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.
-

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Remove all sources of ignition.
Follow safe handling advice and personal protective equipment recommendations.
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Never return spills in original containers for re-use.
Treat recovered material as described in the section "Disposal considerations".
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contact with incompatible substances can cause decomposition at or below SADT.
Clear spills immediately.
Suppress (knock down) gases/vapors/mists with a water spray jet.
To clean the floor and all objects contaminated by this material, use plenty of water.
Soak up with inert absorbent material.
Isolate waste and do not reuse.
Non-sparking tools should be used.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
-

SECTION 7. HANDLING AND STORAGE

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Advice on protection against fire and explosion : Keep away from heat and sources of ignition. Use only explosion-proof equipment. Keep away from combustible material.
- Advice on safe handling : Do not swallow.
Do not breathe vapors/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Avoid formation of aerosol.
Take precautionary measures against static discharges.
Never return any product to the container from which it was originally removed.
Provide sufficient air exchange and/or exhaust in work rooms.
Avoid confinement.

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Smoking, eating and drinking should be prohibited in the application area.

Wash thoroughly after handling.

For personal protection see section 8.

Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Protect from contamination.

Conditions for safe storage : Avoid impurities (e.g. rust, dust, ash), risk of decomposition. Electrical installations / working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Store in accordance with the particular national regulations.

Materials to avoid : Keep away from strong acids, bases, heavy metal salts and other reducing substances.

Recommended storage temperature : < 100 °F

< 38 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
N-Methyl-2-pyrrolidone	872-50-4	TWA	10 ppm	US WEEL
Hydrogen peroxide	7722-84-1	TWA	1 ppm	ACGIH
		TWA	1 ppm 1.4 mg/m ³	NIOSH REL
		TWA	1 ppm 1.4 mg/m ³	OSHA Z-1
		TWA	1 ppm 1.4 mg/m ³	OSHA P0
Acetylacetone	123-54-6	TWA	25 ppm	ACGIH

Hazardous components without workplace control parameters

Ingredients	CAS-No.
2,4-Pentanedione, peroxide	37187-22-7

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Biological occupational exposure limits

Ingredients	CAS-No.	Control parameters	Biological specimen	Sam-pling time	Permissible concentra-tion	Basis
N-Methyl-2-pyrrolidone	872-50-4	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	End of shift (As soon as possible after exposure ceases)	100 mg/l	ACGIH BEI

Engineering measures : Minimize workplace exposure concentrations.

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Filter type : ABEK-filter

Hand protection

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work.
For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove Wash hands before breaks and at the end of workday.

Eye protection : Tightly fitting safety goggles
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.
Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

Hygiene measures : Keep away from food and drink.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and immediately after handling the product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : colorless

Odor : characteristic

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

pH	:	No data available
Melting point/range	:	No data available
Boiling point/boiling range	:	Decomposition: Decomposes below the boiling point.
Flash point	:	> 65 °C Method: Seta closed cup
Flammability (solid, gas)	:	Not applicable
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	> 1
Density	:	1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	No data available
Self-Accelerating decomposition temperature (SADT)	:	60 °C Method: UN-Test H.4 SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.
Viscosity Viscosity, dynamic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing. Organic peroxide

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under recommended storage conditions.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Vapors may form explosive mixture with air.
Conditions to avoid	:	Protect from contamination. Contact with incompatible substances can cause

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

decomposition at or below SADT.
Heat, flames and sparks.
Avoid confinement.

Incompatible materials : Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

Hazardous decomposition products : Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity : Acute toxicity estimate: 2,543 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 6.34 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Ingredients:

2,4-Pentanedione, peroxide:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat, male): > 13.1 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist
Method: Expert judgment
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: Expert judgment
Assessment: The substance or mixture has no acute dermal toxicity

N-Methyl-2-pyrrolidone:

Acute oral toxicity : LD50 (Rat): 4,150 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 5.1 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 402

Hydrogen peroxide:

Acute oral toxicity : LD50 (Rat, male): 1,026 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 0.17 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The component/mixture is moderately toxic after short term inhalation.
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity : LD50 (Rabbit): > 6,500 mg/kg

Acetylacetone:

Acute oral toxicity : LD50 (Rat): 570 mg/kg

Acute inhalation toxicity : LC50 (Rat): 5.1 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: OECD Test Guideline 403
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rabbit, female): 790 mg/kg

Skin corrosion/irritation

Causes severe burns.

Product:

Remarks: Extremely corrosive and destructive to tissue.

Ingredients:

2,4-Pentanedione, peroxide:

Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

N-Methyl-2-pyrrolidone:

Species: Rabbit
Method: OECD Test Guideline 404
Result: Irritating to skin.

Hydrogen peroxide:

Result: Corrosive after 3 minutes or less of exposure

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Acetylacetone:

Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Remarks: May cause irreversible eye damage.

Ingredients:

2,4-Pentanedione, peroxide:

Species: Rabbit
Result: Eye irritation
Method: OECD Test Guideline 405

N-Methyl-2-pyrrolidone:

Species: Rabbit
Result: Eye irritation
Method: OECD Test Guideline 405

Hydrogen peroxide:

Result: Irreversible effects on the eye

Acetylacetone:

Species: Rabbit
Result: No eye irritation

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Product:

Remarks: Causes sensitization.

Ingredients:

2,4-Pentanedione, peroxide:

Test Type: Maximization Test
Routes of exposure: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Probability or evidence of skin sensitization in humans

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Remarks: Causes sensitization.

N-Methyl-2-pyrrolidone:

Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitization.
Remarks: Based on data from similar materials

Acetylacetone:

Routes of exposure: Skin contact
Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitization.

Germ cell mutagenicity

Not classified based on available information.

Ingredients:

2,4-Pentanedione, peroxide:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: positive

: Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (male and female)
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative

Hydrogen peroxide:

Genotoxicity in vitro : Test Type: Ames test
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Result: negative

Acetylacetone:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Result: negative

: Method: OECD Test Guideline 479
Result: positive

: Method: OECD Test Guideline 473
Result: positive

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Genotoxicity in vivo : Method: OECD Test Guideline 476
Result: negative

: Method: OECD Test Guideline 474
Result: positive

Method: OECD Test Guideline 483
Result: negative

Method: OECD Test Guideline 475
Result: negative

Method: OECD Test Guideline 478
Result: Equivocal

Test Type: DNA Repair
Species: Rat
Application Route: Oral
Result: negative

Species: Rat
Application Route: inhalation (vapor)
Method: OPPTS 870.5395
Result: negative

Carcinogenicity

Not classified based on available information.

Ingredients:

2,4-Pentanedione, peroxide:

Remarks: This information is not available.

IARC

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

May damage fertility or the unborn child.

Ingredients:

2,4-Pentanedione, peroxide:

Effects on fertility : Remarks: No data available

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Effects on fetal development : Remarks: No data available

N-Methyl-2-pyrrolidone:

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

Acetylacetone:

Effects on fetal development : Species: Rat
Application Route: inhalation (vapor)
Duration of Single Treatment: 13 d
General Toxicity Maternal: NOAEC: 200
Teratogenicity: NOAEC Parent: 400
Embryo-fetal toxicity.: NOAEC F1: 50
Method: OECD Test Guideline 414

Species: Rat
Application Route: inhalation (vapor)
Duration of Single Treatment: 13 d
General Toxicity Maternal: LOAEC: 400
Embryo-fetal toxicity.: LOAEC F1: 200
Method: OECD Test Guideline 414

STOT-single exposure

May cause respiratory irritation.

Ingredients:

N-Methyl-2-pyrrolidone:

Assessment: May cause respiratory irritation.

Hydrogen peroxide:

Assessment: May cause respiratory irritation.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Ingredients:

N-Methyl-2-pyrrolidone:

Species: Rat
NOAEL: 0.5 mg/l
LOAEL: 1 mg/l
Application Route: inhalation (vapor)
Exposure time: 90 d
Method: OECD Test Guideline 413

Species: Rat
NOAEL: 3,000 mg/kg
LOAEL: 7,500 mg/kg
Application Route: Ingestion

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Exposure time: 90 d
Method: OECD Test Guideline 408

Species: Rat
NOAEL: 6,000 mg/kg
LOAEL: 18,000 mg/kg
Application Route: oral (feed)
Exposure time: 28 d
Method: OECD Test Guideline 407

Species: Rabbit
NOAEL: 826 mg/kg
Application Route: Skin contact
Exposure time: 20 d
Method: OECD Test Guideline 410

Hydrogen peroxide:

Species: Mouse
Application Route: Ingestion
Exposure time: 90 d
Symptoms: No adverse effects.

Acetylacetone:

Species: Rat
NOAEL: 200 mg/kg
LOAEL: 805 mg/kg
Application Route: inhalation (vapor)
Exposure time: 9 d

Species: Rat
NOAEL: 100 mg/kg
Application Route: inhalation (vapor)
Exposure time: 90 d
Method: OECD Test Guideline 413

Species: Rabbit
NOAEL: 244 mg/kg
LOAEL: 975 mg/kg
Application Route: Dermal
Exposure time: 9 d

Aspiration toxicity

Not classified based on available information.

Ingredients:

Acetylacetone:

No aspiration toxicity classification

Further information

Product:

Remarks: No data available

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Ingredients:

2,4-Pentanedione, peroxide:

Remarks: No data available

Acetylacetone:

Remarks: Solvents may degrease the skin.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients:

2,4-Pentanedione, peroxide:

- Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 67.6 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 7.05 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 5.36 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
- Toxicity to microorganisms : EC50: 614 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

N-Methyl-2-pyrrolidone:

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 500 mg/l
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 24 h
Method: DIN 38412
- EC50 (Palaeomonetes vulgaris (Grass shrimp)): 1,107 mg/l
Exposure time: 96 h
- Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 500 mg/l
Exposure time: 72 h
- NOEC (Desmodesmus subspicatus (green algae)): 125 mg/l
Exposure time: 72 h
-

SAFETY DATA SHEET

NOROX AZOX



Version 1.4 Revision Date: 09/21/2017 SDS Number: 600000000076 Print Date: 01/23/2018

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 12.5 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

LOEC (Daphnia magna (Water flea)): 25 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: > 600 mg/l
Exposure time: 0.5 h
Method: ISO 8192

Hydrogen peroxide:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 16.4 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia pulex (Water flea)): 2.4 mg/l
Exposure time: 48 h

Toxicity to algae : EC50 (Skeletonema costatum (marine diatom)): 1.38 mg/l
Exposure time: 72 h

NOEC (Skeletonema costatum (marine diatom)): 0.63 mg/l
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.63 mg/l
Exposure time: 21 d

Toxicity to microorganisms : EC50: Method: OECD Test Guideline 209

Acetylacetone:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 104 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 25.9 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

NOEC (Daphnia magna (Water flea)): 4.3 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 83.22 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 3.2 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 10 mg/l
Exposure time: 34 d
Method: OECD Test Guideline 210

LOEC (Pimephales promelas (fathead minnow)): 22 mg/l
Exposure time: 34 d
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 18 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: 107.6 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

EC10: 13.2 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Persistence and degradability

Ingredients:

2,4-Pentanedione, peroxide:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301D

N-Methyl-2-pyrrolidone:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301C

Hydrogen peroxide:

Biodegradability : Result: Readily biodegradable.

Acetylacetone:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301C

Bioaccumulative potential

Ingredients:

2,4-Pentanedione, peroxide:

Partition coefficient: n-octanol/water : log Pow: 1.1 (25 °C)
Method: OECD Test Guideline 117

N-Methyl-2-pyrrolidone:

Partition coefficient: n-octanol/water : log Pow: -0.46 (25 °C)

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Hydrogen peroxide:

Partition coefficient: n-octanol/water : log Pow: -1.57
Remarks: Calculation

Acetylacetone:

Bioaccumulation : Bioconcentration factor (BCF): 3.16
Remarks: Calculation

Partition coefficient: n-octanol/water : log Pow: 0.68 (40 °C)

Mobility in soil

No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : **An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.**
Toxic to aquatic life.

Ingredients:

2,4-Pentanedione, peroxide:

Additional ecological information : **An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.**
Toxic to aquatic life.

Acetylacetone:

Additional ecological information : **An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.**
Harmful to aquatic life.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Dispose of wastes in an approved waste disposal facility.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.
Dispose of in accordance with local regulations.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
(ACETYL ACETONE PEROXIDE)
Class : 5.2
Packing group : Not assigned by regulation
Labels : 5.2

IATA-DGR

UN/ID No. : UN 3105
Proper shipping name : Organic peroxide type D, liquid
(Acetyl acetone peroxide)
Class : 5.2
Packing group : Not assigned by regulation
Labels : Organic Peroxides, Keep Away From Heat
Packing instruction (cargo aircraft) : 570
Packing instruction (passenger aircraft) : 570

IMDG-Code

UN number : UN 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
(ACETYL ACETONE PEROXIDE)
Class : 5.2
Packing group : Not assigned by regulation
Labels : 5.2
EmS Code : F-J, S-R
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 3105
Proper shipping name : Organic peroxide type D, liquid
(Acetyl Acetone Peroxide, <=42%)
Class : 5.2
Packing group : Not assigned by regulation
Labels : ORGANIC PEROXIDE
ERG Code : 145
Marine pollutant : no

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

SDS Number:
600000000076

Print Date:
01/23/2018

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Hydrogen peroxide	7722-84-1	1000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards : Fire Hazard
Reactivity Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 302 : The following components are subject to reporting levels established by SARA Title III, Section 302:

Hydrogen peroxide 7722-84-1 13 %

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

N-Methyl-2-pyrrolidone 872-50-4 26 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

California Prop. 65 WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

N-Methyl-2-pyrrolidone 872-50-4

The ingredients of this product are reported in the following inventories:

AICS (AU) : On the inventory, or in compliance with the inventory

NZIoC (NZ) : On the inventory, or in compliance with the inventory

ENCS (JP) : On the inventory, or in compliance with the inventory

SAFETY DATA SHEET

NOROX AZOX



Version 1.4	Revision Date: 09/21/2017	SDS Number: 600000000076	Print Date: 01/23/2018
----------------	------------------------------	-----------------------------	---------------------------

ISHL (JP) : On the inventory, or in compliance with the inventory
KECI (KR) : On the inventory, or in compliance with the inventory
PICCS (PH) : On the inventory, or in compliance with the inventory
IECSC (CN) : On the inventory, or in compliance with the inventory
TCSI (TW) : On the inventory, or in compliance with the inventory
TSCA (US) : On TSCA Inventory

TSCA list

No substances are subject to a Significant New Use Rule.

The following substance(s) is/are subject to TSCA 12(b) export notification requirements:
Acetylacetone 123-54-6

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG -

SAFETY DATA SHEET

NOROX AZOX



Version
1.4

Revision Date:
09/21/2017

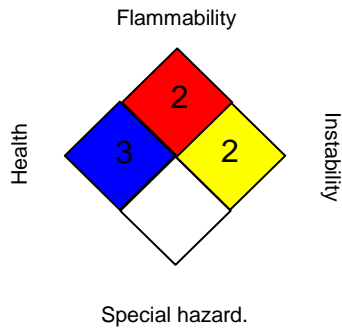
SDS Number:
600000000076

Print Date:
01/23/2018

United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

NFPA:



HMIS® IV:

HEALTH	*	3
FLAMMABILITY		2
PHYSICAL HAZARD		2

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. For the first box in the Health rating a "/" indicates no chronic health risks and a "*" indicates chronic hazards exist.

Revision Date : 09/21/2017

The information provided in this Material 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.

US / Z8