

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

SECTION 1. IDENTIFICATION

Trade name : NOROX[®] CHAP-21

Manufacturer or supplier's details

Company name of supplier : United Initiators, Inc.

Address : 555 Garden Street
Elyria OH 44035 USA

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 the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids : Category 4

Organic peroxides : Type D

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 3

Acute toxicity (Dermal) : Category 4

Skin corrosion : Category 1B

Serious eye damage : Category 1

Skin sensitization : Category 1

Carcinogenicity : Category 1B

Reproductive toxicity : Category 1B

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version
2.0

Revision Date:
08/01/2023

SDS Number:
600000000159

Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Specific target organ toxicity : Category 2
- repeated exposure

Short-term (acute) aquatic : Category 2
hazard

Long-term (chronic) aquatic : Category 2
hazard

GHS label elements

Hazard pictograms



Signal Word

: Danger

Hazard Statements

: H227 Combustible liquid.
H242 Heating may cause a fire.
H302 + H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H331 Toxic if inhaled.
H350 May cause cancer.
H360 May damage fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

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.
P260 Do not breathe mist or vapors.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
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:

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version
2.0

Revision Date:
08/01/2023

SDS Number:
600000000159

Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
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.
P391 Collect spillage.

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/ < 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

Components

Chemical name	CAS-No.	Concentration (% w/w)
Cumene hydroperoxide	80-15-9	>= 55 - < 65
2,4-Pentanedione, peroxide	37187-22-7	>= 10 - < 15

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

N-Methyl-2-pyrrolidone	872-50-4	$\geq 7.5 - < 10$
Cumene	98-82-8	$\geq 7.5 - < 10$
Acetylacetone	123-54-6	$\geq 0.1 - < 1$

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- General advice : Take off contaminated clothing and shoes immediately.
Call a physician immediately.
Never give anything by mouth to an unconscious person.
If unconscious, place in recovery position and seek medical 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.
No artificial respiration, mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus.
- If inhaled : Administer oxygen if breathing is difficult or cyanosis is observed.
Call a physician immediately.
If breathed in, move person into fresh air.
If not breathing, give artificial respiration.
Contact a poison control center.
Respiratory tract burning possible if aerosols are inhaled.
Call a physician or poison control center immediately.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
- In case of skin contact : If symptoms persist, call a physician.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
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.
- 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.

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

- Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Call a physician immediately.
Rinse mouth thoroughly with water.
Keep respiratory tract clear.
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed or in contact with skin.
May cause an allergic skin reaction.
Causes serious eye damage.
Toxic if inhaled.
May cause cancer.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.
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 jet
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire fighting : Risk of explosion if heated under confinement.
Possible emission of gaseous decomposition products may lead to a dangerous pressure build-up.
Avoid confinement.
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.
- The product burns violently.
Flash back possible over considerable distance.
Do not allow run-off from fire fighting to enter drains or water courses.
Vapors may form explosive mixtures with air.
The product will float on water and can be reignited on surface water.

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

- 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 : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use a water spray to cool fully closed containers.
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.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Follow safe handling advice and personal protective equipment recommendations.
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe 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

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version	Revision Date:	SDS Number:	Date of last issue: 06/28/2022
2.0	08/01/2023	600000000159	Date of first issue: 02/08/2018

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 : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).
Keep away from heat and sources of ignition.
Use only explosion-proof equipment.
Keep away from open flames, hot surfaces and sources of ignition.
Keep away from combustible material.
Do not spray on a naked flame or any incandescent material.
- Advice on safe handling : Open drum carefully as content may be under pressure.
Protect from contamination.
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.
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.
- Conditions for safe storage : Store in original container.
Keep containers tightly closed in a cool, well-ventilated place.
Store in cool place.
Contamination may result in dangerous pressure increases - closed containers may rupture.
Prevent unauthorized access.
Observe label precautions.
Store in accordance with the particular national regulations.
Avoid impurities (e.g. rust, dust, ash), risk of decomposition.
Electrical installations / working materials must comply with

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

the technological safety standards.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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

Recommended storage temperature : < 100 °F

< 38 °C

Further information on storage stability : No decomposition if stored normally.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Cumene hydroperoxide	80-15-9	TWA	1 ppm	US WEEL
N-Methyl-2-pyrrolidone	872-50-4	TWA	15 ppm 60 mg/m ³	US WEEL
		STEL	30 ppm 120 mg/m ³	US WEEL
Cumene	98-82-8	TWA	5 ppm	ACGIH
		TWA	50 ppm 245 mg/m ³	NIOSH REL
		TWA	50 ppm 245 mg/m ³	OSHA Z-1
		TWA	50 ppm 245 mg/m ³	OSHA P0
Acetylacetone	123-54-6	TWA	25 ppm	ACGIH

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	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.

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Personal protective equipment

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

Filter type : ABEK-filter

Use NIOSH approved respiratory protection.

Hand protection

Material : butyl-rubber

Break through time : >= 480 min

Glove thickness : 0.5 mm

Remarks : The data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove. 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 manufacturer. Wash hands before breaks and at the end of workday.

Eye protection : Ensure that eyewash stations and safety showers are close to the workstation location.
Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.
Tightly fitting safety goggles
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.

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

Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.
Wear as appropriate:
Flame retardant antistatic protective clothing.

Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures : Avoid contact with skin, eyes and clothing.
Keep away from food and drink.
When using do not eat or drink.

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

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 : slight

pH : Not applicable

Melting point/range : No data available

Boiling point/boiling range : No data available

Flash point : 65 °C
Method: closed cup

Evaporation rate : No data available

Flammability (solid, gas) : Not applicable

Self-ignition : The substance or mixture is not classified as self heating. The substance or mixture is not classified as pyrophoric.

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : No data available

Relative vapor density : > 1

Density : 1.0 g/cm³

Solubility(ies)
Water solubility : slightly soluble

Partition coefficient: n-octanol/water : No data available

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Self-Accelerating decomposition temperature (SADT) : 60 °C
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

Viscosity, kinematic : No data available

Oxidizing properties : The substance or mixture is not classified as oxidizing.
Organic peroxide

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Stable under recommended storage conditions.
Heating may cause a fire or explosion.

Chemical stability : Stable under recommended storage conditions.
No decomposition if stored normally.

Possibility of hazardous reactions : Vapors may form explosive mixture with air.

Conditions to avoid : Protect from contamination.
Contact with incompatible substances can cause 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

Harmful if swallowed or in contact with skin.
Toxic if inhaled.

Product:

Acute oral toxicity : Acute toxicity estimate: 612.35 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 5.19 mg/l
Exposure time: 4 h
Test atmosphere: vapor

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: 1,883 mg/kg
Method: Calculation method

Components:

Cumene hydroperoxide:

Acute oral toxicity : LD50 Oral (Rat): 382 mg/kg

Acute inhalation toxicity : LC50: 1.370 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity : LD50: 1,200 - 1,520 mg/kg
Assessment: The component/mixture is moderately toxic after single contact with skin.

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
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: No mortality observed at this dose.

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

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Remarks: No mortality observed at this dose.

Cumene:

Acute oral toxicity : LD50 (Rat): 2,260 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: No mortality observed at this dose.

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

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

Skin corrosion/irritation

Causes severe burns.

Product:

Remarks : Extremely corrosive and destructive to tissue.

Components:

Cumene hydroperoxide:

Species : Rabbit
Result : Causes burns.

Remarks : Extremely corrosive and destructive to tissue.

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.

Cumene:

Species : Rabbit

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Method : OECD Test Guideline 404
Result : No skin irritation

Acetylacetone:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Remarks : May cause irreversible eye damage.

Components:

Cumene hydroperoxide:

Species : Rabbit
Result : Corrosive

Remarks : May cause irreversible eye damage.

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

Cumene:

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

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.

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Product:

Remarks : Causes sensitization.

Components:

Cumene hydroperoxide:

Result : Does not cause skin sensitization.

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

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

Cumene:

Routes of exposure : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Does not cause skin sensitization.

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.

Components:

Cumene hydroperoxide:

Genotoxicity in vitro : Test Type: in vitro test
Test system: Salmonella typhimurium
Result: positive

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse
Application Route: Skin contact

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Result: negative

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

Cumene:

Genotoxicity in vitro : Method: OECD Test Guideline 473
Result: negative

Method: OECD Test Guideline 471
Result: negative

Method: OECD Test Guideline 476
Result: negative

Method: OECD Test Guideline 482
Result: negative

Test Type: Ames test
Result: positive

Genotoxicity in vivo : Species: Rat
Application Route: Intraperitoneal
Exposure time: 72 h
Method: OECD Test Guideline 474
Result: Equivocal

Species: Mouse
Application Route: inhalation (gas)
Exposure time: 14 w
Method: OECD Test Guideline 474
Result: negative

Acetylacetone:

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

Method: OECD Test Guideline 479

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Genotoxicity in vivo

Result: positive

Method: OECD Test Guideline 473
Result: positive

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

May cause cancer.

Components:

Cumene hydroperoxide:

Remarks : This information is not available.

2,4-Pentanedione, peroxide:

Remarks : This information is not available.

Cumene:

Species : Rat, male and female
Application Route : inhalation (vapor)
Result : carcinogenic effects

Species : Mouse, male and female
Application Route : inhalation (vapor)
Result : carcinogenic effects

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

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

Not classified based on available information.

Components:

N-Methyl-2-pyrrolidone:

Assessment : May cause respiratory irritation.

Cumene:

Assessment : May cause respiratory irritation.

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Components:

Cumene hydroperoxide:

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

Repeated dose toxicity

Components:

Cumene hydroperoxide:

Species : Rat
NOAEC : 31 mg/m³
Application Route : inhalation (gas)
Exposure time : 90 d

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
Exposure time : 90 d
Method : OECD Test Guideline 408

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

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

Cumene:

Species : Rat
NOAEL : 154 mg/kg
Application Route : Oral
Method : OECD Test Guideline 413

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.

Components:

Cumene:

May be fatal if swallowed and enters airways.

Acetylacetone:

No aspiration toxicity classification

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Further information

Product:

Remarks : No data available

Components:

2,4-Pentanedione, peroxide:

Remarks : No data available

Acetylacetone:

Remarks : Solvents may degrease the skin.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Components:

Cumene hydroperoxide:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 3.9 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)): 18.8 mg/l
Exposure time: 48 h
Test Type: Immobilization
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 3.1 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 1 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC (Pseudomonas putida): 50 mg/l
End point: Growth rate
Exposure time: 16 h

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

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/aquatic plants : 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/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l
Exposure time: 72 h
- NOEC (Desmodesmus subspicatus (green algae)): 125 mg/l
Exposure time: 72 h
- 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

Cumene:

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 4.8 mg/l

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.14 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 2.01 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.35 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: > 2,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Acetylacetone:

Toxicity to fish : LC50 (Fish): 104 mg/l
Exposure time: 96 h

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

Toxicity to algae/aquatic plants : 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

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

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

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

Components:

Cumene hydroperoxide:

Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301B

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

Cumene:

Biodegradability : Result: Readily biodegradable.

Acetylacetone:

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

Bioaccumulative potential

Components:

Cumene hydroperoxide:

Partition coefficient: n-octanol/water : log Pow: 1.6

2,4-Pentanedione, peroxide:

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

N-Methyl-2-pyrrolidone:

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

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

Cumene:

Bioaccumulation : Bioconcentration factor (BCF): 94.69
Remarks: Calculation

Partition coefficient: n-octanol/water : log Pow: 3.55 (23 °C / 23 °C)

Acetylacetone:

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

Partition coefficient: n-octanol/water : log Pow: 0.68 (40 °C / 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 : No data available

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

Components:

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.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

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

SAFETY DATA SHEET

NOROX® CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

chemical or used container.

Contaminated packaging : Dispose of in accordance with local regulations.
Clean container with water.
Dispose of contents/ container to an approved waste disposal plant.
Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
(CUMYL HYDROPEROXIDE, 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
(Cumyl hydroperoxide, 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
(CUMYL HYDROPEROXIDE, ACETYL ACETONE PEROXIDE)
Class : 5.2
Packing group : Not assigned by regulation
Labels : 5.2
EmS Code : F-J, S-R
Marine pollutant : yes

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

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version 2.0 Revision Date: 08/01/2023 SDS Number: 600000000159 Date of last issue: 06/28/2022
Date of first issue: 02/08/2018

UN/ID/NA number : UN 3105
Proper shipping name : Organic peroxide type D, liquid
(Acetyl Acetone Peroxide, <=18%, Cumyl Hydroperoxide, <=61%)
Class : 5.2
Packing group : Not assigned by regulation
Labels : ORGANIC PEROXIDE
ERG Code : 145
Marine pollutant : yes

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Cumene hydroperoxide	80-15-9	10	17

SARA 304 Extremely Hazardous Substances Reportable Quantity

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Organic peroxides
Acute toxicity (any route of exposure)
Respiratory or skin sensitization
Carcinogenicity
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation

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

Cumene hydroperoxide 80-15-9

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

Cumene 98-82-8

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version	Revision Date:	SDS Number:	Date of last issue: 06/28/2022
2.0	08/01/2023	600000000159	Date of first issue: 02/08/2018

The following substance(s) is/are subject to TSCA 12(b) export notification requirements:
N-Methyl-2-pyrrolidone 872-50-4

SECTION 16. OTHER INFORMATION

Further information

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.
These safety instructions also apply to empty packaging which may still contain product residues.
The hazards on the label also apply to residues in the container.

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 08/01/2023

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA P0 : USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / TWA : 8-hour, time-weighted average
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA : 8-hour time weighted average
OSHA Z-1 / TWA : 8-hour time weighted average
US WEEL / TWA : 8-hr TWA
US WEEL / STEL : Short-Term TWA

AIIC - Australian Inventory of Industrial Chemicals; 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

SAFETY DATA SHEET

NOROX[®] CHAP-21



Version	Revision Date:	SDS Number:	Date of last issue: 06/28/2022
2.0	08/01/2023	600000000159	Date of first issue: 02/08/2018

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; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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