



MATERIAL SAFETY DATA SHEET

NOROX[®] SHP-40

United Initiators SPI,
Inc.
Helena, AR

SECTION 1 - IDENTIFICATION OF THE PRODUCT AND THE COMPANY

| | | | |
|------------------------|--|---------------------------------|---|
| PRODUCT NAME | NOROX[®] SHP-40 | TELEPHONE | 870-572-2935 |
| MANUFACTURER | United Initiators SPI, Inc. | CHEMTREC (24hr) (USA) | 800-424-9300 |
| ADDRESS | 334 Phillips 311 Rd., Helena, AR 72342 | (Maritime/International) | 703-527-3887 |
| CHEMICAL NAME | Acetyl Acetone Peroxide (AAP) and Tertiary Butyl Peroxybenzoate (TBPB) | CAS NO. | See section 2. |
| CHEMICAL FAMILY | Organic Peroxide - Ketone Peroxide and Peroxyester Mix | CHEMICAL FORMULA | Mainly C ₅ H ₁₀ O ₄ and C ₆ H ₅ CO ₃ C(CH ₃) ₃ |

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

| COMPONENTS | CAS NO. | % |
|---------------------------|----------------|----------|
| Acetyl Acetone Peroxide | 37187-22-7 | 20 - 30 |
| Tert-Butyl Peroxybenzoate | 614-45-9 | 5 - 10 |
| Diacetone Alcohol | 123-42-2 | 20 - 35 |
| Polyethylene glycol | 25322-68-3 | 17 - 21 |
| Dimethyl Phthalate | 131-11-3 | 18 - 22 |

SECTION 3 - HAZARD IDENTIFICATION OF THE PREPARATION

| | |
|---------------------------------|---|
| PHYSICAL HAZARDS | Organic Peroxide. Decomposition hazards. Potential fire/explosion hazard. |
| HEALTH HAZARDS | Skin and eye irritant. |
| EXPOSURE LIMITS | No data. |
| ROUTES OF EXPOSURE | |
| Skin Contact | Skin irritant may cause, redness, blistering, and edema. |
| Eye Contact | Eye irritant may cause corrosion to eye tissue. |
| Ingestion | Human systemic effects by ingestion: changes in structure or function of esophagus, nausea, or vomiting, and other gastrointestinal effects. |
| Inhalation | Moderately toxic by inhalation. |
| EFFECTS OF OVER-EXPOSURE | Prolonged inhalation of vapors may cause mucous membrane irritation and vertigo. There are no known medical conditions, which are recognized as being aggravated by exposure. |

SECTION 4 - FIRST-AID MEASURES

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|-------------------|---|
| SKIN | Immediately remove any contaminated clothing. Wash contaminated area thoroughly with soap and copious amounts of water for at least 15 minutes. If irritation or adverse symptoms develop, seek medical attention. |
| EYES | Remove any contact lenses at once. Flush eyes with water for at least 15 minutes. Ensure adequate flushing by separating the eyelids with fingers. If irritation or adverse symptoms develop, seek medical attention. |
| INGESTION | Do Not induce vomiting. Drink plenty of water. Immediately call a physician. For aid to physician, suggest local Poison Control Center. |
| INHALATION | Remove to fresh air, if coughing, breathing becomes labored, irritation develops or other symptoms develop, seek medical attention at once, even if symptoms develop several hours after the exposure. |

SECTION 5 - FIRE-FIGHTING MEASURES

| | |
|---|---|
| FLASH POINT | >149°F (65°C), SETAFLASH |
| FLAMMABLE LIMITS | Not established. |
| AUTOIGNITION POINT | Not established. |
| EXTINGUISHING MEDIA | Water from a safe distance - preferably with a fog nozzle. In case of very small fires, other means such as carbon dioxide, foam or dry chemical extinguishers may be effective. Dry chemical combined with AAP/TBPB may reignite. Light water additives may be particularly effective at extinguishing AAP/TBPB fires. |
| SPECIAL FIRE FIGHTING PROCEDURES | Firefighters should be equipped with protective clothing and SCBA's. In case of fire near storage area, cool the containers with water spray. If dry chemical is used to extinguish an AAP/TBPB fire, the extinguished area must be thoroughly wetted down with water to prevent reignition. |

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UNUSUAL FIRE AND EXPLOSION HAZARDS

The heat of decomposition of the peroxides adds to the heat of the fire. Dry chemical fire extinguishing agent may catalyze the decomposition.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN EVENT OF SPILL OR RELEASE

Dike spill to prevent runoff from entering drains, sewers, streams, etc. Absorb spilled material with an inert absorbent material such as perlite, vermiculite, or sand. Sweep up using non-sparking tools and place in a clean polyethylene drum or a polyethylene pail. **DO NOT place into a steel container, lined or unlined, as a decomposition may occur.** Treat any contaminated cardboard packaging as hazardous waste. **Wet container contents with water prior to sealing.**

SECTION 7 - HANDLING AND STORAGE

HANDLING

Rotate stock using the oldest material first. Avoid contact with skin, eyes and clothing. Use with adequate ventilation. Use PPE as specified in Section 8. Keep containers closed to prevent contamination. Keep away from sources of heat, sparks or flame. Do not add to hot solvents or monomers as a violent decomposition and/or reaction may result. Keep in original container. **DO NOT USE NEAR FOOD OR DRINK.** Wash thoroughly after handling.

STORAGE

The stability of AAP/TBPB is directly related to the shipping and storage temperature history. Cool storage at 80°F (27°C) or below is recommended for longer shelf life and stability. Prolonged storage at elevated temperatures of 100°F (38°C) and higher will cause product degradation, gassing and potential container rupture which can result in a fire and/or explosion. Store out of direct sunlight in a well ventilated area away from combustible and incompatible materials. **DO NOT STORE WITH FOOD OR DRINK.** Refer to NFPA 400 Hazardous Materials Code from the National Fire Protection Association for additional storage information.

OTHER PRECAUTIONS

Unmixed, uncontaminated material, remaining at the end of the day, shall be returned to a proper organic peroxide storage area. Under no circumstances should material be returned to the original container.

SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION

VENTILATION

Mechanical, general.

RESPIRATORY PROTECTION

If airborne concentrations are expected to exceed acceptable levels wear a NIOSH approved air-purifying respirator with an organic vapor cartridge or canister. When using respirators refer to OSHA's 29CFR 1910.134.

EYE PROTECTION

Safety goggles recommended. Permanent eyewash is highly recommended.

HAND PROTECTION

Protective gloves recommended, solvent resistant, such as butyl rubber, nitrile or neoprene.

OTHER

A safety shower and eyewash is recommended when the risk of a significant exposure exists.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR:

Colorless to slightly yellow liquid with a moderate odor.

BOILING POINT:

Not established.

SPECIFIC GRAVITY:

1.08 - 1.12

VAPOR PRESSURE:

Not established.

FLASH POINT:

~149°F (65°C), SETAFLASH

VAPOR DENSITY:

Not established.

FLAMMABLE LIMITS:

Not established.

EVAPORATION RATE:

Not established.

SADT:

>140°F (60°C).

% VOLATILE BY VOLUME:

Not established.

pH:

Not established.

SOLUBILITY IN WATER:

Slightly soluble in water.

SECTION 10 - STABILITY AND REACTIVITY

STABILITY

Stable when kept in original, closed container, out of direct sunlight at temperatures below 80°F.

CONDITIONS TO AVOID

Avoid contamination. Do not store in direct sunlight. Storage at elevated temperatures

MATERIALS TO AVOID

Dimethylaniline, cobalt naphthenate and other promoters, accelerators, reducing agents, strong acids and bases, or any hot material.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon dioxide, benzoic acid, acetone, tert-butanol, water, carbon monoxide, methane, ethane, acetylacetone, et. al.

HAZARDOUS POLYMERIZATION

Will not occur.

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SECTION 11 - TOXICOLOGICAL INFORMATION

Acetyl Acetone Peroxide

No hazard data available for this chemical.

Tert-Butyl Perbenzoate

Irritation Data:

Eye: Rabbit--500 mg/24H: Mild.

Skin: Rabbit--500 mg/24H: Mild.

Toxicity Effects Data:

Inhalation: Rat--LC: >57 mg/m³/4H; Mouse--LC: >57 mg/m³/4H.

Oral: Rat--LD₅₀: 1012 mg/kg; Mouse--LD₅₀: 914 mg/kg.

Multiple Dose Toxicity Effects Data:

Inhalation: Rat--TC_{Lo}: 6 mg/m³/4H - Kidney, ureter, and bladder: Urine volume decreased. Other changes in urine composition.

Oral: Mouse--TC_{Lo}: 32500 mg/kg/13W-I - Gastrointestinal: Other changes endocrine - N73.

Oral: Rat--TC_{Lo}: 32500 mg/kg/13W-I - Gastrointestinal: Other changes endocrine - N73 - Z73.

Polyethylene glycol

Irritation Data:

Eye: Rabbit--500 mg/24H: Mild.

Skin: Rabbit--500 mg/24H: Mild.

Toxicity Effects Data:

Intravenous: Rat--LD₅₀: 22 gm/kg - Cardiac: Arrhythmias (including changes in conduction). Vascular: BP lowering not characterized in autonomic section. Kidney, ureter, and bladder: Hematuria.

Multiple Dose Toxicity Effects Data:

Inhalation: Rat--TC_{Lo}: 567 mg/m³/6H/2W-I - Lung, thorax, or respiration: J70. Nutritional: and Gross Metabolic: Weight loss or decreased weight gain.

Diacetone Alcohol

Irritation Data:

Eye: Rabbit--500 mg open: Mild.

Skin: Rabbit--10 mg/24H: Open

Toxicity Effects Data:

Inhalation: Human--TC_{Lo}: 100 ppm - Sense Organs and Special Senses (Nose, Eye, Ear and Taste): Eye - Other. Behavioral: Headache. Gastrointestinal: Nausea or vomiting.

Intravenous: Rat--LD_{Lo}: 3024 mg/kg - Behavioral: Somnolence (general depressed activity). Behavioral: Coma.

Interperitoneal: Mouse--LD₅₀: 933 mg/kg

Oral: Mouse--LD₅₀: 3950 mg/kg.

Oral: Rabbit--LD_{Lo}: 4653 mg/kg - Lung, thorax, respiration: Respiratory depression.

Oral: Rat--LD₅₀: 2520 mg/kg - Behavioral: Tremor. Behavioral: Convulsions or effect on seizure threshold. Liver: Other changes.

Skin: Rabbit--LD₅₀: 13500 mg/kg.

Multiple Dose Toxicity Effects Data:

Oral: Rat--TC_{Lo}: 1200 mg/kg/30D-C - Kidney, ureter, and bladder: Changes in tubules (including acute renal failure, acute tubular necrosis).

Inhalation: Rat--TC_{Lo}: 4494 mg/m³/6W-I - Kidney, ureter, and bladder: Changes in tubules (including acute renal failure, acute tubular necrosis). Blood: Pigmented or nucleated red blood cells. Nutritional and Gross Metabolic: Weight loss or decreased weight gain.

Dimethyl Phthalate

Hazard Data:

Inhalation: Cat--LC_{Lo}: 9300 mg/m³/6.5 hr.

Intraperitoneal: Mouse--LD₅₀: 1380 mg/kg.

Oral: Rat & Mouse--LD₅₀: 6800 mg/kg, somnolence behavioral, withdrawal nutritional and gross metabolic, weight loss or decreased weight gain; Dog--LD: >1400 mg/kg; Rabbit--LD₅₀: 4400 µL/kg.

Subcutaneous: Mouse--LD_{Lo}: 6500 mg/kg, dyspnea lung, thorax, respiration, or cyanosis.

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SECTION 12 - ECOLOGICAL INFORMATION

No data is available on the preparation itself. The product should be prevented from entering drains, sewers, streams, etc.

Tert-Butyl Perbenzoate

Biological degradability: 72% after 28 days (closed bottle test).

Partition coeff of K_{ow} : 750 ($\log P_{ow}=2.9$)

Bioconcentration factor (BCF): 93

Aquatic Toxicity

Fish: Poecilia reticulata--LC₅₀: 8.6 mg/l/96hr. NOEC: 4.6 mg/l/96hr

Diacetone Alcohol

Biological degradability: 88-92%. Degrades easily

Partition coeff of K_{ow} : .098 (calculated)

Bioconcentration factor (BCF): <10 (calculated)

Aquatic Toxicity

Fish: Lepomis macrochirus--LC₅₀: 420 mg/l/96hr.

Algae: Scenedesmus quadr--NOEL: 3000mg/l/7day

Other: Daphnia magna--EC50: 8750 mg/l

SECTION 13 - DISPOSAL CONSIDERATIONS

Immediately dispose of waste material at a RCRA approved hazardous waste management facility in accordance with federal, state and local regulations.

SECTION 14 - TRANSPORT INFORMATION

| | |
|----------------------------|--|
| DOT Shipping Name: | ORGANIC PEROXIDE TYPE D, LIQUID (TERT-BUTYL PEROXYBENZOATE, ≤10%, ACETYL ACETONE PEROXIDE, ≤30%) |
| DOT Hazard Class: | 5.2 |
| UN/NA ID No.: | UN3105 |
| DOT Packing Group: | PG II |
| Labels: | 5.2 (Organic Peroxide) |
| 2012 ERG GUIDE NO.: | 145 |

SECTION 15 - REGULATORY INFORMATION

The following chemicals are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Percent</u> |
|----------------------|-------------------|----------------|
| Dimethyl Phthalate | 131-11-3 | 18 - 22 |

Australian Inventory of Chemical Substances (AICS)

The ingredients in this product are listed in the Australian AICS Inventory.

Canadian Domestic Substances List (DSL)

The ingredients in this product are listed in the Canadian DSL Inventory.

Chinese Inventory of Existing Chemical Substances Manufactured or Imported in China (IECSC)

The ingredients in this product are listed in the Chinese IECSC Inventory.

European Inventory of Existing Commercial Chemical Substances (EINECS)

The ingredients in this product are listed in the European EINECS Inventory.

Japanese Existing and New Chemical Substances (ENCS)

The ingredients in this product are listed in the Japanese ENCS Inventory.

Korean Existing Chemicals List (ECL)

The ingredients in this product are listed in the Korean ECL Inventory.

US Toxic Substances Control Act (TSCA)

The ingredients in this product are listed in the US TSCA Inventory.

NOROX[®] SHP-40**Status of Carcinogenicity**

Not recognized as a carcinogen by the IARC, NTP or OSHA.

SECTION 16 - OTHER INFORMATION**NFPA 400 Organic Peroxide Classification**

Class III

NFPA 704 Rating

Health
2

Flammability
2

Reactivity
2

HMIS Rating

Health
2

Flammability
2

Reactivity
2

MSDS Reference: SHP-40 MSDS 1307.doc

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