

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier

Product name: A-CAT U400

Synonym(s): None known

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

General use: General purpose catalyst

Uses advised against: Use only in well ventilated areas.

1.3 Details of the supplier and of the safety data sheet

Manufacturer/Distributor

Silver Fern Chemical, Inc.

2226 Queen Anne Avenue North Suite C

Seattle, WA 98109 USA 1-866-282-3384

Website - www.silverfernchemical.com; email address - info@silverfernchemical.com

1.4 Emergency telephone number: +1-800-535-5053; Outside USA & Canada +1-352-323-3500

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

Product definition: Mixture

Classification in accordance with 29 CFR 1910 (OSHA HCS) and Regulation EC No. 1272/2008

Flammable Liquid - Category 3 [H226]

Acute Toxicity, Oral - Category 4 [H302]

Aspiration Toxicity - Category 2 [H305]

Skin Irritation - Category 2 [H315]

Eye Damage - Category 1 [H318]

Single Target Organ Toxicity, Single Exposure - Category 3; STOT SE 3 [H335]

Single Target Organ Toxicity, Single Exposure - Category 3; STOT SE 3 [H336]

2.2 Label elements

Hazard symbol(s):



GHS02



GHS05



GHS07

Signal word:

Danger

Hazard statement(s):

H226 - Flammable liquid and vapor

H302 - Harmful if swallowed

H305 - May be fatal if swallowed and enters air ways.

H315 - Causes skin irritation

H318 - Causes serious eye damage

H335 - May cause respiratory irritation

H336 - May cause drowsiness or dizziness

Precautionary statements:

[Prevention]

P210 - Keep away from heat, open flames and hot surface. No smoking

P233 - Keep container tightly closed.

P240 - Ground and bond container and receiving equipment.

P241 + P242 - Use explosion proof electrical, ventilating and lighting equipment. Use only non-sparking tools.

P243 - Take precautionary measures against static discharge.

P261 - Avoid breathing mist and vapor.

P264 - Wash hands and other exposed skin areas thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.

P280 - Wear protective gloves, protective clothing and eye protection.

[Response]

P301 + P330 + P316 - IF SWALLOWED: Rinse mouth. Get emergency medical help immediately.

P303 + P361 + P353 - IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water or shower.

P304 + P340 + P319 - IF INHALED: Remove victim to fresh air and keep at rest in a comfortable position for breathing.

Get medical help if you feel unwell.

P305 + P351 + P338 + P316 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Get emergency medical help immediately.

P321 + P312 - Specific treatment: Call a POISON CENTER or doctor if you feel unwell. Refer to Section 4 of this SDS.
 P331 - Do not induce vomiting.
 P332 + P317 - If skin irritation occurs: Get emergency medical help.
 P337 + P316 - If eye irritation persists : Get emergency medical help immediately.
 P362 - Take off contaminated clothing and wash before reuse.
 P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide for extinction.
 P403 + P233 + P235 - Store in a well-ventilated place. Keep container tightly closed. Keep cool.
 P405 - Store locked up.
 P501 - Dispose of contents and containers in accordance with national and local regulations.

[Storage]
 [Disposal]

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Repeated exposure may cause skin dryness or cracking

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable

3.2 Mixtures

% by Weight	Ingredient	CAS Number	EC Number	Index Number	GHS Classification
45 - 50	n-Butanol	71-36-3	200-751-6	603-004-00-6	H226, H302, H315, H318, H335, H336
50 - 55	Dinonylnaphthalenesulfonic Acid	25322-17-2	246-841-9	-----	H315, H318

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with the applicable provisions of paragraph (i).

There are no additional ingredients present in this product which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

SECTION 4 – FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: If product mist or vapor causes respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. If unconscious, maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. If symptoms persist or if the victim feels unwell, seek medical attention.

Eyes: Immediately flush eyes with large amounts of water or saline solution for at least 15 minutes, occasionally lifting the upper and lower lids. Remove contact lenses, if present and easy to do after first 2 minutes and continue rinsing. Seek immediate medical attention, preferably from an ophthalmologist.

Skin: Flush skin with large amounts of water while removing contaminated clothing. Wash the affected area with soap and water followed by thorough rinsing. Wash contaminated clothing and shoes before reuse. If irritation persists, seek medical attention.

Ingestion: Rinse mouth with water if the victim is conscious. Remove dentures if present. DO NOT induce vomiting unless directed to do so by medical personnel. Vomiting may occur spontaneously. To prevent aspiration of material into the lungs, lay the victim on one side with the head lower than the waist. Never give anything by mouth to an unconscious or convulsing person. Do not leave the victim unattended. Seek immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Potential health symptoms and effects

Eyes: Causes severe eye irritation, chemical burns and eye damage. Symptoms include inflammation, tearing, pain, light sensitivity, burns and pain. Prolonged eye contact may cause corneal injury and permanent impairment of vision. Vapor or mist can cause eye irritation.

Skin: Causes skin irritation with localized redness, itching and discomfort. Prolonged contact with unprotected skin may cause defatting of the skin and dermatitis.

Inhalation: May be harmful if inhaled. Causes irritation of the respiratory system. May cause cardiovascular disturbances, hearing abnormalities, central nervous system depression, drowsiness or dizziness, muscle weakness and possible death due to respiratory failure. May be absorbed through the lungs.

Ingestion: Harmful if swallowed. May cause irritation of the digestive tract with nausea, vomiting, abdominal pain and diarrhea. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness and nausea. May cause collapse, unconsciousness, coma and possible death due to respiratory failure. Aspiration of this material during swallowing or vomiting may lead to lung damage or death due to chemical pneumonia.

Chronic: Individuals with pre-existing skin conditions and respiratory disorders may be more susceptible to the effects of this product. Prolonged or repeated skin contact may cause defatting of the skin and dermatitis or aggravate existing skin conditions. May cause damage to the auditory nerve, possibly causing some hearing loss, and vestibular injury. Chronic exposure may affect the central nervous system and liver.

4.3 Indication of any immediate medical attention and special treatment needed

Advice to doctor and hospital personnel: Treat symptomatically and supportively.

SECTION 5 – FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable methods of extinction: Use extinguishing media such as water spray or fog, carbon dioxide, foam and dry chemical, dry sand or soil.

Unsuitable methods of extinction: Water jets or streams may spread the fire.

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour.

Hazardous polymerization reaction that could cause a fire and explosion.

Vapors can be ignited by ignition sources.

Acute toxic gas may occur by thermal decomposition or combustion.

Can form an explosive mixture in the flash-point range or above.

When heated, it may cause containers to explode.

Flammable : easily ignited by heat, sparks, flames.

Leaking may lead to explosion/fire.

There is the risk of vapor explosions in indoors, outdoor and sewers.

Vapors may form explosive mixtures with air.

When heated, it may cause corrosive/toxic fumes.

Flammable liquid and vapor!

Vapors are heavier than air and can travel along the ground to a source of ignition and flash back.

Vapors can spread along the ground and collect in low or confined areas.

Exposure to ignition sources (e.g. cell phones) can ignite vapors, causing a flash fire.

Closed containers may explode due to the buildup of pressure when exposed to extreme heat.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Obtain medical attention.

Explosion hazards: Avoid sources of ignition. Vapors may form an explosive mixture with air, especially in confined spaces. Ground and bond containers in storage and when container is in use.

5.3 Advice to firefighters

Firefighters should wear full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion when exposed to extreme heat. Be aware that burning liquid may float on water.

Firefighters must control runoff to prevent environmental contamination. Notify appropriate authorities of potential fire and explosion hazard if liquid enters sewers or waterways.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid breathing dust/fume/gas/mist/vapours/spray. Evacuate non-essential personnel. Wear appropriate protective clothing and equipment designated in Section 8.2. Ventilate the area. Remove all sources of ignition. NO SMOKING. To reduce vapor generation, vapor suppressing foam may be used. Prevent spread by covering it with plastic sheet. Clean up spills immediately. Spill creates a slip hazard.

6.2 Environmental precautions

Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers or waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements.

6.3 Methods and materials for containment and cleaning up

Approach spill from upwind direction. DO NOT flush spills down the drain. Cover drains and contain spill. Cover spill with a large quantity of inert absorbent. Do not use combustible material such as sawdust. Collect material using non-sparking tools and place into an approved container for proper disposal. Observe possible material restrictions (Sections 7.2 and 10.5). Absorb the liquid and rinse contaminated area with detergent and water. Do not allow material or runoff from rinsing contaminated areas to enter floor drains or storm drains and ditches that lead to waterways. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections

For indications about waste treatment, see Section 13.

SECTION 7 – STORAGE AND HANDLING

7.1 Precautions for safe handling

Use explosion-proof electrical/ventilating/lighting/.../equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

While handling materials, all equipment should be grounded.

Do not use pressure or cutting, welding, soldering, splicing, punching, polishing or heat uncovered, flame, sparks, static electricity.

Avoid breathing dust/fume/gas/mist/vapours/spray.

Wash hands thoroughly after handling.

Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Product residue may remain after the container has been emptied.
Please follow all SDS/label preventive measures.
Please use with caution in handling /storage.
Carefully open the spigot before opening.
Prevent long-term or continuous skin contact.

Wear all appropriate personal protective equipment specified in Section 8.2. Do not get in eyes or on skin or clothing. Do not inhale mist or vapor.
NO SMOKING. Use only with adequate ventilation or wear an appropriate respirator. Open containers slowly to control possible pressure release.
Wash contaminated clothing and shoes thoroughly before reuse.

Advice on protection against fire and explosion

Keep away from heat and sources of ignition. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

7.2 Conditions for safe storage, including any incompatibilities

Store in dry, cool, well-ventilated areas away from incompatible materials (see Section 10.5), food and drink. Keep away from heat and ignition sources. Transfer only to approved containers having correct labeling. Keep containers tightly closed when not in use. Protect containers against physical damage. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Containers are hazardous when empty as they contain product residues. Do not cut, drill, weld, braze, solder grind or perform similar operations on or near empty containers. Use appropriate containment to avoid environmental contamination. Ventilate closed areas. Keep out of reach of children.

Please note substances and conditions to be avoided.
Please see the engineering controls and personal protective equipment.
Protect from heat .

Use ventilation and check the oxygen concentration in air while working since there is a lack of oxygen in a confined space and low areas.
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Store in a well-ventilated place. Keep container tightly closed. Keep cool.
Keep away from food and drink.

7.3 Specific end uses

Apart from the uses mentioned in Section 1.2, no other specific uses are stipulated.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit values

CAS Number	Ingredient	OSHA PEL	ACGIH TLV	NIOSH
71-36-3	n-Butanol	20 ppm; 6 mg/m ³ TWA	100 ppm; 300 mg/m ³ TWA	50 ppm; 150 mg/m ³ TWA 1,400 ppm IDLH

8.2 Exposure controls

Engineering measures: Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable. Refer to Section 7.1.

Individual protection measures: Wear protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

Hygiene measures: Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking, smoking or using the lavatory.

Eye/face protection: Wear safety glasses with unperforated side shields or protective splash goggles during use.

Hand protection: Wear gloves recommended by glove supplier for protection against materials in Section 3. Gloves should be impermeable to chemicals and oil. Breakthrough time of selected gloves must be greater than the intended use period.

Skin protection: Wear protective clothing. Wear protective boots if the situation requires.

Respiratory protection: Always use an approved respirator when vapor/aerosols exceed permissible exposure limits. Where risk assessment shows air-purifying respirators are appropriate use a half-mask respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Follow OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.

Environmental exposure controls: Do not empty into drains.

PPE must not be considered a long-term solution to exposure control. PPE usage must be accompanied by employer programs to properly select, maintain, clean fit and use. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers to ensure adequate protection



SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear yellow liquid
Odor	Characteristic
Odor Threshold	No data available
Molecular Weight	Not applicable
Chemical Formula	Not applicable
pH	No data available
Freezing/Melting Point	No data available
Boiling Point Range	108 - 206 °C (226 - 403 °F)
Evaporation Rate	No data available
Flammability (solid, gas)	Not applicable
Flash Point	41.5 °C (106.7 °F)
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Lower Explosive Limit (LEL)	1.2% (v)
Upper Explosive Limit (UEL)	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	0.98 ±0.03
Viscosity	No data available
Solubility in Water	Miscible
Partition Coefficient (n-octanol/water)	log P _{ow} = -0.698 - 0.88
Oxidizing Properties	Not applicable
Explosive Properties	Not applicable
Volatiles by Weight @ 21 °C	100%

9.2 Other Data

No data available

SECTION 10 – STABILITY AND REACTIVITY

10.1 Reactivity

This material is stable under normal handling conditions and use.

10.2 Chemical Stability/ Possibility of hazardous reactions

Flammable liquid and vapour.
Vapors may form explosive mixture with air.
Hazardous polymerization reaction that could cause a fire and explosion.
There is a risk of vapor explosions in indoors, outdoors and sewers.
When heated, it may cause container explosion.
Flammable : easily ignited by heat, sparks, flames.
Leakage can lead to hazard of fire/explosion.
Vapor can move to ignition source and flash back.
Acute toxic gas may occur by thermal decomposition or combustion.
Inhalation and skin absorption may be toxic.
Can form an explosive mixture in the flash-point range or higher.

10.3 Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
High temperatures, sources of ignition, hot surfaces, contact with incompatible materials. Avoid use in confined areas.

10.4 Incompatible materials

Strong oxidizing agents

10.5 Hazardous decomposition products

Thermal decomposition products include oxides of carbon and sulfur oxides.

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Skin irritation

Causes skin irritation.

Eye irritation

Causes severe eye irritation and serious eye damage.

Sensitization

No data available

Acute toxicity

Oral

n-Butyl alcohol LD50 2,292 mg/kg Rat (OECD TG 401)

Dinonlynaphthalenesulfonic acid No data

Dermal

n-Butyl alcohol LD50 3,430 mg/kg Rabbit (OECD TG 402, GLP)

Dinonlynaphthalenesulfonic acid No data Gases

n-Butyl alcohol LC0 > 17.76 mg/l air OECD TG 403

Dinonlynaphthalenesulfonic acid No data Skin corrosion & irritation

n-Butyl alcohol Skin corrosion / irritation test results in rabbits with moderate irritation corresponding to category 2

Dinonlynaphthalenesulfonic acid No data

Serious eye damage/eye irritation

n-Butyl alcohol Eye damage / irritation test in rabbits with moderate temporary irritation after 24 hours 7/10

Dinonlynaphthalenesulfonic acid No data

Respiratory sensitization

n-Butyl alcohol No data

Dinonlynaphthalenesulfonic acid No data Skin sensitization

n-Butyl alcohol Skin sensitization test results for guinea pigs, no sensitization Similar substances: 71-23-8 OECD TG 406

Dinonlynaphthalenesulfonic acid No data

Carcinogenic

n-Butyl alcohol No data

Dinonlynaphthalenesulfonic acid No data Germ cell mutagenicity

n-Butyl alcohol Mutagenesis using in vitro mammalian culture cells, negative OECD TG 476, GLP with or without metabolic activity

Micronucleus test using mammalian erythrocytes in mice in vivo, negative OECD TG 474, GLP

The substance did not cause sister chromosome exchange or chromosome breakage or axonal formation

Dinonlynaphthalenesulfonic acid No data

Reproductive toxicity

n-Butyl alcohol Inhalation toxicity test in rats showed changes in weight or food consumption but no reproductive toxicity (CAS No. 123-86-4) (OECD TG 416)

Oral toxicity test in rats, NOAEL > 500mg / kg bw / day

Inhalation toxicity test results in rats, NOAEL = 24.7mg / L air (teratogenicity), 10.8mg / L air (material toxicity / fetotoxicity)

Toxicity by fertilizing egg yolk in fertilized egg prior to incubation results in damage to eyes, kidneys, nerves and malformations of chick embryo

Dinonlynaphthalenesulfonic acid No data

Specific target organ toxicity (single exposure)

n-Butyl alcohol Inhalation exposure in humans causes headache and pharynx. Animal testing shows anesthetic effects or central nervous system depression. Target organs: Central nerve

Inhalation exposure studies in mice show that inhalation of more than 3,000 ppm causes respiratory rate to decrease due to activation of lung receptors

Dinonlynaphthalenesulfonic acid No data

Specific target organ toxicity (repeated exposure)

n-Butyl alcohol Repeated oral toxicity test results in rats, NOAEL = 125mg / kg bw / day, LOAEL = 500mg / kg bw / day

Repeated inhalation toxicity test in rats showed NOAEL = 2.35mg / L air local

& systemic EPA OTS 798.2450 read-across CAS No. 123-86-4 Dizziness, headache, or hearing loss in humans

Dinonlynaphthalenesulfonic acid No data

Aspiration hazard

n-Butyl alcohol Carbon atoms 3-13 n-alcohols

Dinonlynaphthalenesulfonic acid No data

11.2 Further information

No component of this product present at levels greater than or equal to the 0.1% threshold (de minimis) is identified as a probable, possible, potential or confirmed carcinogen by ACGIH, IARC, NTP or OSHA. No data is available regarding the mutagenicity or teratogenicity of this product, nor is there any available data that indicates that it causes adverse developmental or fertility effects

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Toxicity

Large or frequent discharges or spills may have a harmful or damaging effect on aquatic life and the environment.

A. Ecotoxicity

Fish

n-Butyl alcohol LC50 1,376 mg/L 96 hr Pimephales promelas (OECD Guideline 203, GLP). Source : ECHA

Dinonlynaphthalenesulfonic acid LC50 0.00098 mg / L 96 hr Other. Source: ECOSAR

Crustacea

n-Butyl alcohol LC50 1,983 mg/L 48 hr Daphnia magna (DIN 38412 Parat 11). Source : ECHA

Dinonlynaphthalenesulfonic acid LC50 0.0017 mg / l 48 hr Source: ECOSAR

Algae

n-Butyl alcohol EC50 225 mg/L 96 hr Selenastrum capricornutum (OECD TG 201, GLP). Source : ECHA

Dinonlynaphthalenesulfonic acid EC50 0.00158 mg / l 96 hr Source: ECOSAR

B. Persistence and degradability

Persistence n-Butyl alcohol 1 log Kow (OECD TG 117) Source: ECHA

Dinonlynaphthalenesulfonic acid 8.94 log Kow Source: ECOSAR

Degradability

n-Butyl alcohol No data

Dinonlynaphthalenesulfonic acid No data

C. Bioaccumulative potential

Condensability n-Butyl alcohol 3.16 Source: ECHA

Dinonlynaphthalenesulfonic acid 70.79 Source: QSAR

Biodegradable

n-Butyl alcohol 92% 20 day (O2) Source: ECHA

Dinonlynaphthalenesulfonic acid No data

D. Mobility in soil

n-Butyl alcohol No data

Dinonlynaphthalenesulfonic acid No data

E. Other adverse effects

n-Butyl alcohol Crustacean Daphnia magna: EC50 = 18 mg / L, NOEC 21d = 401 mg / L OECD TG 211, GLP Source: ECHA

Dinonlynaphthalenesulfonic acid No data

12.2 Persistence and degradability

This product is readily biodegradable.

12.3 Bioaccumulation potential

This material will not bioaccumulate.

12.4 Mobility in soil

Mobility in soil is high and may cause contamination of ground water.

12.5 Results of PBT and vPvB assessment

This material does not contain any substances that are persistent, bioaccumulative and toxic (PBT) and not very persistent and very bioaccumulative (vPvB).

12.6 Other effects

Additional ecological information

Do not allow material to run into surface waters, wastewater or soil.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13 – DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Methods of disposal: The generation of waste should be avoided or minimized whenever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

RCRA F-Series: No listings above the reportable threshold (de minimis)

RCRA U-Series: n-Butanol (CAS #71-36-3), U031

SECTION 14 – TRANSPORTATION INFORMATION

Note: Transportation information provided is for reference only. Customer is urged to consult 49 CFR 100 - 177, IMDG, IATA, EC, United Nations TDG and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

USA DOT (Ground Transportation) - Bulk and Non-bulk

Proper Shipping Name	Flammable liquids, corrosive, n.o.s (n-Butanol, Dinonylnaphthalenesulfonic Acid)
Hazard Class	3 (8)
UN/NA	UN2924
Packing Group	III
NEAREG	Guide #132

Drum Label(s)

IMO/IMDG (Water Transportation)

Proper Shipping Name	Flammable liquids, corrosive, n.o.s (n-Butanol, Dinonylnaphthalenesulfonic Acid)
Hazard Class	3 (8)
UN/NA	UN2924
Packing Group	III
Marine Pollutant	No
EMS Number	F-E, S-C



ICAO/IATA (Air Transportation)

Proper Shipping Name	Flammable liquids, corrosive, n.o.s (n-Butanol, Dinonylnaphthalenesulfonic Acid)
Hazard Class	3 (8)
UN/NA	UN2924
Packing Group	III



RID/ADR (Rail Transportation)

Proper Shipping Name	Flammable liquids, corrosive, n.o.s (n-Butanol, Dinonylnaphthalenesulfonic Acid)
Hazard Class	3 (8)
UN/NA	UN2924
Packing Group	III

SECTION 15 - REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for substance or mixture

U. S. Federal Regulations

OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910-1200.

OSHA Process Safety Management Standard: This product is not regulated under OSHA PSM Standard 29 CFR 1910.119.

EPA Risk Management Planning Standard: This product is not regulated under EPA RMP Standard (RMP) 40 CFR Part 68.

EPA Federal Insecticide, Fungicide and Rodenticide Act: This product is not a registered Pesticide under the FIFRA, 40 CFR Part 150.

Toxic Substance Control Act (TSCA) Inventory: All substances in this product are listed on the TSCA Inventory. This product is not subject to TSCA 12(b) Export Notification.

Drug Enforcement Administration (DEA) List 2, Essential Chemicals (21 CFR 1310.02(b)) and 1310.4(f)(2)) and Chemical Code Number
No listings

Drug Enforcement Administration (DEA) Lists 1 & 2, Exempt Chemical Mixtures (21 CFR 1310.12(c)) and Code Number: No listings

Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) Chemicals: No listings

Superfund Amendments and Reauthorization Act (SARA)

SARA Section 311/312 Hazard Categories

Flammable liquid and vapor Causes skin irritation and serious eye damage
Harmful if swallowed May cause respiratory irritation, drowsiness or dizziness

SARA 313 Information: n-Butanol (CAS #71-36-3) is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to Know Act of 1986.

SARA 302/304 Extremely Hazardous Substance: None of the components of the product exceed the threshold (de minimis) reporting levels established by of these sections of Title III of SARA.

SARA 302/304 Emergency Planning & Notification: None of the components of the product exceed the threshold (de minimis) reporting levels established by of these sections of Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): This product contains the following CERCLA reportable substances: n-Butanol (CAS #71-36-3) - RQ = 2,268 kg (5,000 lb)

Clean Air Act (CAA)

This product does not contain Hazardous Air Pollutants (HAPs) designated in CAA Section 112 (b).

This product does not contain Class 1 Ozone depleters.

This product does not contain Class 2 Ozone depleters.

Clean Water Act (CWA)

n-Butanol (CAS #71-36-3) is a Hazardous Substance.

This product does not contain Priority Pollutants.

This product does not contain Toxic Pollutants.

U.S. State Regulations

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986

This product contains no chemical(s) known to the state of California to cause cancer birth defects or reproductive harm in concentrations that exceed the threshold (de minimis) reporting levels established under Proposition 65.

Other U.S. State Inventories

n-Butanol (CAS #71-36-3) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: CA, DE, MA, MI, NJ, NY, PA, RI, WI.

Canada

WHMIS Hazard Classification

Flammable liquid and vapor Causes skin irritation and serious eye damage May cause respiratory irritation, drowsiness and dizziness

Canadian National Pollutant Release Inventory (NPRI): n-Butanol (CAS #71-36-3) is listed on the NPRI.

European Economic Community

WGK, Germany (Water danger/protection): No data available

Global Chemical Inventory Lists

Country	Inventory Name	Listed
Canada	Domestic Substance List (DSL)	Yes
Canada	Non-Domestic Substance List (NDSL)	No
Europe	Inventory of New and Existing Chemicals (EINECS)	Yes
United States	Toxic Substance Control Act (TSCA)	Yes
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
New Zealand	New Zealand Inventory of Chemicals (NZIoC)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (KECI)	Yes
Philippines	Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Yes

*Yes - All components of this product comply with the inventory requirements administered by the governing country.

No - One or more components of this product are not on the inventory or are exempt from listing.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16 - OTHER INFORMATION

Hazardous Material Information System (HMIS)

HEALTH	3
FLAMMABILITY	2
PHYSICAL HAZARD	0
PERSONAL PROTECTION	C

C = safety glasses, gloves and an apron

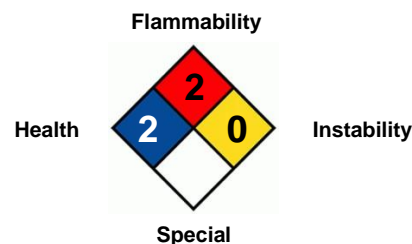
HMIS Hazard Rating Legend

0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe
* = Chronic Health Hazard

NFPA Hazard Rating Legend

0 = Insignificant 1 = Slight 2 = Moderate
3 = High 4 = Extreme

National Fire Protection Association (NFPA)



Abbreviation Key

ACGIH	American Conference of Governmental Industrial Hygienists	LD_{Lo}	Lowest Lethal Dose
ADR	Accord Dangereux Routier (European regulations concerning the international transport of dangerous goods by road)	mppcf	Millions of Particles Per Cubic Foot
CAS	Chemical Abstract Services	NA	North America
CFR	Code of Federal Regulations	NAERG	North American Emergency Response Guide Book
COC	Cleveland Open Cup	NIOSH	National Institute for Occupational Safety & Health
DOT	Department of Transportation	NTP	National Toxicology Program
EC₅₀	Half maximal effective concentration	OSHA	Occupational Safety and Health Administration
EMS	Emergency Response Procedures for Ships Carrying	PBT	Persistent, Bioaccumulating and Toxic
EPA	Environmental Protection Agency	PEL	Permissible exposure limit
ErC₅₀	Reduction of Growth Rate	PMCC	Pensky-Martens Closed Cup
ERG	Emergency Response Guide Book	ppm	Parts Per Million
FDA	Food and Drug Administration	RCRA	Resource Conservation and Recovery Act
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)	RID	Dangerous Goods by Rail
HCS	Hazard Communication Standard	RQ	Reportable Quantity
IARC	International Agency for Research on Cancer	TCC/Tag	Tagliabue Closed Cup
IATA	International Air Transport Association	TLV	Threshold Limit Value
IC₅₀	Half Maximal Inhibitory Concentration	TSCA	Toxic Substance Control Act
ICAO	International Civil Aviation Organization	TWA	Time-weighted Average
IDLH	Immediately Dangerous to Life and Health	UN	United Nations
IMDG	International Maritime Dangerous Goods	VOC	Volatile Organic Compounds
IMO	International Maritime Organization	vPvB	Very Persistent and Very Bioaccumulating
LC₅₀	50% Lethal Concentration	WHMIS	Workplace Hazardous Materials Information System
LD₅₀	50% Lethal Dose		

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