



ACME-HARDESTY  
A division of  
JACOB STERN & SONS, INC.  
- SINCE 1857 -

# BioPure™ nC4-OL

## Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations  
Revision Date: 07/11/2016 Date of Issue: 07/11/2016

Version: 1.0

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

### 1.1. Product Identifier

**Product Form:** Substance

**Product Name:** BioPure™ nC4-OL

**CAS No:** 71-36-3

**Synonyms:** n-Butanol

### 1.2. Intended Use of the Product

**Use of the substance/mixture:** Intermediate solvent. Recommended for industrial use only.

### 1.3. Name, Address, and Telephone of the Responsible Party

#### Company

Acme-Hardesty Co  
450 Sentry Parkway  
Blue Bell, PA 19422  
T 866-226-3834 T 215-591-3610

[www.acme-hardesty.com](http://www.acme-hardesty.com)

### 1.4. Emergency Telephone Number

**Emergency Number** : 800-424-9300

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the Substance or Mixture

#### GHS-US classification

Flam. Liq. 3 H226

Skin Irrit. 2 H315

Eye Irrit. 2A H319

STOT SE 3 H335

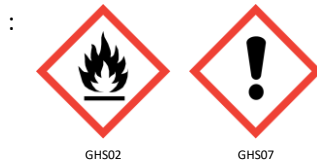
STOT SE 3 H336

Full text of hazard classes and H-statements : see section 16

### 2.2. Label Elements

#### GHS-US Labeling

##### Hazard Pictograms (GHS-US)



##### Signal Word (GHS-US)

: Warning

##### Hazard Statements (GHS-US)

: H226 - Flammable liquid and vapor

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

H336 - May cause drowsiness or dizziness

##### Precautionary Statements (GHS-US)

: P210 - Keep away from extremely high or low temperatures, ignition sources, and incompatible materials. - No smoking.

P233 - Keep container tightly closed.

P240 - Ground/bond container and receiving equipment.

P241 - Use explosion-proof electrical, ventilating, and lighting equipment.

P242 - Use only non-sparking tools.

P243 - Take precautionary measures against static discharge.

P261 - Avoid breathing vapors, mist, or spray.

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

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

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P280 - Wear protective gloves, protective clothing, and eye protection.  
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304+P340 - If inhaled: Remove person to fresh air and keep at rest in a position comfortable for breathing.  
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P312 - Call a poison center or doctor if you feel unwell.  
P321 - Specific treatment (see section 4 on this SDS).  
P332+P313 - If skin irritation occurs: Get medical advice/attention.  
P337+P313 - If eye irritation persists: Get medical advice/attention.  
P362+P364 - Take off contaminated clothing and wash it before reuse.  
P370+P378 - In case of fire: Use appropriate media (see section 5) to extinguish.  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.  
P403+P235 - Store in a well-ventilated place. Keep cool.  
P405 - Store locked up.  
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

### 2.3. Other Hazards

**Other Hazards Not Contributing to the Classification:** Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

### 2.4. Unknown Acute Toxicity (GHS-US)

No data available

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substance

Name	Product Identifier	%	GHS-US classification
1-Butanol	(CAS No) 71-36-3	> 99.8	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Irrit. 2A H319 STOT SE 3, H336 STOT SE 3, H335

Full text of H-phrases: see section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of First Aid Measures

**First-aid Measures General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

**First-aid Measures After Inhalation:** When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

**First-aid Measures After Skin Contact:** Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists.

**First-aid Measures After Eye Contact:** Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

**First-aid Measures After Ingestion:** Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

### 4.2. Most Important Symptoms and Effects, Both Acute and Delayed

**Symptoms/Injuries:** Causes serious eye irritation. Causes skin irritation. May cause respiratory irritation. May cause drowsiness and dizziness.

**Symptoms/Injuries After Inhalation:** Irritation of the respiratory tract and the other mucous membranes. High concentrations may cause central nervous system depression such as dizziness, vomiting, numbness, drowsiness, headache, and similar narcotic symptoms.

**Symptoms/Injuries After Skin Contact:** Redness, pain, swelling, itching, burning, dryness, and dermatitis.

**Symptoms/Injuries After Eye Contact:** Contact causes severe irritation with redness and swelling of the conjunctiva.

**Symptoms/Injuries After Ingestion:** Ingestion may cause adverse effects.

### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

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### SECTION 5: FIREFIGHTING MEASURES

#### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** Dry chemical powder, alcohol-resistant foam, carbon dioxide (CO<sub>2</sub>). Water may be ineffective but water should be used to keep fire-exposed container cool.

**Unsuitable Extinguishing Media:** Do not use a heavy water stream. A heavy water stream may spread burning liquid.

#### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Flammable liquid and vapor.

**Explosion Hazard:** May form flammable or explosive vapor-air mixture.

**Reactivity:** Reacts violently with strong oxidizers. Increased risk of fire or explosion.

#### 5.3. Advice for Firefighters

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire.

**Firefighting Instructions:** Use water spray or fog for cooling exposed containers. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Avoid breathing (vapor, mist, spray). Do not get in eyes, on skin, or on clothing. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Use special care to avoid static electric charges. Avoid all contact with skin, eyes, or clothing.

##### 6.1.1. For Non-emergency Personnel

**Protective Equipment:** Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel. Stop leak if safe to do so.

##### 6.1.2. For Emergency Responders

**Protective Equipment:** Equip cleanup crew with proper protection : self-contained breathing apparatus (NIOSH-approved) and full firefighting turn out gear.

**Emergency Procedures:** Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area. Eliminate ignition sources.

#### 6.2. Environmental Precautions

Prevent entry to sewers and public waters.

#### 6.3. Methods and Material for Containment and Cleaning Up

**For Containment:** Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. As an immediate precautionary measure, isolate spill or leak area in all directions.

**Methods for Cleaning Up:** Clean up spills immediately and dispose of waste safely. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill. Absorb and/or contain spill with inert material. Do not take up in combustible material such as: saw dust or cellulosic material. Use only non-sparking tools.

#### 6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

### SECTION 7: HANDLING AND STORAGE

#### 7.1. Precautions for Safe Handling

**Additional Hazards When Processed:** Handle empty containers with care because residual vapors are flammable.

**Precautions for Safe Handling:** Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Avoid breathing vapors, mist, spray. Take precautionary measures against static discharge. Use only non-sparking tools. Avoid contact with skin, eyes and clothing.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures.

#### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Technical Measures:** Comply with applicable regulations. Take action to prevent static discharges. Ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating, and lighting equipment.

**Storage Conditions:** Store in a dry, cool place. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials. Store in a well-ventilated place. Keep container tightly closed. Keep in fireproof place—No smoking.

**Incompatible Products:** Strong acids, strong bases, strong oxidizers.

**Incompatible Materials:** Sources of ignition. Direct sunlight. Heat sources.

#### 7.3. Specific End Use(s)

Intermediate solvent. Recommended for industrial use only.

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### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

1-Butanol (71-36-3)		
USA ACGIH	ACGIH TWA (ppm)	20 ppm
USA NIOSH	NIOSH REL (ceiling) (mg/m <sup>3</sup> )	150 mg/m <sup>3</sup>
USA NIOSH	NIOSH REL (ceiling) (ppm)	50 ppm
USA IDLH	US IDLH (ppm)	1400 ppm (10% LEL)
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	300 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (ppm)	100 ppm

#### 8.2. Exposure Controls

##### Appropriate Engineering Controls

: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. Gas detectors should be used when flammable gases or vapors may be released. Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof equipment.

##### Personal Protective Equipment

: Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.



##### Materials for Protective Clothing

: Chemically resistant materials and fabrics. Wear fire/flammable resistant/retardant clothing.

##### Hand Protection

: Wear protective gloves.

##### Eye Protection

: Chemical safety goggles.

##### Skin and Body Protection

: Wear suitable protective clothing.

##### Respiratory Protection

: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

##### Other Information

: When using, do not eat, drink or smoke.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1. Information on Basic Physical and Chemical Properties

Physical State	: Liquid
Appearance	: Clear liquid
Odor	: Alcohol
Odor Threshold	: 0.83 ppm
pH	: No data available
Relative Evaporation Rate (butylacetate=1)	: 0.5
Melting Point	: No data available
Freezing Point	: -89 °C (-128.2 °F)
Boiling Point	: 118 °C (244.4 °F)
Flash Point	: 36 °C (96.8 °F)
Auto-ignition Temperature	: 343 °C (650 °F)
Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: 7.3 mbar (@ 20 °C)
Relative Vapor Density at 20 °C	: No data available
Relative Density	: 0.81 (@ 20 °C)

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<b>Specific Gravity</b>	: Not available
<b>Solubility</b>	: Moderate in water
<b>Partition Coefficient: N-Octanol/Water</b>	: P: 7.6; log P: 0.88
<b>Viscosity</b>	: 3 mPa.s (@ 25 °C)
<b>Explosive Properties</b>	: No data available
<b>Oxidizing Properties</b>	: No data available
<b>Explosive Limits</b>	: No data available
<b>Lower Flammable Limit</b>	: 1.4 %
<b>Upper Flammable Limit</b>	: 11.3 %
<b>Color</b>	: Clear

**9.2. Other Information** No additional information available

## SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity:** Reacts violently with strong oxidizers. Increased risk of fire or explosion.
- 10.2 Chemical Stability:** Flammable liquid and vapor. May form flammable or explosive vapor-air mixture.
- 10.3 Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4 Conditions to Avoid:** Direct sunlight, extremely high or low temperatures, heat, hot surfaces, sparks, open flames, incompatible materials, and other ignition sources.
- 10.5 Incompatible Materials:** Strong acids, strong bases, strong oxidizers. Organic acids. Halogenated compounds. Phosphorus trichloride, acid chlorides.
- 10.6 Hazardous Decomposition Products:** None known.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information On Toxicological Effects

**Acute Toxicity** : Oral: Not classified.

<b>1-Butanol (71-36-3)</b>	
<b>LD50 Oral Rat</b>	2500 mg/kg
<b>LD50 Dermal Rabbit</b>	5300 mg/kg
<b>LC50 Inhalation Rat (ppm)</b>	> 8000 ppm/4h

**Skin Corrosion/Irritation:** Causes skin irritation.

**Serious Eye Damage/Irritation:** Causes serious eye irritation.

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Carcinogenicity:** Not classified

**Reproductive Toxicity:** Not classified

**Specific Target Organ Toxicity (Single Exposure):** May cause drowsiness or dizziness. May cause respiratory irritation.

**Specific Target Organ Toxicity (Repeated Exposure):** There is a possibility of liver damage.

**Aspiration Hazard:** Not classified

**Potential Adverse Human Health Effects and Symptoms:** Based on available data, the classification criteria are not met.

**Symptoms/Injuries After Inhalation:** Irritation of the respiratory tract and the other mucous membranes. High concentrations may cause central nervous system depression such as dizziness, vomiting, numbness, drowsiness, headache, and similar narcotic symptoms.

**Symptoms/Injuries After Skin Contact:** Redness, pain, swelling, itching, burning, dryness, and dermatitis.

**Symptoms/Injuries After Eye Contact:** Contact causes severe irritation with redness and swelling of the conjunctiva.

**Symptoms/Injuries After Ingestion:** Ingestion may cause adverse effects.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

**Ecology - General** : Not classified.

<b>1-Butanol (71-36-3)</b>	
<b>LC50 Fish 1</b>	1730 - 1910 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
<b>EC50 Daphnia 1</b>	1983 mg/l (Exposure time: 48 h - Species: Daphnia magna)
<b>LC 50 Fish 2</b>	1740 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
<b>EC50 Daphnia 2</b>	1897 - 2072 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

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### 12.2. Persistence and Degradability

<b>BioPure™ nC4-OL (71-36-3)</b>	
Persistence and Degradability	Not established.

### 12.3. Bioaccumulative Potential

<b>BioPure™ nC4-OL (71-36-3)</b>	
Bioaccumulative Potential	Not established.
<b>1-Butanol (71-36-3)</b>	
BCF fish 1	0.64
Log Pow	0.785 (at 25 °C)

**12.4. Mobility in Soil** No additional information available

### 12.5. Other Adverse Effects

**Other Information** : Avoid release to the environment.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

**Waste Disposal Recommendations:** Dispose of contents/container in accordance with local, regional, national, and international regulations.

**Additional Information:** Handle empty containers with care because residual vapors are flammable.

**Ecology – Waste Materials:** Avoid release to the environment.

## SECTION 14: TRANSPORT INFORMATION

In Accordance With ICAO/IATA/IMDG/DOT

### 14.1. UN Number

**UN-No.(DOT)** : 1120  
**DOT NA no.** UN1120

### 14.2. UN Proper Shipping Name

**Proper Shipping Name (DOT)** : Butanols  
**Class (DOT)** : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120  
**Hazard Labels (DOT)** : 3 - Flammable liquid



**Packing Group (DOT)** : III - Minor Danger  
**Reportable Quantity** : 5000 lbs. / 2270 kg (1-Butanol)  
**DOT Special Provisions (49 CFR 172.102)** : IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized  
T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)  
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling =  $97 / (1 + a (tr - tf))$  Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling  
TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP

**DOT Packaging Exceptions (49 CFR 173.xxx)** : 150

**DOT Packaging Non Bulk (49 CFR 173.xxx)** : 202

**DOT Packaging Bulk (49 CFR 173.xxx)** : 242

**DOT Packaging Bulk (49 CFR 173.xxx)** : 242

### 14.3. Additional Information

**Emergency Response Guide (ERG) Number** : 129

**Number**

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<b>Other information</b>	: No supplementary information available.
<b>Transport by Sea</b>	
<b>DOT Vessel Stowage Location</b>	: B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded
<b>EmS-No. (1)</b>	: F-E
<b>EmS-No. (2)</b>	: S-D
<b>Air Transport</b>	
<b>DOT Quantity Limitations Passenger Aircraft/Rail (49 CFR 173.27)</b>	: 5 L
<b>DOT Quantity Limitations Cargo Aircraft Only (49 CFR 175.75)</b>	: 60 L

## SECTION 15: REGULATORY INFORMATION

### 15.1 US Federal Regulations

<b>BioPure™ nC4-OL (71-36-3)</b>	
<b>SARA Section 311/312 Hazard Classes</b>	Fire hazard Immediate (acute) health hazard
<b>1-Butanol (71-36-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
<b>EPA TSCA Regulatory Flag</b>	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA Y2 - Y2 - indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule
<b>SARA Section 313 - Emission Reporting</b>	1.0 %

### 15.2 US State Regulations

<b>1-Butanol (71-36-3)</b>
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. -CA -Hazardous Substances (Director's) List U.S. -IL -Chemical Safety Act U.S. - Rhode Island -RTK (Right to Know) List

## SECTION 16: OTHER INFORMATION

<b>Revision Date</b>	: 07/11/2016
<b>Other Information</b>	: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

### GHS Full Text Phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Liq. 3	Flammable liquids Category 3
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H226	Flammable liquid and vapor
H302	Harmful if swallowed
H315	Causes skin irritation
H318	Causes serious eye damage

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H319	Causes serious eye irritation
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness

*The data herein are based on our current knowledge and believed to be reliable. Acme-Hardesty Co., provides this information without any representation or warranty, expressed or implied, regarding its accuracy or correctness.*

*Users must make their own determination that handling, storage, use and disposal of the product in the anticipated manner is safe and appropriate. Because these actions of the user are out of our control, and may be beyond our knowledge, we do not assume responsibility and expressly disclaim liability for loss, damage, expense or any other claim arising out of or in any way connected with the handling, storage, use or disposal of the product or container.*

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