

Normal Butane C/ISOM Grade

Version 1.0

Revision Date 2011-08-30

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**Product information**

Trade name : Normal Butane C/ISOM Grade
Material : 1012529

Company : Chevron Phillips Chemical Company LP
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:**Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

Transport:

North America: CHEMTREC 800.424.9300 or 703.527.3887

Asia: +800 CHEMCALL (+800 2436 2255) China: 0532.8388.9090

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Chemcare Asia: Tel: +65 6848 9048 - Mob: +65 8382 9188 - Fax: +65 6848

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : MSDS@CPChem.com
Website : www.CPChem.com

2. HAZARDS IDENTIFICATION**Emergency Overview**

Form: compressed liquefied gas **Physical state:** Liquid **Color:** Colorless **Odor:** Odorless

OSHA Hazards : Flammable Gas, Compressed Gas

GHS Classification

: Flammable gases, Category 1
Gases under pressure, Compressed gas

GHS-Labeling

Symbol(s) :



Signal Word : Danger

Hazard Statements : H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.

Precautionary Statements : **Prevention:**

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P210: Keep away from heat/sparks/open flames/hot surfaces.
- No smoking.

Response:

P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381: Eliminate all ignition sources if safe to do so.

Storage:

P410 + P403: Protect from sunlight. Store in a well-ventilated place.

Carcinogenicity:**IARC**

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

NTP

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

ACGIH

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Normal Butane
n-Butane

Molecular formula : C₄H₁₀

Component	CAS-No.	Weight %
n-Butane	106-97-8	94.00 - 100.00
Isobutane	75-28-5	0.00 - 6.00
n-Pentane	109-66-0	0.00 - 2.00
Propane	74-98-6	0.00 - 1.00

4. FIRST AID MEASURES

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.

If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

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5. FIRE-FIGHTING MEASURES

- Flash point : -73 °C (-99 °F)
estimated
- Autoignition temperature : 288 °C (550 °F)
estimated
- Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO₂). Dry chemical.
- Unsuitable extinguishing media : High volume water jet.
- Special protective equipment for fire-fighters : Wear self contained breathing apparatus for fire fighting if necessary.
- Further information : For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
- Fire and explosion protection : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- 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.

7. HANDLING AND STORAGE**Handling**

- Advice on safe handling : For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.
- Advice on protection against fire and explosion : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Storage

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Requirements for storage areas and containers : Prevent unauthorized access. No smoking. Keep container tightly closed in a dry and well-ventilated place. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Ingredients with workplace control parameters****US**

Ingredients	Basis	Value	Control parameters	Note
n-Butane	OSHA Z-1-A	TWA	800 ppm, 1,900 mg/m3	
	ACGIH	TWA	1,000 ppm,	
	NIOSH REL	TWA	800 ppm, 1,900 mg/m3	
Isobutane	ACGIH	TWA	1,000 ppm,	
	NIOSH REL	TWA	800 ppm, 1,900 mg/m3	
n-Pentane	OSHA Z-1	TWA	1,000 ppm, 2,950 mg/m3	(b),
	OSHA Z-1-A	TWA	600 ppm, 1,800 mg/m3	
	OSHA Z-1-A	STEL	750 ppm, 2,250 mg/m3	
	ACGIH	TWA	600 ppm,	
Propane	ACGIH	TWA	1,000 ppm,	
	OSHA Z-1	TWA	1,000 ppm, 1,800 mg/m3	(b),
	OSHA Z-1-A	TWA	1,000 ppm, 1,800 mg/m3	
	NIOSH REL	TWA	1,000 ppm, 1,800 mg/m3	
1,3-Butadiene	ACGIH	TWA	2 ppm,	A2,
	OSHA Z-1	TWA	1 ppm,	
	OSHA Z-1	STEL	5 ppm,	

(b) The value in mg/m3 is approximate.

A2 Suspected human carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogen; OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primarily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans.

Engineering measures

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the

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product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

Hygiene measures : Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties****Appearance**

Form : compressed liquefied gas
 Physical state : Liquid
 Color : Colorless
 Odor : Odorless

Safety data

Flash point : -73 °C (-99 °F)
 estimated

Lower explosion limit : 1.5 %(V)

Upper explosion limit : 9 %(V)

Oxidizing properties : No

Autoignition temperature : 288 °C (550 °F)
 estimated

Molecular formula : C₄H₁₀

Molecular Weight : 58.14 g/mol

pH : Not applicable

Pour point : No data available

Freezing point : No data available

Boiling point/boiling range : -0.56 °C (30.99 °F)

Vapor pressure : 51.60 PSI
 at 38 °C (100 °F)

Density : 582.4 G/L

Water solubility : Negligible

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Partition coefficient: n-octanol/water : No data available
Viscosity, kinematic : No data available
Relative vapor density : 1.2
(Air = 1.0)
Evaporation rate : > 1

10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.
Chemical stability : No decomposition if stored and applied as directed.

Possibility of hazardous reactions

Conditions to avoid : Heat, flames and sparks.
Other data : No decomposition if stored and applied as directed.

11. TOXICOLOGICAL INFORMATION**Acute oral toxicity**

n-Pentane : LD50: > 2,000 mg/kg
Species: rat

Propane
No data available

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Acute inhalation toxicity : LC50: > 20000 ppm
Exposure time: 4 HR
Method: Acute toxicity estimate

Acute dermal toxicity

n-Pentane : LD50: unknown
Propane
No data available

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Skin irritation : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

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Eye irritation : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Sensitization

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n-Pentane : Did not cause sensitization on laboratory animals.

Repeated dose toxicity

n-Butane : Species: rat, Male and female
Sex: Male and female
Application Route: Inhalation
Dose: 0, 1017, 4489 ppm
Exposure time: 90 day
Number of exposures: 6 hr/d, 5 d/wk
NOEL: 4489 ppm

n-Pentane Species: rat
Application Route: Inhalation
Dose: 0, 3000 ppm
Exposure time: 16 wk
Number of exposures: 12 h/d, 7 d/wk
NOEL: 3,000 ppm

Species: rat
Application Route: Inhalation
Dose: 0, 1000, 3000, 10000 ppm
Exposure time: 2 wk
Number of exposures: 6 h/d, 5 d/wk
NOEL: 1,000 ppm

Propane Species: Monkey
Application Route: Inhalation
Dose: 0, 750 ppm
Exposure time: 90 day
Number of exposures: daily
NOEL: > 750 ppm

Reproductive toxicity

n-Pentane : Species: rat
Sex: male
Application Route: Inhalation
Dose: 0, 5, 10, 20 mg/l
Exposure time: 13 wk
Test period: 6hrs/day, 5 days/wk
NOAEL Parent: 20 mg/l

Species: rat
Sex: female
Application Route: Inhalation
Dose: 0, 5, 10, 20 mg/l
Exposure time: 13 wk
Test period: 6hrs/day, 5days/wk
NOAEL Parent: 20 mg/l

Propane Species: rat
Sex: male and female
Application Route: Inhalation
Dose: 0, 1200, 4000, 12000 ppm
Exposure time: 6 weeks
Number of exposures: 6 hours/day, 7 days/week
Test period: 6 weeks
Test substance: yes

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Method: OECD Guideline 422
NOAEL Parent: 12000 ppm
NOAEL F1: 12000 ppm

Teratogenicity

n-Pentane : Species: rat
Application Route: Inhalation
Dose: 0, 1000, 3000, 10000 ppm
Number of exposures: 6 h/d
Test period: GD 6-15
NOAEL Teratogenicity: 10,000 ppm

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Further information : No data available.

12. ECOLOGICAL INFORMATION**Toxicity to fish**

n-Pentane : LC50: 4.3 mg/l
Exposure time: 96 HR
Species: Oncorhynchus mykiss (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates.

n-Pentane : EC50: 2.7 mg/l
Exposure time: 48 HR
Species: Daphnia magna (Water flea)

Toxicity to algae

n-Pentane : EbC50: 10.7 mg/l
Exposure time: 72 HR
Species: Pseudokirchneriella subcapitata (green algae)

Bioaccumulation

n-Pentane : Accumulation in aquatic organisms is unlikely.

Propane : This material is not expected to bioaccumulate.
This substance is not considered to be persistent,
bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor
very bioaccumulating (vPvB).

Biodegradability

n-Pentane : This material is expected to be readily biodegradable.

Propane : This material is volatile and is expected to partition to air.

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Further information on ecology

Additional ecological information : No data available

13. DISPOSAL CONSIDERATIONS

The information in this MSDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : 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.

14. TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (United States Department of Transportation)

UN1011, BUTANE, 2.1

IMO / IMDG (International Maritime Dangerous Goods)

UN1011, BUTANE, 2.1, (-73 °C)

IATA (International Air Transport Association)

UN1011, BUTANE, 2.1

ADR (Agreement on Dangerous Goods by Road (Europe))

UN1011, BUTANE, 2.1, (B/D)

RID (Regulations concerning the International Transport of Dangerous Goods (Europe))

UN1011, BUTANE, 2.1 ((13))

ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)

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UN1011, BUTANE, 2.1

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**15. REGULATORY INFORMATION****National legislation**

SARA 311/312 Hazards : Fire Hazard
Sudden Release of Pressure Hazard

SARA 302 Reportable Quantity : This material does not contain any components with a SARA 302 RQ.

SARA 302 Threshold Planning Quantity : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 304 Reportable Quantity : This material does not contain any components with a section 304 EHS RQ.

SARA 313 Ingredients : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential : 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).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

1,3-Butadiene
Hexane

The following chemical(s) are listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F):

n-Butane
Isobutane

Propane

1,3-Butadiene

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489):

US State Regulations

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Pennsylvania Right To Know

: n-Butane	106-97-8
: Isobutane	75-28-5
: n-Pentane	109-66-0
: Propane	74-98-6
: 1,3-Butadiene	106-99-0

New Jersey Right To Know

: n-Butane	106-97-8
: Isobutane	75-28-5
: n-Pentane	109-66-0
: Propane	74-98-6

**California Prop. 65
Ingredients**

: WARNING! This product contains a chemical known in the State of California to cause cancer.

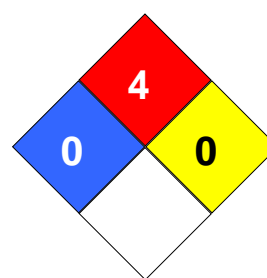
WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Notification status

Europe REACH	: On the inventory, or in compliance with the inventory
United States of America US.TSCA	: On TSCA Inventory
Canada DSL	: All components of this product are on the Canadian DSL list.
Australia AICS	: On the inventory, or in compliance with the inventory
New Zealand NZIoC	: On the inventory, or in compliance with the inventory
Japan ENCS	: On the inventory, or in compliance with the inventory
Korea KECI	: On the inventory, or in compliance with the inventory
Philippines PICCS	: On the inventory, or in compliance with the inventory
China IECSC	: On the inventory, or in compliance with the inventory

16. OTHER INFORMATION**NFPA Classification**

: Health Hazard: 0
Fire Hazard: 4
Reactivity Hazard: 0

**Further information**

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this MSDS pertains only to the product as shipped.

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

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Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		