

# Safety Data Sheet

## according to Globally Harmonized System (GHS)

Printing date 02.11.2014

Revision: 02.11.2014

### 1 Identification of the substance/mixture and of the company/undertaking

- **Product identifier**
- **Trade name:** Isobutyl Alcohol (IBA)
- **Synonyms:**  
Isobutanol, Isobutyl alcohol, IBA, 2-methyl-1-propanol, 2-methylpropyl alcohol, Isopropyl carbinol, 1-hydroxymethylpropane
- **CAS Number:**  
78-83-1
- **Relevant identified uses of the substance or mixture and uses advised against :**
- **Identified/Recommended uses:** Solvent
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Dairen Chemical Corporation  
9th Fl., No. 301, SongJiang Rd.  
Taipei City, 10483, TAIWAN  
Tel: +886-2-7743-1500 Fax: +886-2-2509-9619  
www.dcc.com.tw
- **Further information obtainable from:** Respective plant's environmental, health, and safety (EHS) Dept.
- **Emergency telephone number:** +886-2-7743-1500 (08:30-17:30; GMT+8)

### 2 Hazards identification

- **Classification of the substance or mixture**
- Flam. Liq. 3 H226 Flammable liquid and vapour.
- H305 May be harmful if swallowed and enters airways.
- Eye Dam. 1 H318 Causes serious eye damage.
- Skin Irrit. 2 H315 Causes skin irritation.
- STOT SE 3 H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.
- Acute Tox. 5 H303 May be harmful if swallowed.
- Acute Tox. 5 H313 May be harmful in contact with skin.

- **Label elements**
- **GHS label elements**  
The substance is classified and labelled according to the Globally Harmonised System (GHS).
- **Hazard pictograms**



- **Signal word** Danger
- **Hazard-determining components of labelling:**  
iso-butanol
- **Hazard statements**  
Flammable liquid and vapour.  
May be harmful if swallowed.  
May be harmful in contact with skin.  
Causes skin irritation.  
Causes serious eye damage.  
May cause respiratory irritation. May cause drowsiness or dizziness.  
May be harmful if swallowed and enters airways.
- **Precautionary statements**  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

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IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

### 3 Composition/information on ingredients

- **Chemical characterisation: Substances**

- **CAS No. Description**

78-83-1 iso-butanol  $\geq 99.0\%$ 

- **Identification number(s)**

- **EC number:** 201-148-0

- **Index number:** 603-108-00-1

### 4 First aid measures

- **Description of first aid measures**

- **After inhalation:**

In case of unconsciousness place patient stably in side position for transportation.

Supply fresh air or oxygen; call for doctor.

- **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

Remove/Take off immediately all contaminated clothing.

- **After eye contact:**

Rinse opened eye for 15 minutes under running water. If symptom persists consult a doctor.

- **After swallowing:**

Rinse mouth thoroughly with water.

Risk of aspiration!

Do not induce vomiting; call for medical help immediately.

Caution if victim vomits.

Keep airways free.

Pulmonary failure possible after aspiration of vomit.

- **Most important symptoms and effects, both acute and delayed**

Irritant effects

Coughing

Headache

Shortness of breath

Dizziness

Respiratory arrest

Narcosis

Risk of corneal clouding.

- **Indication of any immediate medical attention and special treatment needed**

Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

### 5 Firefighting measures

- **Extinguishing media**

- **Suitable extinguishing agents:** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.

- **For safety reasons unsuitable extinguishing agents:** Water with full jet

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**Special hazards arising from the substance or mixture**

Beware of vapours accumulating to form explosive concentrations.  
Vapours are heavier than air and may spread along floors.  
Pay attention to flashback.

**Advice for firefighters****Protective equipment:**

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).

**Additional information** Cool endangered receptacles with water spray.

### 6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.  
Keep people at a distance and stay on the windward side.  
Ensure adequate ventilation

Do not breathe dust/fume/gas/mist/vapours/spray.

**Environmental precautions:** Do not allow to enter sewers/ surface or ground water.**Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Allow to solidify. Pick up mechanically.  
Do not flush with water or aqueous cleansing agents

**Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

### 7 Handling and storage

**Precautions for safe handling**

Wear protective gloves/protective clothing/eye protection/face protection.  
Ensure good ventilation/exhaustion at the workplace.  
Do not get in eyes, on skin, or on clothing.  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
Take measures to prevent the build up of electrostatic charge.  
Prevent formation of aerosols.

**Information about fire - and explosion protection:**

Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.

**Storage:****Requirements to be met by storerooms and receptacles:**

Store in cool, dry place in tightly closed receptacles.  
Suitable material for receptacles and pipes: Soft steel.  
Suitable material for receptacles and pipes: Stainless steel.

**Further information about storage conditions:** Keep container tightly sealed.

### 8 Exposure controls/personal protection

**Additional information about design of technical facilities:**

Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines.  
Local exhaust ventilation may be necessary for some operations.

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Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

#### Control parameters

##### Ingredients with limit values that require monitoring at the workplace:

###### 78-83-1 iso-butanol

PEL (USA)	Long-term value: 300 mg/m <sup>3</sup> , 100 ppm
REL (USA)	Long-term value: 150 mg/m <sup>3</sup> , 50 ppm
TLV (USA)	Long-term value: 152 mg/m <sup>3</sup> , 50 ppm
TLV (Korea)	Long-term value: 150 mg/m <sup>3</sup> , 50 ppm

#### DNELs :

- Workers:** DNEL (inhalation, chronic effects systemic): 310 mg/m<sup>3</sup>; AF=1
- Consumers:** DNEL (inhalation, chronic effects systemic): 55 mg/m<sup>3</sup>; AF=6

#### PNECs

PNEC(fresh water): 0,4 mg/l with assessment factor of 50  
PNEC (marine water): 0,04 mg/l with assessment factor of 500  
PNEC (intermittent release): 11 mg/l with assessment factor of 100  
PNEC (sewage treatment plant; STP): 10 mg/l with assessment factor of 10  
PNEC (freshwater sediments): 1,52 mg/kg sediment dw with assessment factor of N/A  
PNEC (marine sediments): 0,152 mg/kg sediment dw with assessment factor N/A  
PNEC (soil): 0,0699 mg/kg soil dw with assessment factor of N/A

#### Exposure controls

##### Personal protective equipment:

##### General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing  
Wash hands before breaks and at the end of work.  
Avoid contact with the skin.  
Avoid contact with the eyes and skin.  
Be sure to clean skin thoroughly after work and before breaks.  
Ensure that washing facilities are available at the work place.

##### Respiratory protection:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Short term filter device:

Filter A/P2

##### Protection of hands:



Protective gloves

The selected protective gloves have to satisfy the specifications of standard EN 374 or its equivalent.  
Replace gloves immediately when torn or any change in appearance (dimension, colour, flexibility etc) is noticed.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

##### Material of gloves

Nitrile rubber, NBR

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

##### Penetration time of glove material

Full Contact:

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Break through time: &gt; 480 min

Splash Contact:

Break through time: &gt; 10 min

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Eye protection:**


Tightly sealed goggles

Safety glasses with side shields conforming to EN166, ANSI 87.1-2010, or equivalent.

**Body protection:**

Flame retardant antistatic protective clothing

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

## 9 Physical and chemical properties

**Information on basic physical and chemical properties**
**General Information**
**Appearance:**
**Form:**

Liquid

**Colour:**

Colourless

**Odour:**

Musty

**Odour threshold:**

Not determined.

**pH-value:**

Not determined.

**Change in condition**
**Melting point/Melting range:**

-108 °C

**Boiling point/Boiling range:**

108 °C

**Flash point:**

28 °C

**Flammability (solid, gaseous):**

Not applicable.

**Ignition temperature:**

390 °C

**Decomposition temperature:**

Not determined.

**Self-igniting:**

Not determined.  
430

**Danger of explosion:**

Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

**Explosion limits:**
**Lower:**

1,7 Vol %

**Upper:**

12 Vol %

**Vapour pressure at 20 °C:**

12 hPa

**Density at 20 °C:**

0,8016 g/cm<sup>3</sup>
**Relative density at 20 °C**

0,8 g/cm<sup>3</sup>
**Vapour density**

2,6 g/cm<sup>3</sup> (Air=1)

**Evaporation rate**

0,82 (BuAc=1)

**Solubility in / Miscibility with water:**

98 g/l

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- **Partition coefficient (n-octanol/water):** 0,65 log POW
- **Viscosity:**
  - Dynamic:** Not determined.
  - Kinematic:** Not determined.
- **Solvent content:**
  - Organic solvents:** 99,0 %
  - VOC (EC)** 99,00 %
- **Other information** No further relevant information available.

### 10 Stability and reactivity

- **Reactivity**

Vapour may form explosive mixture with air.  
When properly handled and stored, no dangerous reaction is known.
- **Chemical stability** This product is stable under prescribed use and storage.
- **Thermal decomposition / conditions to be avoided:**

No decomposition if used according to specifications.
- **Possibility of hazardous reactions**

Exothermic reaction with:  
Acid chlorides

Risk of ignition or formation of inflammable gases or vapours with:  
Chromium (VI) oxides  
Aluminium.  
Strong oxidizing agents

Violent reaction possible with:  
Alkaline earth metals  
Alkali metals
- **Conditions to avoid** Heating
- **Incompatible materials:**

Strong oxidizing agents  
various plastics
- **Hazardous decomposition products:** Carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>)

### 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

May be harmful in contact with skin.  
May be harmful if swallowed.

· <b>LD/LC50 values relevant for classification:</b>		
<b>78-83-1 iso-butanol</b>		
Oral	LD50	2460 mg/kg (rat)
Dermal	LD50	3400 mg/kg (rabbit)

- **Skin corrosion/irritation:**

Causes skin irritation.  
Rabbit: irritating to the skin (OECD 404)
- **Serious eye damage/eye irritation:**

Causes serious eye damage.  
Rabbit: corrosive to the eye (OECD 405)
- **Respiratory or skin sensitization:** Not classified based on available data.

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- **Germ Cell Mutagenicity:** Not classified based on available data.
- **Carcinogenicity:** Not classified based on available data.
- **Reproductive Toxicity:** Not classified based on available data.
- **Specific Target Organ Toxicity - Single Exposure (STOT SE):**  
May cause drowsiness or dizziness.  
May cause respiratory irritation.
- **Specific Target Organ Toxicity - Repeated Exposure (STOT RE):**  
Not classified based on available data.
- **Aspiration Hazard:**  
May be harmful if swallowed and enters airways.  
Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.
- **Primary irritant effect:**
  - **on the skin:** Irritant to skin and mucous membranes.
  - **on the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitisation:** No sensitising effects known.

## 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:**  
Not classified based on available data.  
LC50 (96h, freshwater fish): >1430 mg/L (OECD N/A)  
EC50 (Daphnia Magna, 48hr): 1100 mg/L (OECD N/A)  
NOEL (Daphnia Magna, 21d)=20 mg/l (OECD N/A)  
ErC50 (alga, 72hr): 1799 mg/L (OECD 201)
- **Persistence and degradability**  
Easily biodegradable  
Degradation : 70-80% (28d, OECD N/A)
- **Bioaccumulative potential**  
Bioconcentration Factor (BCF) : ~2  
Partition coefficient, n-octanol/water (log Pow) : 0,76  
Source: External (M)SDS
- **Mobility in soil**  
Partition coefficient, soil organic carbon/water (Koc) : 2,1 ; log Koc: 0,31  
Henry's Law Constant (H) : 1,012 Pa m<sup>3</sup>/mol @ 25 °C
- **Additional ecological information:**
- **General notes:**  
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation**  
After prior treatment product has to be disposed of in an incinerator for hazardous waste adhering to the regulations pertaining to the disposal of particularly hazardous waste.  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.  
Any disposal method should also comply with national, regional, provincial, and local laws.

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- **Uncleaned packaging:**
- **Recommendation:**  
Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.  
Disposal must be made according to official regulations.

## 14 Transport information

- **UN-Number**
- **ADR, IMDG, IATA** UN1212
- **UN proper shipping name**
- **ADR** 1212 ISOBUTANOL (ISOBUTYL ALCOHOL)
- **IMDG, IATA** ISOBUTANOL (ISOBUTYL ALCOHOL)
- **Transport hazard class(es)**
- **ADR, IMDG, IATA**



- **Class** 3 Flammable liquids.
- **Label** 3
- **Packing group**
- **ADR, IMDG, IATA** III
- **Environmental hazards:**
- **Marine pollutant:** No
- **Special precautions for user** Warning: Flammable liquids.
- **Danger code (Kemler):** 30
- **EMS Number:** F-E, S-D

### · Transport/Additional information:

- **ADR**
- **Limited quantities (LQ)** 5L
- **Excepted quantities (EQ)** Code: E1  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml
- **Transport category** 3
- **Tunnel restriction code** D/E

- **IMDG**
- **Limited quantities (LQ)** 5L
- **Excepted quantities (EQ)** Code: E1  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml
- **UN "Model Regulation":** UN1212, ISOBUTANOL (ISOBUTYL ALCOHOL), 3, III

## 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Status of global inventories:**  
All component(s) within this product is listed or exempted from the following country's chemical inventory:  
USA – TSCA  
Australia – AICS  
Canada – DSL  
China – IECSC

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EU – EINECS/NLP  
Japan – ENCS  
Korea – KECI  
New Zealand – NZIoC  
Philippines – PICCS  
Taiwan – ECSI  
Mexico - INSQ

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
VOC: Volatile Organic Compounds (USA, EU)  
DNEL: Derived No-Effect Level (REACH)  
PNEC: Predicted No-Effect Concentration (REACH)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
Flam. Liq. 3: Flammable liquids, Hazard Category 3  
Acute Tox. 5: Acute toxicity, Hazard Category 5  
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2  
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1  
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3  
: Aspiration hazard, Hazard Category 2

· **Sources**

Most toxicological and eco-toxicological data are obtained from European Chemical Agency (ECHA)'s public dissemination website.

<http://apps.echa.europa.eu/registered/data/dossiers/DISS-9d9acc14-6d71-2c22-e044-00144f67d249/DISS-9d9acc14-6d71-2c22-e044-00144f67d249> DISS-9d9acc14-6d71-2c22-e044-00144f67d249.html

· **General Disclaimers:**

DCC Group recommends that all the users/customers/recipients to study this Safety Data Sheet (SDS) carefully and understand all the data or any potential hazards associated with this product. Please consult with appropriate expert if necessary. The information herein is provided in good faith and is believed to be accurate on the date of issue. No warranty, expressed or implied, is given. It is the customer's/user's responsibility to ensure that they are complying with local, regional, state, provincial, and/or national laws in using this product, as regulatory requirement may differ at each level. It is also the customer's/user's responsibility to determine the necessary condition required for using this product safely, as actual operating or usage conditions are beyond DCC Group's control. DCC Group will not be responsible for any SDS obtained from elsewhere other than from DCC Group. If you are unsure whether the SDS you have is current or have obtained the SDS from another source; please contact us to obtain the latest version.

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