

**PRODUCT: ISOPROPANOL (IPA) REVISION: 10**

**DATED: 03/04/16**

**PAGE 1 of 11**

**PRODUCT SPECIFICATION**

Product Name Isopropanol 'S' Grade (2-propanol)  
 Alternative Names Isopropyl Alcohol  
 Specification Reference IPA/7 (08/07)

**SALES SPECIFICATION**

| PROPERTY                                      | UNITS     | VALUE                                | ASTM  | ISO   | OTHER  |
|---|-----------|--------------------------------------|-------|-------|--------|
| Appearance                                    |           | Clear and free from suspended matter | D4176 |       | Visual |
| Colour  | Pt-Co     | 10 max                               | D1209 | 6271  |        |
| Water   | Mass %    | 0.1 max                              | D1364 | 760   |        |
| Acidity as CH <sub>3</sub> COOH               | Mass %    | 0.001 max                            | D1613 | 2887  |        |
| Isopropanol                                   | Mass %    | 99.9 min                             |       |       | GC     |
| <b>Further Properties</b>                     |           | <b>Typical Values</b>                |       |       |        |
| Density                                       | g/ml      | 0.784 – 0.786                        | D4052 | 12185 |        |
| Distillation at 101.3 kPa                     |           |                                      | D1078 | 918   |        |
| Initial Boiling Point                         | °C        | 82.0                                 |       |       |        |
| Final Boiling Point                           | °C        | 83.0                                 |       |       |        |
| Refractive Index N <sub>D</sub> <sup>20</sup> |           | 1.377                                | D1218 | 5661  |        |
| Non Volatile Matter                           | mg/100 ml | <1                                   | D1353 | 759   |        |

**PHYSICAL PROPERTIES**

| PROPERTY                         | CONDITIONS       | UNIT                         | VALUE                 |
|----------------------------------|------------------|------------------------------|-----------------------|
| Molecular mass                   |                  |                              | 60.096                |
| Density                          | 20°C             | kg/litre (vacuo)             | 0.7851                |
| Relative density                 | 20°C/20°C        |                              | 0.7863                |
| Change in relative density       | 20°C             | per °C                       | 0.84x10 <sup>-3</sup> |
| Coefficient of Cubical expansion | 20°C             | per °C                       | 1.07x10 <sup>-3</sup> |
| Litres per Tonne                 | 20°C             |                              | 1274                  |
| Melting point                    | 1.013 bar        | °C                           | -89.5                 |
| Boiling point                    | 1.013 bar        | °C                           | 82.3                  |
| Change in boiling point          | 20°C             | °C/mbar                      | 0.025                 |
| Vapour pressure                  |                  | mbar                         | 41.6                  |
| Flammable limits                 |                  |                              |                       |
| Upper                            | 20 °C            | % volume                     | 12.0                  |
| Lower                            | 20 °C            | % volume                     | 2.0                   |
| Flash point                      | Abel closed cup  | °C                           | 12                    |
| Auto ignition temperature        |                  | °C                           | 399                   |
| Specific heat (liquid)           | 20°C             | kJ/kg°C                      | 2.49                  |
| Specific heat (vapour)           | 20 °C            | kJ/kg°C                      | 1.75                  |
| Latent heat (of fusion)          |                  | kJ/kg                        | 89.6                  |
| (of vaporisation)                | at boiling point |                              | 670                   |
| Heat of combustion               | 20 °C            | kJ/kg                        | 33.37                 |
| Critical temperature             |                  | Mj/kg                        | 234.9                 |
| Critical pressure                |                  | °C                           | 53.6                  |
| Critical volume                  |                  | bar                          | 0.2201                |
| Volume Resistivity               | 25°C             | m <sup>2</sup> /kg mole      | 7.7x10 <sup>4</sup>   |
| Thermal Conductivity             | 20 °C            | ohm.m                        | 141                   |
| Dielectric constant              | 20 °C            | mW/m°C                       | 19                    |
| Refractive Index                 | 20°C             | n <sub>D</sub> <sup>20</sup> | 1.3776                |
| Absolute viscosity               | 20°C             | cP                           | 2.43                  |
| Solubility                       | 20°C             | g/kg                         | Complete              |
| in water                         | 20°C             | g/kg                         | Complete              |
| water in solvent                 | 21.5°C           |                              | 2.93                  |
| Evaporation rate                 |                  |                              |                       |
| Relative to n-BuAc = 1           |                  |                              |                       |

**NOTES**

BULK ISOPROPANOL complies with the following standards:

BS 1595:1976

ASTM D770

Current European Pharmacopeia

**Exclusion of Liability**

Information contained in this publication is accurate to the best of the knowledge and belief of the supplier.

Any information or advice obtained from the supplier otherwise than by means of this publication and whether relating to our materials or other materials, is also given in good faith. However, it remains at all times the responsibility of the customer to ensure that our materials are suitable for the particular purpose intended.

We accept no liability whatsoever (except as otherwise provided by law) arising out of the use of information supplied, the application, adaptation or processing of the products described herein, the use of other materials in lieu of our materials or the use of our materials in conjunction with such other materials.

**Health and Safety**

A Material Safety Data Sheet has been issued describing the health, safety and environmental properties of this product, identifying the potential hazards and giving advice on the handling precautions and emergency procedures. This must be consulted fully before handling, storage and use.

## SAFETY DATA SHEET

### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

#### 1.1 Product Identifier

Trade Names ISOPROPANOL  
Synonyms ISOPROPYL ALCOHOL  
CAS Number 67-63-0  
EINECS Number 200-661-7  
REACH Registration Number 01-2119457558-25-xxxx  
propan-2-ol

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

Use of the raw material for photochemicals, raw material for cleaning  
Substance/Mixture agents and disinfectants, process control substance, Solvent,  
industrial use

#### 1.3 Details of the supplier of the safety data sheet

G.P.Services(UK) Ltd  
Churchill Road  
Doncaster,  
South Yorkshire  
DN1 2TF  
Tel: 44(0)1302 765390  
Fax: 44(0) 1302 765397  
Email: [sales@gpservicesuk.co.uk](mailto:sales@gpservicesuk.co.uk)

#### 1.4 Emergency telephone number

Tel: 44(0)1302 765390 (office hours)

### 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

##### Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2 H225: Highly flammable liquid and vapour.  
Eye irritation, Category 2, Eyes H319: Causes serious eye irritation.  
Specific target organ toxicity – single H336: May cause drowsiness or dizziness.  
exposure, Category 3, Central nervous  
system

##### Classification (67/548/EEC, 1999/45/EC)

Highly flammable R11: High flammable.  
Irritant R36: Irritating to eyes.  
R67: Vapours may cause drowsiness and dizziness.

#### 2.2 Label elements

##### Labelling (REGULATION (EC) No 1272/2008)

Hazard Pictogram



Signal word Danger

Hazard statements H225 Highly flammable liquid and vapour.  
H319 Causes serious eye irritation.  
H336 May cause drowsiness or dizziness.

Precautionary statements

**Prevention:**

- P243 Take precautionary measures against static discharge  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P271 Use only outdoors or in a well-ventilated area.

**Response:**

- P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304+P340 IF INHALED: Remove victim 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.

**2.3 Other hazards**

No information available.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**3.1 Substances**

| Chemical Name                               | CAS-No.<br>EINECS-No./ELINCS No. | Content [%] |
|---|----------------------------------|-------------|
| propan-2-ol; isopropyl alcohol; isopropanol | 67-63-0<br>200-661-7             |             |

**4. FIRST AID MEASURES**

**4.1 Description of first aid measures**

- General advice Take off contaminated clothing and shoes immediately.
- If inhaled Move to fresh air.
- In case of skin contact Wash off with plenty of water.
- In case of eye contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
- If swallowed Drink plenty of water.  
Do NOT induce vomiting.  
Obtain medical attention.

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

- Risks No information available.

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

- Treatment For specialist advice physicians should contact the Poisons Information Service.

## 5. FIRE FIGHTING MEASURES

### 5.1 Extinguishing Media

Suitable extinguishing media

Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry powder

Unsuitable extinguishing media

High volume water jet

### 5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting

No information available.

### 5.3 Advice for fire-fighters

Further information

Use water spray to cool unopened containers.

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions

Ensure adequate ventilation.  
Keep away from sources of ignition – No smoking.

### 6.2 Environmental precautions

Environmental precautions

Do no flush into surface water or sanitary sewer system.  
Do not allow material to contaminate ground water system.

### 6.3 Methods and materials for containment and cleaning up

Methods for cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

### 6.4 Reference to other sections

For personal protection see section 8.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Advice on safe handling

Ensure adequate ventilation.  
Vapours are heavier than air and may spread along floors.

Advice on protection against fire and explosion

Keep away from sources of ignition – No smoking.  
Vapours may form explosive mixtures with air.  
Do not allow to enter drains (danger of explosion).  
Take precautionary measures against static discharges.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

Keep container tightly closed.  
Store between 5 and 25 ° C in a dry, well ventilated place away from sources of heat, ignition and direct sunlight.

German storage class

3 Flammable Liquids

### 7.3 Specific end uses

Consult the technical guidelines for the use of this Substance/mixture.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

| Component   | CAS Number | Value | Control Parameters     | Update | Basis    |
|-------------|------------|-------|------------------------|--------|----------|
| Isopropanol | 67-63-0    | TWA   | 400 ppm<br>999 mg/m3   | 2007   | EH40 WEL |
|             |            | STEL  | 500 ppm<br>1,250 mg/m3 | 2007   | EH40 WEL |

**DNEL**

propan-2-ol; isopropyl alcohol; isopropanol

End Use: Workers  
 Exposure routes: Skin contact  
 Potential health effects: Chronic effects  
 Exposure time: 1 d  
 Value: 888 mg/kg

End Use: Workers  
 Exposure routes: Inhalation  
 Potential health effects: Chronic effects  
 Value: 500 mg/m3

End Use: Consumers  
 Exposure routes: Skin contact  
 Potential health effects: Chronic effects  
 Exposure time: 1 d  
 Value: 319 mg/kg

End Use: Consumers  
 Exposure routes: Inhalation  
 Potential health effects: Chronic effects  
 Value: 89 mg/m3

End Use: Consumers  
 Exposure routes: Ingestion  
 Potential health effects: Chronic effects  
 Exposure time: 1 d  
 Value: 26 mg/kg

**PNEC**

propan-2-ol; isopropyl alcohol; isopropanol

Fresh water  
 Value: 140.9 mg/l

Marine water  
 Value: 140.9 mg/l

Fresh water sediment  
 Value: 552 mg/kg

Marine sediment  
 Value: 552 mg/kg

Soil  
 Value: 28 mg/kg

**8.2 Exposure controls**

### Personal protective equipment

|                        |   |
|------------------------|---|
| Respiratory protection | No personal respiratory protective equipment normally required.<br>In inadequately ventilated areas, where workplace limits are exceeded, where unpleasant odours exist or where aerosols are in use, or smoke and mist occur, use self-contained breathing apparatus or breathing apparatus with a type A filter or appropriate combined filter (e.g. where aerosols are in use, or smoke and mist occur, A-P2 or ABEK-P2), in compliance with EN 141. |
| Eye protection         | Tightly fitting safety goggles  |
| Hygiene measures       | Take off all contaminated clothing immediately.   |
| Protective measures    | Avoid contact with skin and eyes.<br>Do not breathe vapours or spray mist.  |

### Environmental exposure controls

|                |  |
|----------------|--|
| General advice | Do not flush into surface water or sanitary sewer system.<br>Do not allow material to contaminate ground water system. |
|----------------|--|

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

|  |   |
|--|---|
| Appearance                                 | Liquid                                    |
| Colour                                     | Colourless                                |
| Odour                                      | Alcohol like                              |
| pH   | Not applicable                            |
| Melting point/range                        | -89 ° C                                   |
| Boiling point/boiling range                | 82 ° C, 1,013 hPa                         |
| Flash point                                | 12 ° C                                    |
| Lower explosion limit                      | 2 % (V)                                   |
| Upper explosion limit                      | 12 % (V)                                  |
| Vapour pressure                            | 42 hPa, 20 °C<br>60.2 hPa, 25 °C          |
| Density                                    | 0.7855 g/cm <sup>3</sup> , 20 ° C         |
| Water solubility                           | completely miscible                       |
| Partition coefficient: n-<br>Octanol/water | log Pow: 0.05, 25 ° C, (literature value) |
| Autoignition temperature                   | > 399 ° C                                 |
| Ignition temperature                       | 425 ° C                                   |
| Thermal decomposition                      | No decomposition if used as directed      |

|                              |                                    |
|------------------------------|------------------------------------|
| Viscosity, dynamic           | 2.5 mPas, 20 °C<br>2.1 mPas, 25 °C |
| Explosive properties         | Not explosive, No explosive        |
| <b>9.2 Other information</b> |                                    |
| Oxidising potential          | no data available                  |
| Refractive index             | 1.376 – 1.378, 20 °C               |

## **10. STABILITY AND REACTIVITY**

### **10.1 Reactivity**

No data available

### **10.2 Chemical stability**

No data available

### **10.3 Possibility of hazardous reactions**

Hazardous reactions Vapours may form explosive mixture with air.

### **10.4 Conditions to avoid**

Conditions to avoid Heat, flames and sparks.

### **10.5 Incompatible materials**

Materials to avoid No data available

### **10.6 Hazardous decomposition products**

Hazardous decomposition products No decomposition if stored normally.

## **11. TOXICOLOGICAL INFORMATION**

### **11.1 Information on toxicological effects**

Further information no data available

#### **Components:**

#### **propan-2-ol; isopropyl alcohol; isopropanol:**

|                                   |   |
|-----------------------------------|---|
| Acute oral toxicity               | LD50: > 2,000 mg/kg, rat, GLP: no, (literature value)   |
| Acute dermal toxicity             | LD50: > 2,000 mg/kg rabbit, GLP, no, (literature value)   |
| Skin corrosion/irritation         | rabbit, Result: not irritating, GLP: no, (literature value)   |
| Serious eye damage/eye Irritation | rabbit, Result: irritating, GLP: no, (literature value)   |
| Respiratory or skin               | Buehler Test, guinea pic, Result: not sensitising, GLP: no, (literature value)                          |
| Germ cell mutagenicity            |   |
| Genotoxicity in vitro             | Ames test, Salmonella typhimurium, with and without, Result: not mutagenic, GLP: no, (literature value) |



## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

#### Components:

Propanol-2-ol; isopropyl alcohol; isopropanol:

|   |   |
|---|---|
| Toxicity to fish                                    | LC50: > 100 mg/l, 48 h, Leuciscus idus melanotus, static<br>GLP: no<br>(literature value)       |
| Toxicity to daphnia and other aquatic invertebrates | EC50: > 100 mg/l, 48 h, Daphnia magna, static test, GLP: no,<br>(literature value)              |
| Toxicity to algae                                   | EC50: > 100 mg/l, 72 h, Scenedesmus subspicatus, static<br>test, GLP: no,<br>(literature value) |

### 12.2 Persistence and degradability

#### Components:

propanol-2-ol; isopropyl alcohol; isopropanol:

|                  |   |
|------------------|---|
| Biodegradability | aerobic, > 70 %, Result: Readily biodegradable., Exposure<br>time: 10 d, content 7 mg/l, GLP: no,<br>(literature value) |
|------------------|---|

### 12.3 Bioaccumulative potential

### 12.4 Mobility in soil

### 12.5 Results of PBT and vPvB assessment

#### Components

propan-2-ol; isopropyl alcohol; isopropanol:

|            |   |
|------------|---|
| Assessment | This substance is not considered to be persistent,<br>bioaccumulating nor toxic (PBT)., This substance is not<br>considered to be very persistent nor very bioaccumulating<br>(vPvB). |
|------------|---|

### 12.6 Other adverse effects

#### Product:

|                       |                               |
|-----------------------|-------------------------------|
| Additional ecological | No data available information |
|-----------------------|-------------------------------|

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

|                        |  |
|------------------------|--|
| Product                | Following pre-treatment and observing the regulations for<br>hazardous wastes, it must be taken to a permitted hazardous<br>wastes landfill or hazardous wastes incinerator. |
| Contaminated packaging | Can be used after re-conditioning.   |

| <b>14. TRANSPORT INFORMATION</b>   |                                |
|--|--------------------------------|
| <b>14.1 UN Number</b>  |                                |
| <b>ADR</b>   | 1219                           |
| <b>RID</b>   | 1219                           |
| <b>IMDG</b>  | 1219                           |
| <b>IATA</b>  | 1219                           |
| <b>14.2 Proper Shipping Name</b>   |                                |
| <b>ADR</b>   | ISOPROPYL ALCOHOL, ISOPROPANOL |
| <b>RID</b>   | ISOPROPYL ALCOHOL, ISOPROPANOL |
| <b>IMDG</b>  | ISOPROPYL ALCOHOL, ISOPROPANOL |
| <b>IATA</b>  | ISOPROPANOL                    |
| <b>14.3 Transport hazard class</b>   |                                |
| <b>ADR</b>   | 3                              |
| <b>RID</b>   | 3                              |
| <b>IMDG</b>  | 3                              |
| <b>IATA</b>  | 3                              |
| <b>14.4 Packing group</b>  |                                |
| <b>ADR</b>   |                                |
| Packaging Group  | II                             |
| Classification Code  | F1                             |
| Hazard Identification No   | 33                             |
| Labels   | 3                              |
| Tunnel Restriction Code  | (D/E)                          |
| <b>RID</b>   |                                |
| Packaging Group  | II                             |
| Classification Code  | F1                             |
| Hazard Identification No   | 33                             |
| Labels   | 3                              |
| <b>IMDG</b>  |                                |
| Packaging Group  | II                             |
| Labels   | 3                              |
| EmS Number   | F-E, S-D                       |
| <b>IATA</b>  |                                |
| Packaging Instruction (cargo aircraft)   | 307                            |
| Packaging Group  | II                             |
| Labels   | 3                              |
| <b>14.5 Environmental hazards</b>  |                                |
| <b>ADR</b>   |                                |
| Environmentally hazardous  | No                             |
| <b>RID</b>   |                                |
| Environmentally hazardous  | No                             |
| <b>IMDG</b>  |                                |
| Marine pollutant   | No                             |
| <b>IATA</b>  |                                |
| Environmentally hazardous  | No                             |
| <b>14.6 Special precautions for user</b>   |                                |
| No data available  |                                |
| <b>14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b> |                                |
| Pollution category   | Z                              |

## 15. REGULATORY INFORMATION

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

|                       |                     |
|-----------------------|---------------------|
| Major Accident Hazard | 96/82/EC            |
| Legislation           | Highly flammable    |
|                       | Quantity 1:5,000 t  |
|                       | Quantity 2:50,000 t |

#### Notification status

|        |   |
|--------|---|
| EINECS | On the inventory, or in compliance with the inventory       |
| TSCA   | On TSCA Inventory   |
| AUSTR  | On the inventory, or in compliance with the inventory       |
| DSL    | All components of this product are on the Canadian DSL list |
| ENCs   | On the inventory, or in compliance with the inventory       |
| KOREA  | On the inventory, or in compliance with the inventory       |
| PHIL   | On the inventory, or in compliance with the inventory       |
| CHINA  | On the inventory, or in compliance with the inventory       |
| ISHL   | On the inventory, or in compliance with the inventory       |
| NZIOC  | On the inventory, or in compliance with the inventory       |

### 15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

## 16. OTHER INFORMATION

### Full text of R Phrases referred to under sections 2 and 3

|     |   |
|-----|---|
| R11 | Highly flammable.                           |
| R36 | Irritating to eyes.                         |
| R67 | Vapours may cause drowsiness and dizziness. |

### Full text of H-Statements referred to under sections 2 and 3

|       |                                     |
|-------|-------------------------------------|
| H225  | Highly flammable liquid and vapour. |
| H319  | Causes serious eye irritation.      |
| H3326 | May cause drowsiness or dizziness.  |

Revision Date: 03/04/16