

## GHS Classification

**ID959**

**Butane, 2-methyl-**

**CAS 78-78-4**

Date Classified: May 24, 2006 (Environmental Hazards: Mar. 31, 2006)

**Physical Hazards**

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

| Hazard class  | Classification              | symbol | signal word | hazard statement                      | Rational for the classification  |
|---|-----------------------------|--------|-------------|---------------------------------------|--|
| 1 Explosives  | Not applicable              | -      | -           | -                                     | There are no chemical groups associated with explosive properties present in the molecules.                                  |
| 2 Flammable gases   | Not applicable              | -      | -           | -                                     | Liquid (GHS definition)  |
| 3 Flammable aerosols  | Not applicable              | -      | -           | -                                     | Not aerosol products   |
| 4 Oxidizing gases   | Not applicable              | -      | -           | -                                     | Liquid (GHS definition)  |
| 5 Gases under pressure  | Not applicable              | -      | -           | -                                     | Liquid (GHS definition)  |
| 6 Flammable liquids   | Category 1                  | Flame  | Danger      | Extremely flammable liquid and vapour | Flash point: <23degC. Initial boiling point: <=35degC  |
| 7 Flammable solids  | Not applicable              | -      | -           | -                                     | Liquid (GHS definition)  |
| 8 Self-reactive substances and mixtures                                       | Not applicable              | -      | -           | -                                     | There are no chemical groups associated with explosive or self-reactive properties present in the molecule.                  |
| 9 Pyrophoric liquids  | Not classified              | -      | -           | -                                     | Flash point: 420degC (ICSC (J), 1994)  |
| 10 Pyrophoric solids  | Not applicable              | -      | -           | -                                     | Liquid (GHS definition)  |
| 11 Self-heating substances and mixtures                                       | Classification not possible | -      | -           | -                                     | Test methods applicable to liquid substances are not available   |
| 12 Substances and mixtures, which in contact with water, emit flammable gases | Not applicable              | -      | -           | -                                     | The chemical structure of the substance does not contain metals or metalloids(B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At). |
| 13 Oxidizing liquids  | Not applicable              | -      | -           | -                                     | Organic compounds containing no oxygen, fluorine and chlorine.   |
| 14 Oxidizing solids   | Not applicable              | -      | -           | -                                     | Liquid (GHS definition)  |
| 15 Organic peroxides  | Not applicable              | -      | -           | -                                     | Containing no -O-O- structure  |
| 16 Corrosive to metals  | Classification not possible | -      | -           | -                                     | Liquid at a test temperature, 55degC. Test methods applicable to solid substances are not available.                         |

## Health Hazards

| Hazard class                              | Classification  | symbol           | signal word | hazard statement              | Rational for the classification  |
|---|---|------------------|-------------|-------------------------------|--|
| 1 Acute toxicity (oral)                   | Classification not possible   | -                | -           | -                             | No data available  |
| 1 Acute toxicity (dermal)                 | Classification not possible   | -                | -           | -                             | No data available  |
| 1 Acute toxicity (inhalation: gas)        | Not applicable  | -                | -           | -                             | Liquid (GHS definition)  |
| 1 Acute toxicity (inhalation: vapour)     | Not classified  | -                | -           | -                             | Based on mouse LC50 (1 hour) value: 1000mg/L (4-hour equivalent: 500mg/L) (PATTY 4th, 1994) and rat LC50 (4 hours) value: 280mg/L (RTECS, 2005), it was out of Category even if it gave priority to the data of Priority 1 or to rat data. So it was classified as out of Category.  |
| 1 Acute toxicity (inhalation: dust, mist) | Classification not possible   | -                | -           | -                             | No data available  |
| 2 Skin corrosion / irritation             | Category 2  | Exclamation mark | Warning     | Causes skin irritation        | There is no concrete case report. But it was set as Category 2 from descriptions that high-concentration vapor stimulated the skin (PATTY (4th, 1994)), that the skin was stimulated (ICSC (J) (1994)), and that a rash might appear on the contact site (SITTIG (4th, 2002), HSFS (1999)).  |
| 3 Serious eye damage / eye irritation     | Category 2A-2B  | Exclamation mark | Warning     | Causes serious eye irritation | We found no concrete case reports. However, there is the description that high-concentration vapor stimulated the eyes (PATTY (4th, 1994)), and on the description that it stimulated the eyes (ICSC (J) (1994)). So we classified it as Category 2A-2B.   |
| 4 Respiratory/skin sensitization          | Respiratory sensitization: Classification not possible; Skin sensitization: Classification not possible | -                | -           | -                             | Respiratory organ: No data.<br>Skin : Although we have the description that sensitizing property was not acknowledged in maximization test which used the guinea pigs in IUCLID (2000), there was no description which negates sensitizing property clearly in Priority 1, therefore we presupposed that we could not classify it since data was insufficient for judging it to be Outside Of Category . |
| 5 Germ cell mutagenicity                  | Classification not possible   | -                | -           | -                             | Classification not possible due to lack of data  |
| 6 Carcinogenicity                         | Classification not possible   | -                | -           | -                             | No data available  |
| 7 Toxic to reproduction                   | Classification not possible   | -                | -           | -                             | No data available  |

|    |  |                               |                  |         |   |   |
|----|--|-------------------------------|------------------|---------|---|---|
| 8  | Specific target organs/systemic toxicity following single exposure   | Category 3 (narcotic effects) | Exclamation mark | Warning | May cause respiratory irritation or may cause drowsiness and dizziness (narcotic effects) | Although there is no concrete case report, it was judged as Category 3 (anesthetic actions) because of a description in PATTY (4th, 1994) indicating anesthetic actions, and of descriptions in RTECS (2005) and HSDB (2005) referring to confirmation of anesthetic actions in inhalation exposure tests using rats, mice, and dogs. |
| 9  | Specific target organs/systemic toxicity following repeated exposure | Classification not possible   | -                | -       | -   | Classification not possible due to lack of data   |
| 10 | Aspiration hazard  | Category 1                    | Health hazard    | Danger  | May be fatal if swallowed and enters airways  | Since it is a hydrocarbon and the dynamic viscosity at 20 degrees C is 0.3615 or 0.3760 mm <sup>2</sup> /s (calculated from the viscosity 0.224 or 0.233 mPas, and the density 0.61967 g/cm <sup>3</sup> at 20 degrees C), we classified it as Category 1.  |

### Environmental Hazards

| Hazard class                                      | Classification | symbol      | signal word | hazard statement                                | Rational for the classification   |
|---|----------------|-------------|-------------|---|---|
| 11 Hazardous to the aquatic environment (acute)   | Category 2     | -           | -           | Toxic to aquatic life                           | It was classified into Category 2 from 48-hour EC50=2.3mg/L of Crustacea (Daphnia magna) (IUCRID, 2000).  |
| 11 Hazardous to the aquatic environment (chronic) | Category 2     | Environment | -           | Toxic to aquatic life with long lasting effects | Classified into Category 2, since acute toxicity was Category 2 and supposed not rapidly degrading (BIOWIN), though supposed less bio-accumulative (log Kow=2.72(PHYSPROP Database, 2005)). |