

Name of the product	Propylene (C ₃ H ₆)
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1. Chemical product and corporate information.

- A. Name of the product Propylene
- B. Recommended use of the product and limitation of the usage.
 Recommended use of the product Synthetic raw materials of acrylonitrile, polypropylene, ethylene propylene rubber, propylene oxide, acetone, isopropyl alcohol, octanol, etc./
 Isopropyl alcohol, polypropylene, manufacture of synthesized glycerine, acrylonitrile, propylene oxide, heptene, cumene, polymer gasoline, acrylic acid, vinyl resin, chemistry OXO,
 Propellant and component of aerosol.
- Limitation of the usage: No data available.
- C. Supplier's information.(In case of imported product, state the supplier's information for emergency contact)
 Name of the corporate: FEWM Co. LTD
 Address: 53, Jeungpyeong2sandan-ro, Doan-myeon, . Jeungpyeong-gun, Chungcheongbuk-do
 Emergency Contact: 043)838-9562

2. Hazards. Maleficence

- A. Hazards. Maleficence classification Inflammable gas: Category 1.
 High-pressure gas: liquid gas.
 Specific target organ systemic toxicity (Single exposure): Category 3 (narcosism)

- B. Cautionary statements including the measures for safety.

Symbolics



Signals	Warning
Hazards wordings	H220: Extremely flammable gas H280: Contains gas under pressure; may explode if heated H336: May cause drowsiness or dizziness
Preventional wordings	
Prevention	P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P261: Avoid breathing dust/fume/gas/mist/vapours/spray. P271: Use only outdoors or in a well-ventilated area.
Response	P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312: Call a medical agency (doctor) if you feel unwell. P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
Storage	P381: Eliminate all ignition sources if safe to do so. P403: Store in a well-ventilated place. P403 + P233: Store in a well-ventilated place. Keep container tightly closed. P405: Store locked up. P410 + P403: Protect from sunlight. Store in a well-ventilated place.
Disposal	P501: Dispose of contents/container according to (stated in the related regulations)
C. Other hazards and maleficence not included in the standards of the category of hazards and maleficence (NFPA)	
Sanitation	No data available
Fire	No data available
Reactivity	No data available

3. Title and content of the component

Name of the component	Propylene
Nickname (Trivial name)	Propene:
CAS no	115-07-1
Content (%)	100%

4. Emergency measures.

A. If in eyes

Take emergency medical measures.

B. If on skin

Melt the frozen clothes stuck on skin before removal.

In the case of burnt, cool the area with cold water as long as possible, and do not remove the clothes stuck on the skin.

In case of contact with the liquid gas, melt the area with lukewarm water.

When contact with the gas or the liquid gas, it may cause a burn, serious injury, frostbite.

Take emergency medical measures.

Consult with the medical agency (doctor) if unwell.

C. If inhaled

When exposed to a large amount of dust or hume, remove it with clean air, and in case of coughing or other symptoms, take medical measures.

Take emergency medical measures.

In case of not breathing, execute artificial respiration.

Provide oxygen if breathing is difficult.

D. If swallowed.

Take emergency medical measures.

E. Major symptoms/result, acute and chronic

No data available.

F. Other cautions to doctor

Make sure that the medical personnel is aware of the material and take protective measures.

5. Measures in case of explosion, fire.

A. Appropriate (inappropriate) extinguisher.

In the case of extinguishment concerned with this material, use alcohol foam, carbon dioxide or water spray.

Use dry sand or soil when extinguishment by smothering.

B. Specific hazard from the chemical component

May cause fire and explosion by intense polymerization.

The container may explode on heating.

Forms explosive mixture with air.

Extremely flammable.

Easily ignited by heat, spark, flame.

Vapor may flashback by moving to the source of ignition.

Cylinder exposed to fire could release inflammable gas.

Some materials may be irritating when inhaled due to high-density.

The vapor may cause dizziness or suffocation without awareness.

Includes high-pressure gas: May explode on heating.

Extremely flammable gas.

In the case of fire, irritating, corrosive, toxic gas may be formed.

C. Protective equipment when fire-fighting and preventional measures.

Do not extinguish, unless leak can be stopped safely.

Eliminate all the sources of ignition if it is safe to do so.

Fight fire away from the region from a reasonable distance.

Be careful as the liquid gas spreads on the ground as it is heavier than the air.

Be careful as the damaged container may fly.

Do not extinguish the fire on leaked gas if the leakage does not stop.
In case of tank fire, if it is a large-scale fire, use an unmanned extinguisher and if not possible, refrain and let it burn.

In the case of tank fire, as there is a risk of freezing, do not wet the source of leakage or safety facility.

In case of tank fire, extinguish at the maximum distance or use an unmanned extinguisher.

In the case of tank fire, cool the container with a large amount of water after the extinguishment.

Immediately refrain in case of tank fire, if there is noise from the pressure relief equipment or discoloration to the tank.

If not in danger, move the container from the area of the fire.

6. Measures in case leakage.

A. Required measures and protections to protect the body.

Remove all the sources of ignition as the microfine particles may cause fire or explosion.

Clean what is leaked and follow the prevention measures in the protection clause.

Do not extinguish the fire if the leakage could not be safely stopped in the case of gas leakage fire.

Avoid inhalation of (dust, fume, gas, mist, vapor, spray)

Pay attention to the materials and conditions to avoid.

If possible, turn the container of the leakage and let it release as a gas rather than liquid.

Quarantine the contaminated area until the gas dilutes by complete spreading.

The material in contact with refrigerating liquid could easily break.

Do not touch the spillage or walk around.

Do not wet the source of spillage directly.

Eliminate all the sources of ignition.

Reduce the vapor using water spray, or avoid the contact of water with the spillage by disheveling the steam point.

Graft all the equipment when handling the material

If not dangerous, stop the leakage.

B. Environmental measures.

Prevent entering the waterway, drainage, basement, confined area.

Absorb the spillage with inert material (such as dry sand or soil) and place it in the container of chemical waste.

For fire fighting purposes, build embankment and collect water.

Absorb the liquid and clean the contaminated area with water and soap.

7. Handling and storage measures.

A. Safety measures.

Do not pressurize, cut, weld, solder, connect, pierce, grind or expose to heat, fire, spark, static or other sources of ignition.

As there could be remains of the material to the container after it has been emptied, hence follow all the MSDS/label preventional measures.

Use only outdoors or in a well-ventilated area.

Avoid inhalation of (dust, hume, gas, mist, vapor, spray)

Work with reference to engineering maintenance and personal protection.

Pay attention to the material and conditions to avoid.

Graft all the equipment when handling the material

Use according to the handling/storage

Open the lid carefully.

B. Safe storage measures.

Pay attention to the material and conditions to avoid.

The pressure of the container could rise when exposed to heat hence refrain from exposure to heat.

Completely drain the empty drum and appropriately close and store back to the drum regulator or appropriately place it.

Store the container in a well-ventilated place and keep tightly closed.

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

Avoid direct sunlight and keep in a well-ventilated area.

8. Prevention of spillage and personal protection.

A. Exposure standards of the chemical material, biological exposure standards etc.

Domestic Regulations No data available.

ACGIH Regulation Normal suffocant.

TWA 500 ppm

Biological exposure standards No data available.

B. Appropriate engineering maintenance. No data available.

C. Personal protection

Respiratory protection Use the respiratory protection that has completed the inspection by the Korea Occupational Safety and Health Agency as per the characteristics of the exposed material.

Eye protection No data available.

Hand protection No data available.

Body protection No data available.

9. Physicochemical characteristic.

- A. External
 Shape Gas (Source: International Chemical Safety Cards
 (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
 Color No color (Source: International Chemical Safety Cards
 (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- B. Odor Smell of aromatic compounds (Source: HSDB)
- C. Odor threshold (...between 39.6 and 116.27 mg/c m.)
 (Source: National Library of Medicine/Hazardous Substances
 Data)
 Bank (NLM/HSDB) ([Http://toxnet.nlm.nih.gov/cgi-](http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB)
[bin/sis/htmlgen?HSDB](http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB))
- D. pH No data available.
- E. Melting point/ freezing point -185 C (Source: International Chemical Safety Cards (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- F. Initial boiling point and boiling point range -48 C (Source: International Chemical Safety
 Cards (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- G. Ignition point -107 C (Source: International Uniform ChemicalL informaion
 Database (IUCLID)(<http://ecb.irc.it/esis>)
- H. Vaporization speed No data available.
- I. Inflammability (solid, vapor) No data available.
- J. Upper limit or lower limit of the range of ignition or explosion 10.3 / 2.4 %
 (Source: International Chemical Safety Cards (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- K. Steam pressure (1158kPa at 25 C)
 (Source: International Chemical Safety Cards (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- L. Solubility 200 mg/l (at 25 C)
 (Source: International Uniform ChemicalL informaion Database
 (IUCLID)(<http://ecb.irc.it/esis>)
- M. Vapor density 1.5
 (Source: International Chemical Safety Cards (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- N. Specific gravity 0.5
 (Source: International Chemical Safety Cards (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- O. n-octanol-water partition coefficient 1.77 (Log Kow)
 (Source: International Chemical Safety Cards (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- P. Auto-ignition temperature 460 C
 (Source: International Chemical Safety Cards (ICSC)
[\(Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm\)](http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm)
- Q. Decomposition temperature No data available.
- R. Viscosity 0.00834 cP (16.7 C)

- S. Molecular weight (Source: HSDB)
42.03
(Source: 14303 Chemical product (Japan))

10. Stability and reactivity

A. Chemical stability and hazardous reactivity

Extremely inflammable gas.
Includes high-pressure gas: May explode on heating
May cause fire and explosion by intense polymerization.
The container may explode on heating.
Forms explosive mixture with air.
Extremely flammable.
Easily ignited by heat, spark, flame.
Vapor may flashback by moving to the source of ignition.
Cylinder exposed to fire could release inflammable gas.
Some materials may be irritating when inhaled due to high-density.
The vapor may cause dizziness or suffocation without awareness.

- B. Conditions to avoid Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
C. Materials to avoid No data available
D. Harmful decomposed product Irritating, corrosive, toxic gas.

11. Toxicological information.

A. Information on routes of exposure of high possibility.

No data available.

B. Health hazards information.

Acute toxicity

Oral No data available.

Skin No data available.

Inhalation Gas LC50 658 mg/l 4hr Test type: Rat
(Source: International Uniform Chemical Information Database

(IUCLID) ([Http://ecb.jrb.it/esis](http://ecb.jrb.it/esis))

Skin corrosion or irritation No skin irritation on human
(Source: OECD Screening information Data Set (<http://cs3-hq.oecd.org/scripts/hpv/>))

Serious eye damage or irritation Weak irritation to the human's eye.
(Source: International Uniform Chemical Information Database

(IUCLID) ([Http://ecb.jrb.it/esis](http://ecb.jrb.it/esis))

Respiratory sensitization No data available.

Skin sensitizations No data available.

Carcinogenicity No data available.

Occupation safety and health acts	No Data Available.
Notice of Ministry of Employment and Labor	No Data Available.
IARC	3
OSHA	No Data Available.
ACGIH	A4
NTP	No data available.
EU CLP	No data available.
Germ-cell mutagenicity	Negative at the result of microorganism back mutation test. (Source: International Uniform Chemical Information Database (IUCLID) (Http://ecb.jrb.it/esis))
Reproductive toxicity	No data available.
Specific target organ systemic toxicity (Single exposure)	May affect the central nerves.
Consciousness lowers with exposure.	(Source: International Chemical Safety Cards (ICSC) (Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm))
Specific target organ systemic toxicity (Repeated exposure)	No side effect is shown when 10000ppm of propylene was repeatedly exposed for 14 weeks. Source: OECD Screening information
Data Set (http://cs3-hq.oecd.org/scripts/hpv/)	
Aspirations respiratory tract hazards	No data available.
Other maleficence effects	No data available.

12. Effects on the environment.

A. Ecotoxicity

Fish	No data available.
Crustacean	No data available.
Algae	No data available.

B. Persistent and biodegradable.

Persistent	1.77 log Kow (Source: International Chemical Safety Cards (ICSC) (Http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm))
Degradability	No data available.

C. Bio-accumulative potential

Condenasability	13.18 (Source: International Uniform Chemical Information Database (IUCLID) (Http://ecb.jrb.it/esis))
Biodegradability	65.7 (%) 35 day

D. Mobility in soil

220
(Source: National Library of Medicin/Hazardous Substances Data)

E. Other adverse effects

No data available

13. Disposal considerations.

A. Methods of waste disposal

No data available.

B. Cautious measures when disposal.

Dispose of the content and container as per (the stated regulations of the concerned law)

14. Information required for the transport.

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| A. UN No. | 1077 |
| B. Proper shipping name | Propylene |
| C. Transportation hazard classification | 2.1 |
| D. If applied, the packing group | - |
| E. Marine pollution (Marine pollutant material) | No data available. |
| F. Special transport measures to the transport or the transportation and precautionary conditions that the user should know. | |

Emergency measures in case of fire	F-D
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Emergency measures in case of spillage	S-U
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15. Legal regulatory status.

- | | |
|---|--------------------------------|
| A. Regulations by occupation safety and health acts safety report (PSM) | Object of submission of public |
| B. Regulations by Chemicals control Act | Not Applicable. |
| C. Regulations by Safety Control of Dangerous Substances | Not Applicable. |
| D. Regulations by waste control act | Not Applicable. |
| E. Regulations by domestic and foreign law. | |
| Other domestic regulations. | Not Applicable. |
| Persistent organic pollutants control act | Not Applicable. |
| Foreign regulations | |
| The USA knowledge management (OSHA Regulations) | Not Applicable. |
| The USA knowledge management (CERCLA Regulations) | Not Applicable. |
| The USA knowledge management (EPCRA 302 Regulations) | Not Applicable. |
| The USA knowledge management (EPCRA 304 Regulations) | Not Applicable. |
| The USA knowledge management (EPCRA 313 Regulations) | Not Applicable. |
| The USA knowledge management (EPCRA 302 Regulations) | Not Applicable. |
| The USA knowledge management (Materials of Rotterdam agreement) | Not Applicable. |
| The USA knowledge management (Materials of Stockholm agreement) | Not Applicable. |

The USA knowledge management (Materials of Montreal protocol)	Not Applicable.
EU Classification(result of definite classification)	F+:R12
EU Classification (Hazard text)	R12
EU Classification (Safety text)	S2, S9, S16, S33

16. Other information.

A. Source of reference.

14303 Chemical product (Japan)

14303 Chemical product (Japan) (Molecular weight)

Emergency Response Guidebook (2008)

HSDB (odor)

HSDB (viscosity)

(Source: International Chemical Safety Cards (ICSC)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (n-octanol/water partition coefficient)

(Source: International Chemical Safety Cards (ICSC)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (melting point/freezing point)

(Source: International Chemical Safety Cards (ICSC)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (Specific gravity)

(Source: International Chemical Safety Cards (ICSC)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (Color)

(Source: International Chemical Safety Cards (ICSC)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (Shape)

(Source: International Chemical Safety Cards (ICSC)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (Upper limit/lower limit of the inflammation or explosion range)

(Source: International Chemical Safety Cards (ICSC)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (self-ignition temperature)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (persistent)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (vapor density)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (steam density)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (initial boiling point and boiling point scope)

(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>) (Specific target organ systemic toxicity (Single exposure))

(Source: International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrb.it/esis>) (condensability)

(Source: International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrb.it/esis>)(germ cell mutagenicity)

(Source: International Uniform Chemical Information Database (IUCLID) ([Http://ecb.jrb.it/esis](http://ecb.jrb.it/esis))(serious eye damage or irritation)
(Source: International Uniform Chemical Information Database (IUCLID) ([Http://ecb.jrb.it/esis](http://ecb.jrb.it/esis))(solubility)
(Source: International Uniform Chemical Information Database (IUCLID) ([Http://ecb.jrb.it/esis](http://ecb.jrb.it/esis))(point of ignition)
(Source: International Uniform Chemical Information Database (IUCLID) ([Http://ecb.jrb.it/esis](http://ecb.jrb.it/esis))(Inhalation)
National Library of Medicine/Hazardous Substances Data Bank (NLM/HSDB) (<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HsDB>)
National Library of Medicine/Hazardous Substances Data Bank (NLM/HSDB) (<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HsDB>) (Odor threshold)
National Library of Medicine/Hazardous Substances Data Bank (NLM/HSDB) (<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HsDB>) (Soil mobility)
OECD Screening Information Data Set (<http://cs3-hq.oecd.org/scripts/hpv/>) (Specific target organ systemic toxicity (Repeated exposure))
OECD Screening Information Data Set (<http://cs3-hq.oecd.org/scripts/hpv/>) (Specific target organ systemic toxicity (Skin corrosive or irritation))
UN Recommendations on the Transport of Dangerous Goods (UN RTDG)

B. Initial date of preparation 1st August 2017

C. Number of revision and first date of issue

Number of revision times

Last date of revision 9th August 2018

D. Miscellaneous

The issued Material safety data sheet (MSDA) is document edited and partly amended by referencing the MSDS provided by Korea Occupational Safety and Health Agency