

1. IDENTIFICATION OF THE PRODUCT

1.1. Product name

PROTECTION TAPE (model : T45A)

1.2. Identification of the manufacturer

- Name DASUNG P&F CO., LTD.
- Address 1st floor #205, 55, Wonsan-ro, Haseong-myeon, Gimpo-si, Gyeonggi-do, Republic of Korea.
- Emergency phone number + 82 31 983 2008
- Fax + 82 31 983 0019
- Web site <http://www.dasungpf.com/>

1.3. Recommended use of the chemical and restriction on use

- Recommended use Protection tape
- Restriction on use No data available

2. HAZARDS IDENTIFICATION

2.1. GHS(Globally Harmonized System of classification and labelling of chemicals) classification of the substance/mixture

Specific target organ toxicity (Single exposure) : Category 3 (Respiratory irritation)

Specific target organ toxicity (Repeated exposure) : Category 2

2.2. GHS label elements, including precautionary statements

2.2.1. Hazard symbols (Pictograms)



2.2.2. Signal word

Warning

2.2.3. Hazard statements

H335 May cause respiratory irritation

H373 May cause damage to organs (Liver, brain, heart, lung, blood system, respiratory system, thyroid, etc.) through prolonged or repeated exposure

2.2.4. Precautionary statements

• Prevention

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P271 Use only outdoors or in a well-ventilated area.



• Response

P312 Call a POISON CENTER/doctor if you feel unwell.

P304+P340 IF INHALED : Remove person to fresh air and keep comfortable for breathing.

• Storage

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

• Disposal

P501 Dispose of contents/container to REGULATORY.

2.3. Other hazards which do not result in classification

• NFPA (National Fire Protection Association)

POLYETHYLENE	• Health	1
	• Fire	1
	• Reaction	0

BUTYL ACRYLATE-2-HYDROXYETHYL ACRYLATE-METHYL ACRYLATE COPOLYMER	No data available	
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METHYL ACETATE	• Health	1
	• Fire	3
	• Reaction	0

ETHYL ACETATE	• Health	3
	• Fire	3
	• Reaction	0

TOLUENE	• Health	2
	• Fire	3
	• Reaction	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition	Synonyms(Common name)	CAS Number	Concentration (wt%)
POLYETHYLENE	PE	9002-88-4	91 %
BUTYL ACRYLATE-2-HYDROXYETHYL ACRYLATE-METHYL ACRYLATE COPOLYMER	ACRYLATE COPOLYMER	38810-51-4	(3 ~ 4) %
METHYL ACETATE	ACETIC ACID METHYL ESTER	79-20-9	(1 ~ 3) %
ETHYL ACETATE	ACETIC ACID ETHYL ESTER	141-78-6	(1 ~ 2) %
TOLUENE	TOLUOL	108-88-3	< [*] 2 %

* '<' means 'Less than.'

4. FIRST-AID MEASURES

4.1. Eye contact

- Immediately call a POISON CENTER/doctor.
- If eye irritation persists : Get medical advice/attention.
- Do not touch or rub it even if uncomfortable or pain.
- IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.



4.2. Skin contact

- Call a POISON CENTER/doctor if you feel unwell.
- If skin irritation or rash occurs : Get medical advice/attention.
- Take off contaminated clothing and wash it before reuse.
- Wash with water and soap.
- IF ON SKIN (or hair) : Take off immediately all contaminated clothing. Rinse skin with water/shower.

4.3. Inhalation

- Call a POISON CENTER/doctor if you feel unwell.
- If experiencing respiratory symptoms : Call a POISON CENTER/doctor.
- IF INHALED : remove person to fresh air and keep comfortable for breathing.

4.4. Ingestion

- Call a POISON CENTER/doctor if you feel unwell.
- Rinse the mouth.

4.5. Indication of immediate medical attention and special treatment needed

- Notify to medical team or managers, and do appropriate measures.
- May be delayed symptoms for contact.

5. FIRE-FIGHTING MEASURES

5.1. Suitable and unsuitable extinguishing media

- Small/normal fire Alcohol-resistant foam, dry chemical, carbon dioxide, dry sand
- Large fire Water spray/fog, fire fighting foam
- Extinguishment by smothering Dry sand or soil
- Unsuitable extinguishing media High-pressure water

5.2. Specific hazards arising from the chemical

- Irritation or toxic gases may be occurred in fire-emergency.
- Vapour can be ignited by ignition sources.

5.3. Special precautions for fire-fighters

- Rescuers need to note the personal protective equipment.
- Leave the area and Fight fire remotely.
- Avoid release to the environment.
- If not danger, remove containers.
- Extinguish fire in maximum range or use automatic fire apparatus.
- Cool containers exposed to fire with water.
- Leave from tanks if high-sounds or discolorations are found in power-operated relief valve.

5.4. Special protective equipment for fire-fighters

- Chemical resisted equipment for fire-fighter



6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

- Cleaning up immediately, and follow the precaution.
- Remove all ignition sources.
- If not danger, stop to leak.
- If no personal protective equipment, do not touch exposure material and container.
- Notice the avoid conditions and materials.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Isolate from exposed area.
- Ground/Bond container and receiving equipment.
- Ventilated exposed area.
- Keep away from combustible/flammable materials.

6.2. Environmental precautions

- Do not let products flow in waterway, drain basement, and sealed room.

6.3. Methods and materials for containment and cleaning up

- Clean up with cleaner and water.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

- Notice precautions of MSDS/Label after empty container.
- Do not contact with skin for a long time.
- Notice the avoid conditions and materials.
- Do not handle until all safety precautions have been read and understood.
- Notice the engineering management and personal protection.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Wash hand thoroughly after use.
- Do not eat, drink or smoke when using this product.
- Handle and store in outdoor or well-ventilated place.
- Avoid high-temperature.
- Keep away from combustible/flammable materials.

7.2. Conditions for safe storage, including any incompatibilities

- Do not eat, drink or smoke when using this product.
- Notice the avoid conditions and materials.
- Keep container tightly closed in well-ventilated area.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No Smoking.

7.3. Storage temperature

- Room-temperature



8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

METHYL ACETATE	<ul style="list-style-type: none"> • The regulation of Korea • ACGIH • Biological limit values 	TWA : 200 ppm STEL : 250 ppm TWA : 200 ppm STEL : 250 ppm No data available
ETHYL ACETATE	<ul style="list-style-type: none"> • The regulation of Korea • ACGIH • Biological limit values 	TWA : 400 ppm TWA : 400 ppm No data available
TOLUENE	<ul style="list-style-type: none"> • The regulation of Korea • ACGIH • Biological limit values 	TWA : 50 ppm STEL : 150 ppm TWA : 20 ppm 0.02 mg/L Medium : blood Time : prior to last shift of workweek Parameter : Toluene 0.03 mg/L Medium : urine Time : end of shift Parameter : Toluene 0.3 mg/g creatinine Medium : urine Time : end of shift Parameter : oCresol with hydrolysis (background)

8.2. Appropriate engineering controls

- Maintain air concentration below exposure standard using the engineering management such as enclosed system and local exhaust ventilation.
- Maintain air concentration below exposure standard when occur fume or mist in handle.
- Washing/shower system.

8.3. Individual protection measures, such as personal protective equipment(PPE)

- Respiratory protection Chemical resisted respiratory protection
- Eye protection Chemical resisted eye protection
- Hand protection Chemical resisted hand protection
- Skin/body protection No data available
- Thermal hazards No data available

8.4 Precautionary pictograms (European Union Council Directive 92/58/EEC)





9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Appearance

- Physical state at 20 °C Solid (Film)
- Colour White
- Particle characteristics No data available

9.2. Odour

Characterful

9.3. Odour threshold

No data available

9.4. pH

No data available

9.5. Melting point/freezing point

No data available

9.6. Initial boiling point and boiling range

No data available

9.7. Flash point

No data available

9.8. Evaporation rate

No data available

9.9. Flammability(solid, gas)

No data available

9.10. Upper flammability or explosive limits

No data available

9.11. Lower flammability or explosive limits

No data available

9.12. Vapour pressure

No data available

9.13. Solubility

No data available

9.14. Relative vapour density

No data available

9.15. Relative density (Water = 1)

0.75

9.16. Partition coefficient n-octanol/water

No data available

9.17. Auto-ignition temperature

No data available

9.18. Decomposition temperature

No data available

9.19. Viscosity

No data available

9.20. Molecular weight

No data available

10. STABILITY AND REACTIVITY

10.1. Reactivity, chemical stability and possibility of hazardous reactions

- Irritation and toxic gases may be occurred in fire-emergency.
- Vapour can be ignited by ignition sources.

10.2. Conditions to avoid

- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No Smoking.

10.3. Incompatible materials

- Combustible materials.
- Reducing materials.

10.4. Hazardous decomposition products

- Irritation and toxic gases may be occurred in fire-emergency.



11. TOXICOLOGICAL INFORMATION

11.1. Information on the likely routes of exposure

No data available

11.2. Health hazards information

11.2.1. Acute toxicity

POLYETHYLENE	<ul style="list-style-type: none">• Oral LD50 >8 000 mg/kg Rat * Reference : RTECS• Dermal No data available• Inhalation dust LC50 75.5 mg/L 30 min Rat * Reference : RTECS
METHYL ACETATE	<ul style="list-style-type: none">• Oral LD50 6 482 mg/kg Rat (OECD TG 401) * Reference : ECHA• Dermal LD50 >2 000 mg/kg Rat (OECD TG 402) * Reference : ECHA• Inhalation vapor LC50 49.2 mg/L h Rabbit * Reference : ECHA
ETHYL ACETATE	<ul style="list-style-type: none">• Oral LD50 11.3 mL/kg Rat (female) * Reference : ECHA• Dermal No data available• Inhalation No data available
TOLUENE	<ul style="list-style-type: none">• Oral LD50 5 580 mg/kg Rat (EU Method B.1) * Reference : ECHA• Dermal LD50 >5 000 mg/kg Rabbit * Reference : ECHA• Inhalation vapor LC50 >20 mg/L Rat (OECD TG 403) * Reference : ECHA

11.2.2. Skin corrosion/irritation

METHYL ACETATE	- rabbit/non irritation OECD TG 404, GLP. * Reference : ECHA
ETHYL ACETATE	- rabbit/irritation not recovered in 7 days. light irritation. Erythema score = 1.33, edema score = 0.4, OECD TG 404. * Reference : ECHA
TOLUENE	- rabbit/middle irritation EU Method B4. * Reference : ECHA

11.2.3. Eye damage/irritation

METHYL ACETATE	- rabbit/irritation, cornea score : 1.3/1.7, iris score : 1/1, conjunctiva score : 2.7/3, conjunctival edema score : 1.8/2 OECD TG 405, GLP. * Reference : ECHA
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ETHYL ACETATE - rabbit/OECD TG 405, recovered in 7 days, non irritation. Cornea score = 0.5, iris score = 0.17, conjunctiva score = 1.33, conjunctival edema score = 0.67.

※ Reference : ECHA

TOLUENE - rabbit/light irritation.

※ Reference : ECHA

11.2.4. Respiratory sensitization

No data available

11.2.5. Skin sensitization

ETHYL ACETATE - guinea pig(female)/non sensitization, OECD TG 406.

※ Reference : ECHA

TOLUENE - guinea pig/maximization test, non sensitization EU Method B.6, GLP.

※ Reference : ECHA

11.2.6. Germ cell mutagenicity

METHYL ACETATE - In vitro Microorganism bacteria reverse mutation test : Negative OECD TG 471.

- In vivo Mammal red blood cell micronucleus test : Negative OECD TG 474, GLP.

※ Reference : ECHA

ETHYL ACETATE - In vitro Microorganism reverse mutation test OECD TG 471 : Negative.

- In vitro Mammal Cultured cell chromosome aberration test OECD TG 473 : Negative.

- In vitro Mammal cell sister chromatid exchange test, without Presence of Metabolic Activation System : Negative, with Presence of Metabolic Activation System : Positive.

- In vitro Aneuploidy in Saccharomyces cerevisiae test, without Presence of Metabolic Activation System : Positive.

- In vitro Mammal Cultured cell chromosome aberration test OECD TG 473, without Presence of Metabolic Activation System : ambiguous.

- In vivo Mammal red blood cell micronucleus test OECD TG 474 : Negative.

- In vivo micronucleus test : Negative.

※ Reference : ECHA

TOLUENE - In vitro Mammal Cultured cell DNA mutagenicity test OECD TG 476, Microorganism reverse mutation test EU Method B.13/14 : Negative.

- In vivo chromosome aberration test : Negative.

※ Reference : ECHA



11.2.7. Carcinogenicity

POLYETHYLENE	- IARC : Group 3
TOLUENE	- IARC : Group 3 - ACGIH : A4

11.2.8. Reproductive toxicity

METHYL ACETATE	- Reported to Reproductive toxicity (<CAS No. 67-56-1, 64-19-7>, NOAEC F2 developmental toxicity = ca. 3 000 mg/m ³ air). * Reference : ECHA
ETHYL ACETATE	- rat(male)/13 weeks inhalation, (other guideline : US EPA Health Effects Testing Guidelines 40 CFR Part 798.2450), no effect (NOAEL(P, male) = 1 500 ppm). - Reported to Reproductive toxicity (rat/OECD TG 414, NOAEL (Maternal toxicity) = 16 000 ppm, NOAEL (Teratogenic) ≥20 000 ppm, LOAEL (Maternal toxicity) = 20 000 ppm Analogous substance CAS No. 64-17-5). * Reference : ECHA
TOLUENE	- Reported to Reproductive toxicity (rat/2 000 ppm(7 537 mg/m ³) NOAEC(P) 600 ppm (2 261 mg/m ³)). * Reference : ECHA

11.2.9. Specific target organ toxicity (Single exposure)

POLYETHYLENE	- dust/rat, Lung inflammation. * Reference : Kochetkova, 1971
METHYL ACETATE	- Reported to Specific target organ toxicity (Single exposure) (human).
ETHYL ACETATE	- human/upper respiratory irritation. Narcotic effects, lung damage in lethal concentration. * Reference : HSDB
TOLUENE	- Reported to Specific target organ toxicity (Single exposure) (human/effects to central nervous system). - Eye/nose/neck irritation. - animal/Narcotic effects. - Target organ : central nervous system. * Reference : HSDB

11.2.10. Specific target organ toxicity (Repeated exposure)

METHYL ACETATE	- Reported to Specific target organ toxicity (Repeated exposure) (rat/oral, NOAEC = 350 ppm GLP, OECD TG 412). * Reference : ECHA
ETHYL ACETATE	- rat(female/male)/oral, Salivary secretion, irregular breathing and coma in high concentration group (NOAEL = 900 mg/kg bw/day nominal, LOAEL = 3 600 mg/kg bw/day nominal).



- rat/inhalation, respiratory irritaiton (LOEC = 350 ppm, NOEC Systemic toxicity = 350 ppm) (EPA OTS 798.2450, GLP).

※ Reference : ECHA

TOLUENE

- Reported to Specific target organ toxicity (Repeated exposure) (rat/90 days, oral, NOAEL 625 mg/kg bw/day).
 - rat/103 weeks inhalation carcinogenicity test OECG TG453, GLP Local toxicity of nasal epithelium NOAEC 600 ppm 2 250 mg/m3.
 - Reported to Specific target organ toxicity (Repeated exposure) (rat/90 days, inhalation EU method B.29, GLP, NOAEC 625 ppm 2 355 mg/m3).

※ Reference : ECHA

11.2.11. Aspiration Hazard

TOLUENE

- Hydrocarbon, Kinematic viscosity in 40 °C, under 20.5 mm²/s.

11.3. Other information

No data available

12. ECOLOGICAL INFORMATION

12.1. Toxicity

METHYL ACETATE

• Fish LC50 (250 ~ 350) mg/L 96 h Brachydanio rerio (stop water, OECD Guideline 203, GLP)

※ Reference : ECHA

• Crustacean EC50 1 026.7 mg/L 48 h Daphnia magna (stop water OECD TG 202, GLP)

※ Reference : ECHA

• Algae EC50 >120 mg/L 72 h (Desmodesmus subspicatus, stop water OECD TG 201, GLP)

※ Reference : ECHA

ETHYL ACETATE

• Fish LC50 230 mg/L 96 h Pimephales promelas (US EPA method E03-05)

※ Reference : ECHA

• Crustacean EC50 2 500 mg/L 24 h Daphnia magna (other guideline : DIN 38412 pt 11)

※ Reference : ECHA

• Algae No data available

TOLUENE

• Fish LC50 5.5 mg/L 96 h Oncorhynchus kistutch

※ Reference : ECHA

• Crustacean No data available

• Algae No data available



12.2. Persistence and degradability

METHYL ACETATE	<ul style="list-style-type: none"> • Persistence 0.18 log Kow ※ Reference : ECHA
ETHYL ACETATE	<ul style="list-style-type: none"> • Persistence 0.68 log Kow (25 °C, pH 7, EPA OPPTS 830.7560) • Degradability COD : 1.69 g O₂/g test mat ※ Reference : ECHA
TOLUENE	<ul style="list-style-type: none"> • Persistence 2.73 log Kow at 20 °C ※ Reference : ECHA

12.3. Bioaccumulative potential

METHYL ACETATE	<ul style="list-style-type: none"> • Biodegradability 75 % 19 day (OECD TG 301D) ※ Reference : ECHA
ETHYL ACETATE	<ul style="list-style-type: none"> • Biodegradability 69 % 20 day (spend 02)
TOLUENE	<ul style="list-style-type: none"> • Bioconcentration 90 ※ Reference : ECHA • Biodegradability 80 % 20 day (hard to degradable) ※ Reference : ECHA

12.4. Mobility in soil

METHYL ACETATE	log koc = 0.18, OECD TG 121
	※ Reference : ECHA

12.5. Hazardous to the ozone layer

No data available

12.6. Other adverse effects

METHYL ACETATE	<ul style="list-style-type: none"> - Algae : NOEC 96 h = 120 mg/L <i>Desmodesmus subspicatus</i> Growth rate stop water OECD TG 201, GLP. ※ Reference : ECHA
ETHYL ACETATE	<ul style="list-style-type: none"> - Fish : 32 d - NOEC <i>Pimephales promelas</i> <9.65 mg/L OECD TG 210. - Crustacean : 21 d - NOEC <i>Daphnia magna</i> = 2.4 mg/L OECD TG 211. - Algae : 72 h - NOEC <i>Scenedesmus subspicatus</i> >100 mg/L growth rate OECD TG 201, GLP. ※ Reference : ECHA
TOLUENE	<ul style="list-style-type: none"> - Fish <i>Oncorhynchus kisutch</i> : NOEC 40 d = 1.39 mg/L. - Crustacean <i>Ceriodaphnia dubia</i> : NOEC 7 d = 0.74 mg/L. ※ Reference : ECHA

13. DISPOSAL CONSIDERATIONS

13.1. Disposal Methods

- Follow federal, state and local regulations.



13.2. Caution for disposal

- Consider the notice in regulations.

14. TRANSPORT INFORMATION

14.1. IMDG Code (International Maritime Dangerous Goods Code)

METHYL ACETATE	<ul style="list-style-type: none"> • UN No. 1231 • PSN METHYL ACETATE • Classification 3 • Packing Group II • Marine pollutant No data available • Precautions in fire-emergency F-E • Precautions in exposure S-D
ETHYL ACETATE	<ul style="list-style-type: none"> • UN No. 1173 • PSN ETHYL ACETATE • Classification 3 • Packing Group II • Marine pollutant No data available • Precautions in fire-emergency F-E • Precautions in exposure S-D
TOLUENE	<ul style="list-style-type: none"> • UN No. 1294 • PSN TOLUENE • Classification 3 • Packing Group II • Marine pollutant No data available • Precautions in fire-emergency F-E • Precautions in exposure S-D

※ PSN : Proper Shipping Name

14.2. Other transport regulations

- IATA DGR No data available
- RID No data available
- ADR No data available
- AND No data available

14.3. Special precautions for user

No data available

14.4. Transport in bulk according to IMO instruments

No data available

15. REGULATORY INFORMATION

15.1. Korea Industrial Safety and Health Act

- | | |
|----------------|--|
| METHYL ACETATE | <ul style="list-style-type: none"> - Working environment measurement - Material for administration |
|----------------|--|



	- Exposure standard material
	- Process safety management (PSM)
ETHYL ACETATE	- Working environment measurement
	- Material for administration
	- Exposure standard material
	- Process safety management (PSM)
TOLUENE	- Working environment measurement
	- Material for administration
	- Material for special health care
	- Exposure standard material
	- Process safety management (PSM)

15.2. Korea Chemicals Control Act

ETHYL ACETATE	- Toxic
	- Provision against accidents material
TOLUENE	- Toxic
	- Provision against accidents material

15.3. Korea Hazardous Materials Safety Control Act

METHYL ACETATE	- Class 4. the 1st petroleums Insoluble liquid in water 200 L
ETHYL ACETATE	- Class 4. the 1st petroleums Insoluble liquid in water 200 L
TOLUENE	- Class 4. the 1st petroleums Insoluble liquid in water 200 L

15.4. Korea Wastes Control Act

	- Designated waste
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15.5. Other internal and foreign acts

METHYL ACETATE	• Classification result of EU	Flam. Liq. 2 H225 STOT SE 3 H336 Eye Irrit. 2 H319
ETHYL ACETATE	• CERCLA of USA	2 267.995 kg 5 000 lb
	• Classification result of EU	Flam. Liq. 2 H225 STOT SE 3 H336 Eye Irrit. 2 H319
TOLUENE	• CERCLA of USA	453.599 kg 1 000 lb
	• EPCRA 313 of USA	Applicable
	• Classification result of EU	Flam. Liq. 2 H225 Repr. 2 H361d Asp. Tox. 1 H304 STOT SE 3 H336 STOT RE 2 H373 Skin Irrit. 2 H315



16. OTHER INFORMATION

16.1. Information of MSDS

- Issued Date 2015 / 10 / 28
- MSDS No. 01-20151023-0201E
- Origin MSDS No. 01-20151023-0200E
- Revision No. 01
- Revision Date 2019 / 01 / 28

16.2. Reference

- GHS Classification and Hazard/Toxic Classification : GHS 7th revised edition, Korea MSDS Testing Laboratory's Test Certificate, Korea Occupational Safety & Health Agency(KOSHA), Korea Information System for Chemical Safety Management, OECD SIDS, IUCLID, US NLM, IARC, ICSC, ECOSAR, QSAR, HSDB, RTECS, ACGIH, ECOTOX, ECHA, NTP, etc.
- Physical and chemical properties : Korea MSDS Testing Laboratory's Test Certificate, UN TDG.
- Transport information : Korea MSDS Testing Laboratory's Test Certificate, IMDG Code (37th Edition).
- If there is '  ' (Gray square) front of a subsection, that subsections are the essential information for the Labeling.

16.3. This MSDS is composed in line with The Korea Occupational Safety and Health Act Article 41 to protect the health of the employees, and for documentation.

16.4. This MSDS is composed with reference to documents provided by KOSHA and GHS(Globally Harmonized System of classification and labelling of chemicals, Rev. 7) criteria.

16.4. This MSDS does NOT guarantee the quality or performance of the product.

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