



# MATERIAL SAFETY DATA SHEET

DAEHEUNG CHEMICAL CO., LTD. [www.dhcbond.com](http://www.dhcbond.com)

PGM

Product Name

NO 2-4

## 1. Product and Company Identification

- A. Product Name NO 2-4
- B. Recommended use of the chemical and restrictions on use
- Recommended use of the chemical filling and sealing of cracks & joints, with adhesion
  - Restrictions on use of the product Flammable, Irritant, Hazardous material
- C. Manufacturer/Supplier/Distributor Information
- Name DAEHEUNG CHEMICAL CO., LTD.
  - Address 68, Sandan-ro 64beon-gil, Pyeongtaek-si, Gyeonggi-do, Korea
  - Emergency phone number 82-31-668-1424

## 2. Hazards identification

- A. Hazard/Risk Classification
- Flammable Liquid : Category 2
  - Skin Corrosion/Irritation : Category 2
  - Serous Eyes Damage/Eye Irritation : Category 2
  - Reproductive Toxicology : Category 1A
  - Target Organ Toxicity (Single Exposure) : Category 3
  - Target Organ Toxicity (Single Exposure) : Category 1
  - Target Organ Toxicity (Repeated Exposure) : Category 3
  - Target Organ Toxicity (Repeated Exposure) : Category 1
  - Aspiration Harzard : Category 1
  - Chronic hazards to the aquatic environment : Category 3

### B. Label elements including precautionary statements

- Symbol



- Signal Word

Danger

- Hazard/Risk Statement

H225 Highly flammable liquid and vapour Causes severe skin burns and eye damage

H304 May be fatal if swallowed and enters airways Suspected of damaging fertility or the unborn child

H315 Causes skin irritation

H319 Causes serious eye irritation

H335 May cause respiratory irritation

H336 May cause drowsiness or dizziness

H360 May damage fertility or the unborn child

H370 Causes damage to organs

H372 Causes damage to organs through prolonged or repeated exposure

H412 Harmful to aquatic life with long lasting effects

- Precautionary Statement

Prevention

P201 Obtain special instructions before use

P202 Do not handle until all safety precautions have been read and understood

Prevention	<p>P210 Keep away from heat/sparks/open flames/hot surfaces – No smoking</p> <p>P233 Keep container tightly closed</p> <p>P240 Ground/bond container and receiving equipment</p> <p>P241 Use explosion–proof electrical/ventilating/light/…/equipment</p> <p>P242 Use only non–sparking tool</p> <p>P243 Take precautionary measures against static discharge</p> <p>P260 Do not breathe dust/fume/gas/mist/vapours/spray</p> <p>P261 Avoid breathing dust/fume/gas/mist/vapours/spray</p> <p>P264 Wash … thoroughly after handling</p> <p>P270 Do not eat, drink or smoke when using this product</p> <p>P271 Use only outdoors or in a well–ventilated area</p> <p>P273 Avoid release to the environment</p> <p>P280 Wear protective gloves/protective clothing/eye protection/face protection</p>
Response	<p>P281 Use personal protective equipment as required</p> <p>P301+P310 IF SWALLOWED : Immediately call a POISON CENTER or doctor/physician</p> <p>P302+P352 IF ON SKIN : Wash with soap and water</p> <p>P303+P361+P353 IF ON SKIN (or hair) : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower</p> <p>P304+P340 IF INHALED : Remove victim to fresh air and keep at rest in a position comfortable for breathing</p> <p>P305+P351+P338 IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing</p> <p>P307+P311 IF exposed : Call a POISON CENTER or doctor/physician</p> <p>P308+P313 IF exposed or concerned : Get medical advice/attention</p> <p>P312 Call a POISON CENTER or doctor/physician if you feel unwell</p> <p>P314 Get Medical advice/attention if you feel unwell</p> <p>P331 Do NOT induce vomiting</p> <p>P332+P313 If skin irritation occurs : Get medical advice/attention</p> <p>P337+P313 If eye irritation persists get medical advice/attention</p> <p>P362 Take off contaminated clothing and wash before reuse</p>
Storage	<p>P403+P233 Store in a well ventilated place. Keep container tightly closed</p> <p>P403+P235 Store in a well ventilated place. Keep cool.</p> <p>P405 Store locked up</p>
Disposal	<p>P501 Dispose of contents/container to …</p>

C. Other Hazard/Risk which are not included in the classification criteria (e.g. dust explosion hazard)

TOLUENE

Health	2
Fire	3
Reactivity	0

XYLENE

Health	2
Fire	3
Reactivity	0

METHYL ETHYL KETONE

Health	1
Fire	3
Reactivity	0

PARA-TERTIARY-BUTYLPHENOL-FORMALDEHYDE ...

Health	1
Fire	1
Reactivity	0

ACRYLONITRILE-BUTADIENE RUBBER

Health	1
Fire	1
Reactivity	0

### 3. Composition/Information on ingredients

Chemical Name	Other name	CAS number	Content(%)
TOLUENE	Methylbenzene	108-88-3	10~20
XYLENE	Dimethylbenzene	1330-20-7	5~10
METHYL ETHYL KETONE	2-Butanone Butanone	78-93-3	25~35
PARA-TERTIARY-BUTYLPHENOLFORMALDEHYDE ...	PHENOL, P-tert-BUTYL-,	25085-50-1	10~20
ACRYLONITRILE-BUTADIENE RUBBER	2-PROPENENITRILE, POLYMER WITH	9003-18-3	20~30
TRADE SECRETS	-	-	5~10

### 4. First aid measures

A. Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing If eye irritation persists get medical advice/attention
B. Skin contact	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower If skin irritation occurs: Get medical advice/attention Remove/Take off immediately all contaminated clothing Wash skin with soap and water.
C. Inhalation	Do not induce vomiting. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
D. Ingestion	Seek immediate medical advice. Do not induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious).
E. Indication of immediate medical attention and notes for physician	Medical personnel are aware of the material and to take precautions to protect.

### 5. Fire-Fighting measures

- A. Suitable (and unsuitable) extinguishing media
- Alcohol foam, carbon dioxide or water spray should be used.
  - When to do Fire-Fighting, use dry sand or earth.
- B. hazards arising from the chemical (e.g. nature of any hazardous combustion products)
- Highly flammable liquid and vapor.
  - Vapors may form explosive mixtures with air.
  - The fume is heavier than air and moves more distance, it could backfire by ignition sources.
- C. Special protective equipment and precautions for fire-fighters
- Firefighters should wear proper protective equipment.
  - Apply water from a safe distance to cool and protect surrounding area.

C. Special protective equipment and precautions for fire-fighters

Evacuate area and fight fire from a safe distance.

When the tank, the freight car and the tank truck are enveloped in fire, it will have to quarantine over half-mile (approximately 800m)

## 6. Accidental release measures

### A. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.

Do not inhale the volatilized solvent directly.

In order to prevent the dangerous the approach other than the interested party.

### B. Environmental precautions and protective procedures

Do not allow to enter drains or waterways.

Do not discharge into the subsoil/soil.

Absorb spills with waste or dry sand or earth, then place in a chemical waste container.

For large spills, prevent them from entering into sewers, watercourses or low area by mounding soil, then recover to a chemical waste container.

### C. Methods and materials for containment and cleaning up

Take up with absorbent materials (sand, kieselguhr, universal binder)

Dispose of absorbed material in accordance with the regulations.

## 7. Handling and storage

### A. Precautions for safe handling

Wear suitable chemical resistant gloves, safety goggles, dust mask and other protective clothing.

Use in the well-ventilated areas. Prevent build-up electrostatic charge (by grounding).

### A. Precautions for safe handling

Shower and eye bath. Keep away from acidic material.

Be careful to high temperatures.

### B. Conditions for safe storage (including any incompatibilities)

Store in its original container in a cool environment, keep away from heat, spark, and open flame.

Ground containers during storage and transfer operations to avoid static spark.

Ideal storage temp. range for ease of handling is 10 ~ 27°C

## 8. Exposure controls & personal protection

### A. Control parameters (e.g. occupational exposure limit values, biological limit values)

#### - Occupational exposure limit values

TOLUENE	TWA - 50ppm 188mg/m <sup>3</sup> STEL - 150ppm 560mg/m <sup>3</sup>
XYLENE	TWA - 100ppm 435mg/m <sup>3</sup> STEL - 150ppm 655mg/m <sup>3</sup>
METHYL ETHYL KETONE	TWA - 200ppm 590mg/m <sup>3</sup> STEL - 300ppm 885mg/m <sup>3</sup>

#### - ACGIH limit values

TOLUENE	TWA 20 ppm 75mg/m <sup>3</sup>
XYLENE	TWA 100 ppm
	STEL 150 ppm
METHYL ETHYL KETONE	TWA 200 ppm
	STEL 300 ppm

#### - Biological limit values

TOLUENE	0.02 mg/L
	0.03 mg/L
METHYL ETHYL KETONE	2 mg/L

B. Appropriate engineering controls	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide adequate ventilation.
C. Personal protective equipment	
– Respiratory protection	A respirator that is recommended or approved for use may be necessary for spray application or other situations such as high temperature use which may produce inhalation exposures.
– Eye protection	Wear eye protection/face protection.
– Hands protection	Wear proper chemical resistant gloves.
– Body protection	Wear proper Protective clothing.

## 9. Physical and chemical properties

A. Appearance	
Physical state	viscous liquid
Color	reddish brown
B. Odour	Solvent
C. Odour threshold	No data available
D. pH	Not Applicable
E. Melting point/freezing point	No data available
F. Initial boiling point and boiling range	96.6 °C
G. Flashing point	0.64 °C
H. Evaporation rate	No data available
I. Flammability(solid, gas)	expose such containers to heat, flame, sparks, static electricity, or other sources of ignition
J. Upper/lower flammability or explosive limits	9.54 % / 1.53 %
K. Vapor pressure	48.49 mmHg
L. Solubility	Not soluble in water
M. Vapor density	Above 2
N. Relative density	0.92±0.02
O Partition coefficient:n-octanol/water	No data available
P. Auto-ignition temperature	500 °C
Q. Decomposition temperature	No data available
R. Viscosity	25,000±3,000 cps (20 °C)
S. Formula mass	No data available

## 10. Stability and reactivity

A. Chemical stability and possibility of hazardous reactions	Stable under normal conditions. Highly flammable liquid and vapor
B. Conditions to avoid	Keep away from heat/sparks/open flames/hot surfaces – No smoking
C. Incompatible materials	Avoid the fire, spark, flame, and other ignition sources
D. Hazardous decomposition products	CO, CO <sub>2</sub> , nitrogen compounds

## 11. Toxicological information

A. Information on the likely routes of exposure	No data available
B. Health hazards information	
– Acute toxic	
Oral	
TOLUENE	LD50 2600 mg/kg Rat
XYLENE	LD50 3500 mg/kg Rat

METHYL ETHYL KETONE	LD50 2737 mg/kg Rat
ACRYLONITRILE-BUTADIENE	LD50 5480 mg/kg Rat
RUBBER	
Inhalation	
TOLUENE	LC50 12.5 mg/l 4 hr Rat
XYLENE	LC50 6700 ppm 4 hr Rat (29.09mg/L)
METHYL ETHYL KETONE	LC50 32 mg/l 4 hr Mouse
Dermal	
TOLUENE	LD50 120000 mg/kg Rat
XYLENE	LC50 ≥4350 mg/kg Rabbit
METHYL ETHYL KETONE	LD50 6480 mg/kg Rabbit
- Skin corrosive/irritant	
TOLUENE	moderate skin irritation in rabbit primary skin irritation test.
XYLENE	moderate skin irritation in rabbit primary skin irritation test.
METHYL ETHYL KETONE	weak irritation(Rabbit)
- Serious eye damage/eye irritation	
TOLUENE	caused mild eye irritation and the subjects recovered from the damage within 7 days in rabbit eye irritation test.
XYLENE	moderate skin irritation in rabbit primary skin irritation test.
METHYL ETHYL KETONE	weak irritation
- Respiratory sensitization	No data available
- Skin sensitization	
TOLUENE	Negative (Guinea Pigs)
- Carcinogenicity	
IARC	Group 3
ACGIH	A4
- Germ Cell Mutagenicity	
TOLUENE	- Dominant lethal tests: negative - Micronucleus test: positive - Chromosome aberration test: positive
XYLENE	negative
METHYL ETHYL KETONE	Micronucleus test: negative
- Reproductive toxicity	
TOLUENE	Increased incidence of natural abortion in human; abnormal development and malformation of newborns caused by prenatal toluene abuse:
- Specific target organ toxicity (single exposure):	
TOLUENE	Causes fatigue, sleepiness, dizziness and mild respiratory irritation
- Specific target organ toxicity (repeated exposure)	
TOLUENE	Causes chronic central nervous system damage including restricted vision, headache associated with nystagmus and hearing loss, tremor, ataxia and amnesia.

## 12. Ecological information

### A. Aquatic and terrestrial ecotoxicity

#### - Fish

TOLUENE	LC50 24 mg/l 96 hr Oncorhynchus mykiss
XYLENE	LC50 3.3 mg/l 96 hr
METHYL ETHYL KETONE	LC50 3220 mg/l 96 hr Pimephales promelas

#### - Shellfish

TOLUENE	EC50 11.5 mg/l 48 hr Daphnia magna
XYLENE	LC50 190 mg/l 96 hr
METHYL ETHYL KETONE	EC50 5091 mg/l 48 hr Daphnia magna

– Bird	
METHYL ETHYL KETONE	EC50 > 500 mg/ℓ 96 hr <i>Skeletonema costatum</i>
B. Persistence and degradability	
– Persistence	
TOLUENE	log Kow 2.73
XYLENE	Ortho 3.12, Meta 3.2, Para 3.15
METHYL ETHYL KETONE	log Kow 0.29
C. Bioaccumulative potential	
– Potential	
TOLUENE	86 (%) 20 day
XYLENE	39 (%)
METHYL ETHYL KETONE	89 (%) 20 day
D. Mobility in soil	
XYLENE	log Kow = 3.12(Ortho), 3.2(Meta), 3.15(Para)
E. Other adverse effects	No data available

### 13. Disposal considerations

A. Disposal method	Destroy the product by incineration 40CFR262
B. Disposal precaution	Destroy the product by incineration

### 14. Transport information

A. UN number	1133
B. UN proper shipping name	ADHESIVES containing flammable liquid
C. Transport hazard class:	3
D. Packing group (if applicable)	II
E. Marine pollution (yes/no)	Yes
F. Special precaution which a user to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises:	F–E, S–D

### 15. Regulatory information

A. Industrial Safety and Health Act	Article 39 (Management, etc. of Harmful Agents) Article 41 (Preparation, Keeping, etc. of Material Safety Data Sheet)
B. Toxic Chemical Control Act	Not Applicable.
C. Dangerous Material Safety Control Act	
TOLUENE	The 4th type, the 1st petroleum type 200ℓ
XYLENE	The 4th type, the 2st petroleum type 1000ℓ
METHYL ETHYL KETONE	The 4th type, the 1st petroleum type 200ℓ
D. Wastes Management Act	Designated Wastes
E. Other requirements in domestic and other countries	
– Domestic	Not Applicable.
– Other countries	
CERCLA	
TOLUENE	453.599 kg 1000 lb
XYLENE	45.3599 kg 100 lb
METHYL ETHYL KETONE	2267.995 kg 5000 lb
EU regulations	
TOLUENE	F: R11Repr.Cat.3; R63Xn: R48/20–65Xi; R38R67

XYLENE	R10Xn; R20/21Xi; R38
METHYL ETHYL KETONE	F; R11Xi; R36R66R67
EU regulations	
TOLUENE	R11, R38, R48/20, R63, R65, R67
XYLENE	R10, R20/21, R38
METHYL ETHYL KETONE	R11, R36, R66, R67
EU regulations	
TOLUENE	S2, S36/37, S46, S62
XYLENE	S2, S25
METHYL ETHYL KETONE	S2, S9, S16

## 16. Other information

### A. Information source and references

Source of data : Korea Occupational Safety and Health Agency (KOSHA)>

B. Issuing date August 25, 2014

C. Revision number and date 1 / August 26, 2014

D. others

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