



MATERIAL SAFETY DATA SHEET

DAEHEUNG CHEMICAL CO., LTD. www.dhcbond.com

PGM

Product Name

HD-T(L)

1. Product and Company Identification

- A. Product Name HD-T(L)
- B. Recommended use of the chemical and restrictions on use
- Recommended use of the chemical Bond the Plastic Sheet, Form
 - Restrictions on use of the product N/A
- 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 : categories 2
- Serious eye damage / Irritation : category 1
- Germ cell mutagenicity : categories 2
- Reproductive Toxicology : Category 1A
- Target Organ Toxicity (Single Exposure) : Category 1
- Target Organ Toxicity (Repeated Exposure) : Category 1

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
 - H315 Causes skin irritation
 - H318 Causes serious eye damage
 - H341 Suspected of causing genetic defects
 - H360 May damage fertility or the unborn child
 - H370 Causes damage to organs
 - H372 Causes damage to organs through prolonged or repeated exposure
- Precautionary Statement
 - Prevention
 - P201 Obtain special instructions before use
 - P202 Do not handle until all safety precautions have been read and understood
 - P210 Keep away from heat/sparks/open flames/hot surfaces – No smoking
 - P233 Keep container tightly closed
 - P240 Ground/bond container and receiving equipment
 - P241 Use explosion-proof electrical/ventilating/light/.../equipment
 - P242 Use only non-sparking tool
 - P243 Take precautionary measures against static discharge

Prevention	<p>P260 Do not breathe 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>P280 Wear protective gloves/protective clothing/eye protection/face protection</p>
Response	<p>P281 Use personal protective equipment as required</p> <p>P302+352 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>P305+351+338 IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing</p> <p>P307+311: IF exposed: Call a POISON CENTER or doctor/physician</p> <p>P308+P313 IF exposed or concerned : Get medical advice/attention</p> <p>P310 Immediately call a POISON CENTER or doctor/physician</p> <p>P314 Get Medical advice/attention if you feel unwell</p> <p>P321 Specific treatment (see ... on this label)</p> <p>P332+313 If skin irritation occurs: Get medical advice/attention</p> <p>P362 Take off contaminated clothing and wash before reuse</p> <p>P370+378 In case of fire: Use ... for extinction</p>
Storage	<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)

	N,N-DIMETHYLFORMAMIDE	TOLUENE	METHYL ETHYL KETONE	URETHANE PREPOLYMER
Health	2	2	1	NA
Fire	2	3	3	NA
Reactivity	0	0	0	NA

3. Composition/Information on ingredients

Chemical Name	Other name	CAS number	Content(%)
URETHANE PREPOLYMER	–	9009–54–5	80~85
N,N-DIMETHYLFORMAMIDE	N-formyldimethylamine Dimethyl formamide	68–12–2	5~15
TOLUENE	Methyl benzene	108–88–3	2~5
METHYL ETHYL KETONE	2-Butanone Butanone	78–93–3	2~5

4. First aid measures

A. Eye contact	<p>IF IN EYES: Wash carefully with water for several minutes. Remove contact lenses, if possible. Easy to do.</p> <p>If eye irritation persists, Consult a physician if irritation persists.</p>
B. Skin contact	<p>Skin (or hair): Take off immediately all contaminated clothing or remove the Keep. Rinse skin with water / shower.</p> <p>If skin irritation occurs, obtain medical advice Keep</p> <p>Wash skin with soap and water</p>
C. Inhalation	<p>Excessive dust, or fumes when exposed to clean air removed by coughing or other symptoms and Seek medical attention if you have.</p>
D. Ingestion	<p>Do not induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious).</p> <p>Seek immediate medical advice.</p>

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

Water spray, foam, dry powder

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 steam explosion hazard at Indoor, outdoor, drain.

C. Special protective equipment and precautions for fire-fighters

In case of fire: Wear self-contained breathing apparatus.

Cool tanks/drums with water spray/remove them into safety.

6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures

Use water spray/stream to protect personnel and to cool endangered containers.

Remove product from area of fire.

Wear suitable protective clothing, gloves and eye/face protection.

Stop leak if safe to do so. Remove all sources of ignition.

In case of fire: Wear selfcontained breathing apparatus.

Evacuate unnecessary personnel. Remove all sources of ignition. Stop leak if safe to do so. Eliminate leaks immediately.

B. Environmental precautions and protective procedures

Avoid release to the environment

Waterways, sewers, basements, and Prevent entry into confined spaces.

C. Methods and materials for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid-or universal binding agents).

Collect in closed containers for disposal.

Dispose of this material and its container to hazardous or special waste collection point.

7. Handling and storage

A. Precautions for safe handling

Do not handle until all safety precautions Read and understand all safety precautions.

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).

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 fore ease of handling is 10 ~ 27°C

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

8. Exposure controls & personal protection

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

– Occupational exposure limit values

N,N-DIMETHYLFORMAMIDE

TWA – 10ppm 30mg/m³ (Skin)

TOLUENE	TWA – 50ppm 188mg/m ³ STEL – 150ppm 560mg/m ³
METHYL ETHYL KETONE	TWA – 200ppm 590mg/m ³ STEL – 300ppm 885mg/m ³
– ACGIH limit values	
N,N-DIMETHYLFORMAMIDE	TWA 10 ppm
TOLUENE	TWA 20 ppm 75 mg/m ³
METHYL ETHYL KETONE	TWA 200 ppm
	STEL 300 ppm
– Biological limit values	
N,N-DIMETHYLFORMAMIDE	15 mg/L, 40 mg/L
TOLUENE	0.02mg/L, 0.03mg/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	The filter class must be suitable for the maximum contaminant concentration(gas/vapour/aerosol/particulates) that may arise when handling the product.
– Respiratory protection	If the concentration is exceeded, closed-circuit breathing apparatus must be used!.
	In case of fire: Wear self contained breathing apparatus.
– 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	Yellowish
B. Odour	Acetone
C. Odour threshold	No data available
D. pH	No data available
E. Melting point/freezing point	No data available
F. Initial boiling point and boiling range	200~208℃
G. Flashing point	–17~58 °C
H. Evaporation rate	No data available
I. Flammability(solid, gas)	No data available
J. Upper/lower flammability or explosive limits	No data available
K. Vapor pressure	No data available
L. Solubility	Not soluble in water
M. Vapor density	No data available
N. Relative density	1.10±0.05
O Partition coefficient:n-octanol/water	No data available
P. Auto-ignition temperature	Above 600 °C
Q. Decomposition temperature	No data available
R. Viscosity	400~600 cps
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	Avoid the fire, spark, flame, and other ignition sources The fume has an explosive characteristic. Avoid the overheating of container.
C. Incompatible materials	flammable material
D. Hazardous decomposition products	CO, CO ₂ , nitrogen compounds

11. Toxicological information

A. Information on the likely routes of	No data available
B. Health hazards information	
– Acute toxic	
Oral	
N,N-DIMETHYLFORMAMIDE	LD50 2800 mg/kg Rat
TOLUENE	LD50 2600 mg/kg Rat
METHYL ETHYL KETONE	LD50 2737 mg/kg Rat
Inhalation	
N,N-DIMETHYLFORMAMIDE	LC50 1948 ppm 4 hr Rat
TOLUENE	LC50 12.5 mg/ℓ 4 hr Rat
METHYL ETHYL KETONE	LC50 32 mg/ℓ 4 hr Mouse
Dermal	
N,N-DIMETHYLFORMAMIDE	LD50 4720 mg/kg Rabbit
TOLUENE	LD50 120000 mg/kg Rat
METHYL ETHYL KETONE	LD50 6480 mg/kg Rabbit
– Skin corrosive/irritant	
TOLUENE	Skin – rabbit – No skin irritation
METHYL ETHYL KETONE	Skin – rabbit – Mild skin irritation
– Serious eye damage/eye irritation	
METHYL ETHYL KETONE	No eye irritation
– Respiratory sensitization	No data available
– Skin sensitization	Negative (Guinea Pigs)
– Carcinogenicity	
ACGIH	A4 : Not Classifiable as a Human Carcinogen

12. Ecological information

A. Aquatic and terrestrial ecotoxicity	
– Fish	
N,N-DIMETHYLFORMAMIDE	LC50 7100 mg/ℓ 96 hr <i>Lepomis macrochirus</i>
TOLUENE	LC50 24 mg/ℓ 96 hr <i>Oncorhynchus mykiss</i>
METHYL ETHYL KETONE	LC50 3220 mg/ℓ 96 hr <i>Pimephales promelas</i>
– Shellfish	
N,N-DIMETHYLFORMAMIDE	EC50 4500 mg/ℓ 48 hr <i>Daphnia magna</i>
TOLUENE	EC50 11.5 mg/ℓ 48 hr <i>Daphnia magna</i>
METHYL ETHYL KETONE	EC50 5091 mg/ℓ 48 hr <i>Daphnia magna</i>
– Bird	
N,N-DIMETHYLFORMAMIDE	EC50 > 500 mg/ℓ 96 hr <i>Scenedesmus subspicatus</i>
METHYL ETHYL KETONE	EC50 > 500 mg/ℓ 96 hr <i>Skeletonema costatum</i>
B. Persistence and degradability	
– Persistence	
N,N-DIMETHYLFORMAMIDE	log Kow -0.87
TOLUENE	log Kow 2.73

METHYL ETHYL KETONE	log Kow 0.29
C. Bioaccumulative potential	No data available
D. Mobility in soil	No data available
E. Other adverse effects	No data available

13. Disposal considerations

A. Disposal method	Destroy the product by incineration
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	
N,N-DIMETHYLFORMAMIDE	The 4th type, the 2st petroleum type 2000ℓ
TOLUENE	The 4th type, the 1st petroleum type 200ℓ
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	
N,N-DIMETHYLFORMAMIDE	45.3599 kg 100 lb
TOLUENE	453.599 kg 1000 lb
METHYL ETHYL KETONE	2267.995 kg 5000 lb
EU regulations	
N,N-DIMETHYLFORMAMIDE	Repr. Cat. 2; R61Xn; R20/21Xi; R36
TOLUENE	F; R11Repr.Cat.3; R63Xn; R48/20-65Xi; R38R67
METHYL ETHYL KETONE	F; R11Xi; R36R66R67
EU regulations	
N,N-DIMETHYLFORMAMIDE	R61, R20/21, R36
TOLUENE	R11, R38, R48/20, R63, R65, R67
METHYL ETHYL KETONE	R11, R36, R66, R67
EU regulations	
N,N-DIMETHYLFORMAMIDE	S53, S45
TOLUENE	S2, S36/37, S46, S62
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 2014-03-07

C. Revision number and date 0

D. others

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