

1. Identification

- | | |
|--|---|
| <p>A. Product name : DR-100 Thinner for Epoxy</p> <p>B. Recommended Use and Restriction on Use
 <input type="radio"/> General use : Thinner for Epoxy
 <input type="radio"/> Restriction on use : Restricted to use other than recommended use</p> <p>C. Manufacturer / Supplier / distributor information
 <input type="radio"/> Company name : NOROO Paint & Coatings Co., Ltd.
 <input type="radio"/> Address : 351, Bakdal-ro, Manan-gu, Anyang-si, Gyeonggi-do, Korea
 <input type="radio"/> Emergency telephone number : +82-31-467-6114</p> | <p>D. AU Importer
 <input type="radio"/> Company name : Synergy Building Supplies
 <input type="radio"/> Address : 236 PLANET ST WELSHPOOL WA 6106
 <input type="radio"/> Emergency telephone number : 1300 655 853</p> |
|--|---|

2. Hazard identification

- A. GHS Classification
- Acute toxicity (dermal) Category 4
 - Acute toxicity (inhalation: gas) Category 4
 - Carcinogenicity Category 2
 - Reproductive toxicity Category 2
 - Flammable liquids Category 2
 - Serious eye damage/irritation Category 2A
 - Specific target organ toxicity(Single exposure) Category 3
 - Specific target organ toxicity(Repeated exposure) Category 1
 - Specific target organ toxicity(Repeated exposure) Category 2
 - Skin corrosion/irritation Category 2
 - Aspiration hazard Category 1
 - Specific target organ toxicity(Single exposure) Category 1

- B. GHS label elements
- Hazard symbols



- Signal words : DANGER
- Hazard statements :
 - H312 Harmful in contact with skin
 - H332 Harmful if inhaled
 - H351 Suspected of causing cancer
 - H361 Suspected of damaging fertility or the unborn child
 - H225 Highly flammable liquid and vapour
 - H319 Causes serious eye irritation
 - H335+H336 May cause respiratory irritation, May cause drowsiness and dizziness.
 - H372 Prolonged or repeated exposure may cause lung damage to the body (Refer Section SDS 11)
 - H373 Prolonged or repeated exposure may cause damage to the liver, testes, skin, respiratory system, blood and central nervous system of the body (Refer Section SDS 11)
 - H315 Causes skin irritation
 - H304 May be fatal if swallowed and enters airways
 - H370 Causes damage to organs: central nervous system (CNS), gastrointestinal tract(Refer Section SDS 11)
- Precautionary statements
 - Prevention
 - P240 Ground/bond container and receiving equipment.
 - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
 - P242 Use only non-sparking tools. Flammable liquids (chapter 2.6) 1, 2, 3
 - P243 Take precautionary measures against static discharge.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - P261 Do not breathe dust/fume/gas/mist/vapours/spray.
 - P271 Use only outdoors or in a well-ventilated area.
 - P201 Obtain special instructions before use.
 - P202 Do not handle until all safety precautions have been read and understood.
 - P281 Use personal protective equipment as required.
 - P210 Keep away from heat/sparks/open flames/hot surfaces. ? No smoking.
 - P264 Wash hands thoroughly after handling.
 - P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 - P260 Do not breathe dust/fume/gas/mist/vapours/spray.
 - P270 Do not eat, drink or smoke when using this product.
 - P233 Keep container tightly closed.
 - Response
 - P302+P352 IF ON SKIN: Wash with plenty of soap and water.
 - P312 Call a POISON CENTER or doctor/physician if you feel unwell.
 - P322 Specific measures
 - P363 Wash contaminated clothing before reuse.
 - P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P308+P313 If exposed or concerned: Get medical advice/attention.
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337+P313 If eye irritation persists: Get medical advice/attention.
 P321 Specific treatment
 P314 Get medical advice/attention if you feel unwell.
 P332+P313 If skin irritation occurs: Get medical advice/attention.
 P362 Take off contaminated clothing and wash before reuse.
 P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
 P331 Do NOT induce vomiting.
 P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).
 P307+P311 If exposed: Call a POISON CENTER or doctor/physician.

- Storage
 - P405 Store locked up.
 - P403+P235 Store in a well-ventilated place. Keep cool.
 - P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- Disposal
 - P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

Chemical Name	NFPA grade	Health	Flammability	Reactivity
Toluene		2	3	0
2-Butoxyethanol		3	2	0
Solvent naphtha (petroleum), light arom.		1	2	0
Isobutanol		1	3	0

3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content (%)
Toluene	Toluene	108-88-3	64~74
2-Butoxyethanol	2-Butoxyethanol	111-76-2	14~24
Solvent naphtha (petroleum), light arom.	Solvent naphtha (petroleum), light arom.	64742-95-6	7~17
Isobutanol	Isobutanol	78-83-1	6~16

4. First-aid measures

- A. Eye Contact : If irritation, pain, swelling, tears or glaring happens, take medical assistant immediately Flush exposed eyes with plenty of water for more than 15minutes.
- B. Skin Contact : Wash off with soap and water for more than 15 minutes. And take medical assistant immediately. If symptoms like irritation or pain occurs, take medical assistant immediately. Remove exposed clothing, and wash off exposed area with soap and water.
- C. Inhalation : Take a medical assistant immediately. Remove contaminated clothing and shoes, and isolate it. If hard to breathe, administering oxygen Perform the artificial respiration, using the pocket mask with one way valves or other respiratory medical devices. If inhaled or swallowed, do not perform the inhalation phase of breathing If not breathing, perform the artificial respiration. Avoid from exposure, and move into an area with fresh air.
- D. Ingestion Contact : It is need to be considered that early removal of some ingested material by gastric lavage must be weighed against potential complications of bleeding or perforation Take proper medical assistant by symptoms. If ingested large quantity, take medical assistant. Do not try to induce vomiting, if occurs, keep head below hips to prevent swallow into lungs. Inducing vomit.
- E. Notes to Physician : There is no specific antidote and take an appropriate medical treatment.

5. Fire-fighting measures

- A. Suitable (Unsuitable) extinguishing media
- Suitable extinguishing media : Powder extinguishing agent, gaseous Extinguishing Agent, and regular foam.
 - (Unsuitable) extinguishing media : Water is not appropriate extinguishing agent
 - Case of big fire : Use appropriate protective device depend on the situation. Stay away more than 800m to avoid tank explosion. Spread large amount of the extinguishing agent as a mist form with staying against wind.
- B. Specific hazards arising from the chemical
- Pyrolysate : Carbon dioxide, toxic carbon compounds/Nitrogen compounds/sulfur compounds
 - Fire and Explosion danger : Risk of medium-sized fire.
- C. Special protective actions for fire-fighters
- Personal Precautions, protective equipment : Gas mask or air respirator, heat resistant clothing, heat resistant helmet, heat resistant gloves, heat resistant boots
 - Emergency procedures : Block the area except for the fire-suppression personnel. Cooling containers with water long time after extinguish fire. If there is no risk, moving containers away from fire. Use appropriate extinguishing agents to catch fire.

6. Accidental release measures

- A. Personal Precautions, protective equipment and emergency procedures
- Personal Precautions, protective equipment : Gas mask for organic gases, other appropriate protective device /

clothing / gloves.

○ Emergency procedures : Do not contact on the bare skin Do work with the personal protected devices such as gas mask for organic gases other appropriate protective devices / clothing / gloves. Spray water to reduce amount of steam. Take an action to block the leakage if there is no risk.

B. Environmental precautions

○ Atmosphere : Using local ventilation to Minimize the exposure to worker. Do install the local ventilations and full ventilation system

○ Soil : Use absorbent to collect the appropriate container. Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.

○ Under water : Collect spilled material with mechanic devices Use absorbent to collect the appropriate container.

C. Methods and materials for containment and cleaning up

○ Small spill : Move to appropriate container for disposal of spilled material collected. Absorb for use sand or other non-combustible material.

○ Large spill : Notify to central and local government, when emissions are above regulation. Prohibit access of unnecessary people, isolate hazard area to secure.

7. Handling and storage

A. Precautions for safe handling : Use local ventilations and a full ventilation system when handling Seal the container for minimizing the petroleum steam Ground for preventing the static discharge Keep or handle followed by Dangerous goods Safety Management Act

B. Conditions for safe storage, including any incompatibilities : Stored in an isolated place, freezing caution, high temperature body caution. Avoid strong oxidizing agents, acid. Storage temperature: 5 ~ 35 °C Avoid direct sunlight while storing outdoor. Because of evaporation and contamination concerns, airtight the container and store in a well-ventilated building.

8. Exposure controls/personal protection

A. Exposure Limits

○ Toluene

- ACGIH : NO DATA

- Biological exposure indices : NO DATA

○ 2-Butoxyethanol

- ACGIH : NO DATA

- Biological exposure indices : NO DATA

○ Solvent naphtha (petroleum), light arom.

- ACGIH : NO DATA

- Biological exposure indices : NO DATA

○ Isobutanol

- ACGIH : NO DATA

- Biological exposure indices : NO DATA

B. Engineering Controls :

▷ Do install the local ventilations and full ventilation system

▷ Using local ventilation to Minimize the exposure to worker.

▷ NO DATA

▷ NO DATA

C. Personal Protective Equipment

○ Respiratory protection : Use the personal protect respirator for organic solvent or higher level of capacity when workers are supposed to be exposed under unsuitable respiratory working condition, or longer period exposure than standard level. Respirators should be authorized by Korea Occupational Safety and Health Agency

○ Eye protection : Let workers do wear the safety glasses in case hazard caused by mist may be expected. Install washing facilities and an emergency washing facilities close to workplace. Use the respirator for organic solvent or higher level.

○ Hand protection : Wear the chemical protective gloves Do the workers wear the impermeable protective gloves made from rubber/PVC due to skin irritation may be supposed by chronicle and long period exposure.

○ Skin protection : Wear appropriate chemical protective clothing. Work after wearing the impermeable protective apron made by rubber/PVC in case hazard caused by exposure or spill, wear the impermeable whole body protective clothing if needed.

9. Physical and chemical properties

A. Appearance : Liquid

B. Odor : Solvent odor

C. Odor threshold : NO DATA

D. PH : NO DATA

E. Melting point/Freezing point(°C) : NO DATA

F. Initial Boiling Point/Boiling Ranges(°C) : 117~274°C

G. Flash point(°C) : 7

H. Evaporating Rate : NO DATA

I. Flammability(solid, gas)(°C) : NON Flammable

J. Upper/Lower Flammability or explosive limits : NO DATA

- K. Vapour pressure : NO DATA
L. Solubility : Water)0.6%
M. Vapour density : NO DATA
N. Specific gravity : 0.9±0.2
O. Partition coefficient of n-octanol/water : NO DATA
P. Autoignition temperature(°C) : NO DATA
Q. Decomposition temperature(°C) : NO DATA
R. Viscosity : NO DATA
S. Molecular weight : NO DATA

10. Stability and reactivity

- A. Chemical stability : NO DATA
B. Possibility of hazardous reactions : Avoid contaminants and friction Do not contact with heat, spark, flame or other flammable sources
C. Conditions to avoid : Oxidation agent, metal and combustable materials
D. Hazardous decomposition products : Thermal decomposition products (carbon etc..)

11. Toxicological information

- A. Information on the likely routes of exposure
 Respiratory tracts : Adverse lung effects, Dyspnoea, Hypothermia, Vomitting
 Oral : Vomitting, Diarrhea, Stomach pain, Irregular heartbeat
 Skin : Irritation, Burn, Adverse nerve effects
 Eye : Irritation, eye damage
- B. Delayed and immediate effects and also chronic effects from short and long term exposure
 Toluene
- Acute toxicity
Oral : rat LD50=2600 mg/kg
Dermal : rabbit LD50=12,000 mg/kg
Inhalation : rabbit LD50=12,000 mg/kg
- Skin corrosion/irritation : Rabbit skin irritation test using the results of the Causes moderate irritation.
- Serious eye damage/irritation : Eyes irritant test using a rabbit raised for 6 days reversible irritation.
- Respiratory sensitization : NO DATA
- Skin sensitization : Tests with negative results Guinea
- Carcinogenicity
IARC : Group 3
OSHA : NO DATA
ACGIH : A4
NTP : NO DATA
EU CLP : NO DATA
- Germ cell mutagenicity : Dominant lethal test negative, positive micronucleus test, chromosome aberration test positive
- Reproductive toxicity : Dominant lethal test negative, positive micronucleus test, chromosome aberration test positive
- STOT-single exposure : Causes acts on the central nervous system in humans, fatigue, drowsiness, dizziness, respiratory irritation, agitation, vomiting, central nervous system depression, confusion, gait abnormalities. Eyes, nose, causing irritation of the throat. In experimental animals
- STOT-repeated exposure : Headaches accompanied by people from hearing loss or visual field constriction, or nystagmus, tremor, ataxia, loss of memory, such as chronic central nervous system disorder that appears. Noewichuk is observed. It appears kidney dysfunction such as hematuria or pro
- Aspiration hazard : NO DATA
 2-Butoxyethanol
- Acute toxicity
Oral : LD50 = 1746 mg/kg Rat
Dermal : LD50 = 99 mg/kg Rabbit
Inhalation : LD50 = 99 mg/kg Rabbit
- Skin corrosion/irritation : skin Irritation test result Irritation
- Serious eye damage/irritation : Using the rabbit eye irritation test results - Severe irritation
- Respiratory sensitization : NO DATA
- Skin sensitization : Guinea pig test results negative, human patch test results in negative
- Carcinogenicity
IARC : Group 3
OSHA : NO DATA
ACGIH : A3
NTP : NO DATA
EU CLP : NO DATA
- Germ cell mutagenicity : (Using mouse and rat bone marrow cells) Micronucleustest Negative,
- Reproductive toxicity : (Using mouse and rat bone marrow cells) Micronucleustest Negative,
- STOT-single exposure : Throat irritation in humans are being observed. Appears neurotoxicity tests decreased activity decreased in rats and jerk reaction. Appears inhalation exposure test results suppress the central nervous system in rats and rabbits.
- STOT-repeated exposure : The toxic effects appear in the blood (red blood cells) by inhalation exposure in animals.

- Aspiration hazard : NO DATA
- Solvent naphtha (petroleum), light arom.
 - Acute toxicity
 - Oral : LD50 = 8400 mg/kg Rat
 - Dermal : LD50 > 2000 mg/kg Rabbit
 - Inhalation : LD50 > 2000 mg/kg Rabbit
 - Skin corrosion/irritation : weakstimulus(rabbit)
 - Serious eye damage/irritation : Mild irritant(rabbit)
 - Respiratory sensitization : NO DATA
 - Skin sensitization : Non-sensitizer (Guinea pig)
 - Carcinogenicity
 - IARC : NO DATA
 - OSHA : NO DATA
 - ACGIH : NO DATA
 - NTP : NO DATA
 - EU CLP : Carc. 1B
 - Germ cell mutagenicity : EU CLP: 1B (case containing less than 0.1% of the benzene in a weight ratio of the material not applied to the present classification)
 - Reproductive toxicity : EU CLP: 1B (case containing less than 0.1% of the benzene in a weight ratio of the material not applied to the present classification)
 - STOT-single exposure : Affecting the central nervous system. Inhalation of high concentrations vapors may cause loss of consciousness.
 - STOT-repeated exposure : NO DATA
 - Aspiration hazard : Harmful aspiration concerns
- Isobutanol
 - Acute toxicity
 - Oral : LD50 = 2460 mg/kg Rat
 - Dermal : LD50 = 2460 mg/kg Rabbit
 - Inhalation : LD50 = 2460 mg/kg Rabbit
 - Skin corrosion/irritation : (in rabbit) test result stimulus - Not recovered within seven days.
 - Serious eye damage/irritation : Not by exposure to irritant vapors from people and changes in the cornea appears.
 - Respiratory sensitization : NO DATA
 - Skin sensitization : NO DATA
 - Carcinogenicity
 - IARC : NO DATA
 - OSHA : NO DATA
 - ACGIH : NO DATA
 - NTP : NO DATA
 - EU CLP : NO DATA
 - Germ cell mutagenicity : Using mammalian erythrocytes Micronucleustest result Negative. Using mammalian bone marrow Chromosomal abnormalitiestest result Negative
 - Reproductive toxicity : Using mammalian erythrocytes Micronucleustest result Negative. Using mammalian bone marrow Chromosomal abnormalitiestest result Negative
 - STOT-single exposure : Throat irritation was observed in humans. Neurotoxicity in rats and decreased reflex activity decreased test results is displayed. Inhalation exposure in rats and rabbits suppression test results appear in the central nervous system.
 - STOT-repeated exposure : 90-day rat inhalation exposure test results will not appear unusual toxic effects.
 - Aspiration hazard : Causes Aspiration hazard.

12. Ecological information

- A. Ecotoxicity
- Toluene
 - Fish : LC50 24 mg/ℓ 96 hr *Oncorhynchus mykiss*
 - Crustaceans : EC50 11.5 mg/ℓ 48 hr *Daphnia magna*
 - Algae : NO DATA
 - 2-Butoxyethanol
 - Fish : LC50 = 1250 mg/ℓ 96 hr
 - Crustaceans : LC50 = 5.4 mg/ℓ 96 hr
 - Algae : NO DATA
 - Solvent naphtha (petroleum), light arom.
 - Fish : LC50 = 9.22 mg/ℓ 96 hr *Oncorhynchus mykiss*
 - Crustaceans : EC50 = 6.14 mg/ℓ 48 hr *Daphnia magna*
 - Algae : EC50 = 19 mg/ℓ 72 hr *Selenastrum capricornutum*
 - Isobutanol
 - Fish : LC50 = 1000 mg/ℓ 96 hr
 - Crustaceans : EC50 = 1250 mg/ℓ 24 hr
 - Algae : NO DATA
- B. Persistence and degradability
- Toluene
 - Persistence : log Kow 2.73
 - Degradability : NO DATA
 - 2-Butoxyethanol
 - Persistence : log Kow = 0.83
 - Degradability : NO DATA
 - Solvent naphtha (petroleum), light arom.
 - Persistence : log Kow = 2.1 ~ 6 (Estimates)
 - Degradability : BOD5/COD = 0.43
 - Isobutanol
 - Persistence : log Kow = 0.8

- Degradability : NO DATA

C. Bioaccumulative potential

- Toluene
 - Bioaccumulative potential : NO DATA
 - Biodegradation : 86 (%) 20 day
- 2-Butoxyethanol
 - Bioaccumulative potential : NO DATA
 - Biodegradation : Biodegradability = 96 (%)
- Solvent naphtha (petroleum), light arom.
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
- Isobutanol
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA

D. Mobility in soil

- Toluene
 - ▷ NO DATA
- 2-Butoxyethanol
 - ▷ NO DATA
- Solvent naphtha (petroleum), light arom.
 - ▷ NO DATA
- Isobutanol
 - ▷ log Kow = 0.8 (1)

E. Other adverse effects

- Toluene
 - ▷ NO DATA
- 2-Butoxyethanol
 - ▷ NO DATA
- Solvent naphtha (petroleum), light arom.
 - ▷ NO DATA
- Isobutanol
 - ▷ NO DATA

13. Disposal considerations

A. Disposal methods : Disposal material should keep in the airtighted container, and consign according to Waste Mateial Management Act

B. Special precautions for disposal : Discard it followed by appropriate regulations Prohibit the unauthorized disposal and incineration due to adversely affect natural ecosystems

14. Transport information

A. UN number : 1263

B. Proper shipping name : Paint (including paint, lacquer, enamel, colorants, shellac solutions, varnish, polish, liquid filler and liquid lacquer sealer) or related materials (including paint diluent and reductant).

C. Hazard class : 3

D. Packing group : II

E. Marine pollutant : N/A

F. Special precautions for user related to transport or transportation measures

- EmS FIRE SCHEDULE : F-E
- EmS SPILLAGE SCHEDULE : S-E

15. Regulatory information

- Toluene
 - Information of EU Classification
 - ▷ Classification : NO DATA
 - ▷ Risk Phrases : NO DATA
 - ▷ Safety Phrase : NO DATA
 - U.S. Federal regulations
 - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
 - ▷ CERCLA Section 103 (40CFR302.4) : 453.599 kg 1000 lb
 - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
 - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
 - ▷ EPCRA Section 313 (40CFR372.65) : pertinent
 - Rotterdam Convention listed ingredients : NO DATA
 - Stockholm Convention listed ingredients : NO DATA
 - Montreal Protocol listed ingredients : NO DATA
- 2-Butoxyethanol
 - Information of EU Classification
 - ▷ Classification : NO DATA
 - ▷ Risk Phrases : NO DATA
 - ▷ Safety Phrase : NO DATA
 - U.S. Federal regulations
 - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
 - ▷ CERCLA Section 103 (40CFR302.4) : notapplicable

- ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
- ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
- ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
- Rotterdam Convention listed ingredients : NO DATA
- Stockholm Convention listed ingredients : NO DATA
- Montreal Protocol listed ingredients : NO DATA
- Solvent naphtha (petroleum), light arom.
 - Information of EU Classification
 - ▷ Classification : NO DATA
 - ▷ Risk Phrases : NO DATA
 - ▷ Safety Phrase : NO DATA
 - U.S. Federal regulations
 - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
 - ▷ CERCLA Section 103 (40CFR302.4) : notapplicable
 - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
 - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
 - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
 - Rotterdam Convention listed ingredients : NO DATA
 - Stockholm Convention listed ingredients : NO DATA
 - Montreal Protocol listed ingredients : NO DATA
- Isobutanol
 - Information of EU Classification
 - ▷ Classification : NO DATA
 - ▷ Risk Phrases : NO DATA
 - ▷ Safety Phrase : NO DATA
 - U.S. Federal regulations
 - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
 - ▷ CERCLA Section 103 (40CFR302.4) : 2267.995 kg 5000 lb
 - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
 - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
 - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
 - Rotterdam Convention listed ingredients : NO DATA
 - Stockholm Convention listed ingredients : NO DATA
 - Montreal Protocol listed ingredients : NO DATA

16. Other information

A. Reference

This MSDS is based on 'Industrial safety and health' Act paragraph 41 and Proclamation of Ministry of Labor and Employment 2016-19, and considered domestic regulations.
 This MSDS is based on KOSHA, NITE, ESIS, NLM, SIDS, IPCS, NCIS.

B. Issue date : 1995-09-21

C. Revision number and Last date revised : 6.(2018-10-22 AM 11:52:11)

D. Other : " WWW.NOROO.CO.KR"