


1. Identification

- A. Product name : PROTECH PT-3000 HIGH BUILD B
 - Usage category : No Data
- B. Recommended Use and Restriction on Use
 - General use : Polyaspartic coating
 - Restriction on use : Restricted to use other than recommended use
- C. Manufacturer / Supplier / distributor information
 - Company name : NOROO Paint & Coatings Co., Ltd.
 - Address : 351, Bakdal-ro, Manan-gu, Anyang-si, Gyeonggi-do, Korea
 - Emergency telephone number : +82-31-467-6114

2. Hazard identification

- A. GHS Classification
 - Serious eye damage/irritation Category 2A
 - Skin sensitization Category 1
 - Respiratory sensitization Category 1
 - B. GHS label elements
 - Hazard symbols
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- Signal words : DANGER
 - Hazard statements :
 - H319 Causes serious eye irritation
 - H317 May cause an allergic skin reaction
 - H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
 - Precautionary statements
 - Prevention
 - P264 Wash hands and contact areas thoroughly after handling.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 - P272 Contaminated work clothing should not be allowed out of the workplace.
 - P284 (In case of poor ventilation) Wear respiratory protection.
 - Response
 - 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 attention / attention.
 - P302+P352 IF ON SKIN: Wash with plenty of soap and water.
 - P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
 - P321 Specific treatment
 - P362+P364 Take off contaminated clothing and wash before reuse.
 - P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 - P342+P311 If respiratory symptoms occur, get medical attention.
 - Storage
 - NO DATA
 - Disposal
 - P501 Dispose of the contents and containers in accordance with waste-related laws.
- C. Other hazards which do not result in classification : (NFPA Classification)

Chemical Name	NFPA grade	Health	Flammability	Reactivity
1,6-Diisocyanatohexane homopolymer		2	1	1
4-Methyl-1,3-dioxolan-2-one		1	1	0

3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content(%)
1,6-Diisocyanatohexane homopolymer	1,6-Diisocyanatohexane homopolymer	28182-81-2	83
4-Methyl-1,3-dioxolan-2-one	4-Methyl-1,3-dioxolan-2-one	108-32-7	16

4. First-aid measures

- A. Eye Contact : Flush exposed eyes with plenty of water for more than 15minutes.
If irritation, pain, swelling, tears or glaring happens, take medical assistant immediately
Do not rub your eyes.
If you wear a contact lenses, remove them first.
- B. Skin Contact : Remove exposed clothing, and wash off exposed area with soap and water.

If symptoms like irritation or pain occurs, take medical assistant immediately.
Wash off with soap and water for more than 15 minutes. And take medical assistant immediately.
If symptoms like redness or irritation occurs, take medical assistant immediately.
Wash carefully after handling.
Wear gloves while washing the patient and avoid contact with exposed clothes.

C. Inhalation : Avoid from exposure, and move into an area with fresh air.

If not breathing, perform the artificial respiration.

If inhaled or swallowed, do not perform the inhalation phase of breathing

Perform the artificial respiration, using the pocket mask with one way valves or other respiratory medical devices.

If hard to breathe, administering oxygen

Remove contaminated clothing and shoes, and isolate it.

Take a medical assistant immediately.

D. Ingestion Contact : Inducing vomit.

If unconscious, do not induce vomiting. In case of vomiting, keep head down under hip to prevent lung inhalation.

If ingested large quantity, take medical assistant.

Take proper medical assistant by symptoms.

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

Flush mouth with water immediately.

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 : Avoid digestion using direct water.

Avoid use waterjet as fire extinguishing agent.

Avoid extinguishing fire with halogenting agent.

Case of big fire : Spread large amount of the extinguishing agent as a mist form with staying against wind.

Stay away more than 800m to avoid tank explosion.

Use appropriate protective device depend on the situation.

B. Specific hazards arising from the chemical

Pyrolysate : Carbon dioxide, toxic carbon compounds/Nitrogen compounds/sulfur compounds

Irritating and highly toxic gases may produced during the combustion by pyrolysis or combustion itself.

Fire and Explosion danger : Risk of medium-sized fire.

Aqueous (Exclude water-soluble one) products does not have risk of fire or explosion hazard by itself.

Vapor may be released to the ignition source and ignited.

May form explosive mixture at or above ignition point

Container may explode when heating

Leakages may fire / explosion hazard and could be easily ignited by heat, sparks or flames.

Vapors may explode indoors, outdoors, and in drains

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 : Use appropriate extinguishing agents to catch fire.

If there is no risk, moving containers away from fire.

Cooling containers with water long time after extinguish fire.

Block the area except for the fire-suppression personnel.

Protect others from access and prohibit access to dangerous areas.

Tell the fire department, location of the fire and the hazardous features.

Use an unmanned fire extinguishing device, in case of large-sized fire. If not, leave it to burn.

Avoid inhalation of the substance or combustion products.

Do not approach if the tank is on 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 : Take an action to block the leakage if there is no risk.

Spray water to reduce amount of steam.

Do work with the personal protected devices such as gas mask for organic gases other appropriate protective devices / clothing / gloves.

Do not contact on the bare skin

B. Environmental precautions

Atmosphere : Do install the local ventilations and full ventilation system

Using local ventilation to Minimize the exposure to worker.

Soil : Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.

Use absorbent to collect the appropriate container.

Under water : Use absorbent to collect the appropriate container.

Collect spilled material with mechanic devices

C. Methods and materials for containment and cleaning up

Small spill : Absorb for use sand or other non-combustible material.

Move to appropriate container for disposal of spilled material collected.

Large spill : Prohibit access of unnecessary people, isolate hazard area to secure.

Notify to central and local government, when emissions are above regulation.

7. Handling and storage

- A. Precautions for safe handling : Keep or handle followed by Dangerous goods Safety Management Act
Ground for preventing the static discharge
Seal the container for minimizing the petroleum steam
Use local ventilations and a full ventilation system when handling
Wash carefully after handling.
Avoid contact with prohibited materials in mixture.
Do not handle until read and understood all safety precautions.
Do not inhale vapor for long-term or repeatedly.
Avoid contact with heat, sparks, flames or other sources of ignition.
Do not take contaminated clothings away from the work area.
Storing with combustible substances such as stained clothes or paper may cause fire by spontaneous ignition. Thus do not stack it, and keep it in a non-flammable container with cap filled with water and dispose it.
- B. Conditions for safe storage, including any incompatibilities : Because of evaporation and contamination concerns, airtight the container and store in a well-ventilated building.
Avoid direct sunlight while storing outdoor.
Storage temperature: 5 ~ 35 °C
Avoid strong oxidizing agents, acid.
Stored in an isolated place, freezing caution, high temperature body caution.
Storage temperature: 5 ~ 15 °C
Storage temperature: 15 ~ 25 °C
Storage temperature: 25 ~ 35 °C
Store in a cool, dry, well-ventilated area.
Check periodically for leaks
Store in accordance with all current law and regulations.
Store in original container only.
Prevent static electricity and do not store near heat sources.
Collect in an airtight container to dispose.
Store away from waterworks and sewers.

8. Exposure controls/personal protection

- A. Exposure Limits
- 1,6-Diisocyanatohexane homopolymer
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - 4-Methyl-1,3-dioxolan-2-one
 - 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 : Respirators should be authorized by Korea Occupational Safety and Health Agency
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.
Consider warning properties before use.
Respiratory protection may be needed, while frequent use or heavy exposure.
Respiratory protection is ranked in order from minimum to maximum
If there is possibility of direct contact or exposure to these substances should wear a authorized dust-proof mask or respirator for organiac compounds
 - Eye protection : Use the respirator for organic solvent or higher level.
Install washing facilities and an emergency washing facilities close to workplace.
Let workers do wear the safety glasses in case hazard caused by mist may be expected.
If there is possibility of direct contact or exposure to these substances should wear authorized safty glasses or mask.
 - Hand protection : 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.
Wear the chemical protective gloves
Wear appropriate protective gloves
If there is possibility of direct contact or exposure to these substances should wear authorized safety gloves for chemicals.
 - Skin protection : 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.
Wear appropriate chemical protective clothing.
Wear cleanroom garment or appropriate protective clothing to prevent contamination
If there is a possibility of direct contact or exposure to the substance Wear protective clothing for chemical substances

9. Physical and chemical properties

- A. Appearance : Liquid
- B. Odor : Specific 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) : NO DATA
- G. Flash point(°C) : 95
- H. Evaporating Rate : NO DATA
- I. Flammability(solid, gas)(°C) : NO DATA
- J. Upper/Lower Flammability or explosive limits : NO DATA
- K. Vapour pressure : NO DATA
- L. Solubility : Water insoluble
- M. Vapour density : NO DATA
- N. Specific gravity : 1.2±0.1
- O. Partition coefficient of n-octanol/water : NO DATA
- P. Autoignition temperature(°C) : NO DATA
- Q. Decomposition temperature(°C) : NO DATA
- R. Viscosity : 550 ± 150 cps
- S. Molecular weight : NO DATA

10. Stability and reactivity

- A. Chemical stability : NO DATA
- B. Possibility of hazardous reactions : Do not contact with heat, spark, flame or other flammable sources
Avoid contaminants and friction
- C. Conditions to avoid : Oxidation agent, metal and combustible 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
- 1,6-Diisocyanatohexane homopolymer
 - Acute toxicity
 - Oral : NO DATA
 - Dermal : NO DATA
 - Inhalation : NO DATA
 - Skin corrosion/irritation : NO DATA
 - Serious eye damage/irritation : NO DATA
 - 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 : NO DATA
 - Reproductive toxicity : NO DATA
 - STOT-single exposure : NO DATA
 - STOT-repeated exposure : This risk may be increased by exposure to a case : Respiratory disorders, skin disorders and allergies
 - Aspiration hazard : NO DATA
 - 4-Methyl-1,3-dioxolan-2-one
 - Acute toxicity
 - Oral : LD50=29100 mg/kg Rat
 - Dermal : LD50>20,000 mg/kg Rabbit
 - Inhalation : LD50>20,000 mg/kg Rabbit
 - Skin corrosion/irritation : Stimulus to the skin of a person raised in the middle, rabbit skin Irritation test result middle using the Causes o
 - Serious eye damage/irritation : Rabbit skin irritation test results using moderate irritation
 - 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 : NO DATA
 - Germ cell mutagenicity : NO DATA
 - Reproductive toxicity : NO DATA
 - STOT-single exposure : NO DATA

- STOT-repeated exposure : NO DATA
- Aspiration hazard : NO DATA

12. Ecological information

- A. Ecotoxicity
- 1,6-Diisocyanatohexane homopolymer
 - Fish : NO DATA
 - Crustaceans : NO DATA
 - Algae : NO DATA
 - 4-Methyl-1,3-dioxolan-2-one
 - Fish : LC50 > 1000 mg/ℓ 96 hr Other
 - Crustaceans : EC50 > 1000 mg/ℓ 48 hr Daphnia magna
 - Algae : EC50 > 900 mg/ℓ 72 hr Scenedesmus subspicatus
- B. Persistence and degradability
- 1,6-Diisocyanatohexane homopolymer
 - Persistence : NO DATA
 - Degradability : NO DATA
 - 4-Methyl-1,3-dioxolan-2-one
 - Persistence : log Kow = -0.41
 - Degradability : COD = 1290 BOD5/COD = 0.019
- C. Bioaccumulative potential
- 1,6-Diisocyanatohexane homopolymer
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
 - 4-Methyl-1,3-dioxolan-2-one
 - Bioaccumulative potential : BCF = 3.162
 - Biodegradation : Biodegradability = 68 (%) 4 week (89,90%)
- D. Mobility in soil
- 1,6-Diisocyanatohexane homopolymer
 - ▷ NO DATA
 - 4-Methyl-1,3-dioxolan-2-one
 - ▷ NO DATA
- E. Other adverse effects
- 1,6-Diisocyanatohexane homopolymer
 - ▷ NO DATA
 - 4-Methyl-1,3-dioxolan-2-one
 - ▷ NO DATA

13. Disposal considerations

- A. Disposal methods : Disposal material should keep in the airtight container, and consign according to Waste Material Management Act
Pre-treat with oil-water separation method when it is available.
Recycle the recycleable materials, such as organic solvents, and then incinerate the residue at high temperature.
To prevent environmental pollution, dispose it to a licensed waste disposal company.
- B. Special precautions for disposal : Prohibit the unauthorized disposal and incineration due to adversely affect natural ecosystems
Discard it followed by appropriate regulations

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 : III
- 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

- 1,6-Diisocyanatohexane homopolymer
 - 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
- 4-Methyl-1,3-dioxolan-2-one
 - 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

16. Other information

A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS,NLM, SIDS, IPCS

B. Issue date : 2021-01-13

C. Revision number and Last date revised : 1. 2021-01-13

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