

1. Identification

- A. Product name : HiQ Pinhole Filler PF-700
- B. Recommended Use and Restriction on Use
- 1) General use : 자보용 특수제품
 - 2) Restriction on use : Recommendations for purposes other use restrictions.
- C. Manufacturer / Supplier / distributor information
- 1) Company name : NOROO Paint & Coatings Co., Ltd.
 - 2) Address : 351, Bakdal-ro, Manan-gu, Anyang-si, Gyeonggi-do, Korea
 - 3) Emergency telephone number : +82-31-467-6114

2. Hazard identification

- A. GHS Classification : Flammable liquids Category 3 ▷Chronic aquatic toxicity Category 4 ▷Carcinogenicity Category 1B ▷Aspiration hazard Category 1

- B. GHS label elements

- 1) Hazard symbols :



- 2) Signal words : DANGER
- 3) Hazard statements : H226 Flammable liquid and vapour ▷H413 May cause long lasting harmful effects to aquatic life ▷H350 May cause cancer ▷H304 May be fatal if swallowed and enters airways
- 4) Precautionary statements
- P210 Keep away from heat/sparks/open flames/hot surfaces. ? No smoking. ▷P233 Keep container tightly closed. ▷P273 Avoid release to the environment. ▷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. ▷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.
 - Response : P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. ▷P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5). ▷P308+P313 If exposed or concerned: Get medical advice/attention. ▷P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. ▷P331 Do NOT induce vomiting.
 - Storage : P403+P235 Store in a well-ventilated place. Keep cool. ▷P405 Store locked up.
 - 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
Kaolin	1	0	0
Naphtha (petroleum), hydrotreated heavy	1	3	0

Rutile(TiO2)	1	0	0
Solvent naphtha (petroleum), light arom.	1	2	0

3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content (%)
Kaolin	Kaolin	1332-58-7	67.9
Naphtha (petroleum), hydrotreated heavy	Naphtha (petroleum), hydrotreated heavy	64742-48-9	31.0
Rutile(TiO2)	Rutile(TiO2)	1317-80-2	1.0
Solvent naphtha (petroleum), light arom.	Solvent naphtha (petroleum), light arom.	64742-95-6	0.1

4. First-aid measures

- A. Eye Contact : If irritation, pain, swelling, and tears or glaring may occur, immediately take a doctor's treatment Rinse exposed eyes with plenty of water for at least 15 minutes.
- B. Skin Contact : Immediately wash off with soap and water for at least 15 minutes. If irritation or pain may occur, take a doctor's examination on exposed area. Discard clothing, and then wash off exposed area with soap and water.
- C. Inhalation : Take an emergency medical examination by a doctor Discard contaminated clothing and shoes, and keep personal away. If breathing is difficult, administer oxygen Perform the artificial respiration using the pocket mask installed the one way valves, or other inhaled medical devices. If inhaled or swallowed, do not perform the inhalation phase of breathing If the cessation of breathing may occur, perform the artificial respiration Avoid from source of exposure, and then moved into an area with fresh air
- D. Ingestion Contact : It is need to be considered that early removal of some ingested material by cautious gastric lavage must be weighed against potential complications of bleeding or perforation Take an appropriate medical treatment depending on the symptoms. Get a doctor's attention immediately if ingestion of large amounts of materials. Do not induce vomiting, and then if vomiting occurs, keep head below hips to prevent aspiration into lungs. Induce vomiting
- E. Notes to Physician : There is no specific antidote and take an appropriate medical treatment.

5. Fire-fighting measures

- A. Suitable (Unsuitable) extinguishing media
- 1) Suitable extinguishing media : Extinguished agent as powder foam or Gas-based fire extinguishing agent, and regular foam
 - 2) (Unsuitable) extinguishing media : Water is not an appropriate extinguished agent
 - 3) Case of big fire : Use an appropriate protect device depend on the fire scenario Evacuate more than 800m if an explosion hazard may occur. Spread a large amount of the extinguished agent as a mist form with staying upwind
- B. Specific hazards arising from the chemical
- 1) Pyrolysate : Carbon dioxide, toxic carbon compounds/Nitrogen compounds/sulfur compounds
 - 2) Fire and Explosion danger : Intermediate levels of fire hazard.
- C. Special protective actions for fire-fighters
- 1) Personal Precautions, protective equipment : Respirator or air respirator, heat resistant clothing, heat resistant hat, heat resistant gloves, heat resistant boots
 - 2) Emergency procedures : Keep unauthorized personnel out except the fire-suppression personnel Cool containers with water until well after fire is out. If there is no risk, move to move containers from fire area. Perform a fire fighting using an appropriate extinguished agent.

6. Accidental release measures

- A. Personal Precautions, protective equipment and emergency procedures

- 1) Personal Precautions, protective equipment : Respirator for organic gases other appropriate protective equipment / protection / protective gloves
 - 2) Emergency procedures : Do not contact with the skin Do work with the personal protected devices such as respirator for organic gases other appropriate protective equipment / protection / protective gloves Spread water for reducing the suppression of generated steam Take an action if there is no risk
- B.Environmental precautions
- 1) Atmosphere : Stay upwind and keep out of low areas. Spread water for reducing the suppression of generated steam
 - 2) 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.
 - 3) Under water : Collect spilled material with mechanic devices Use absorbent to collect the appropriate container.
- C.Methods and materials for containment and cleaning up
- 1) Small spill : Appropriate container for disposal of spilled material collected. Absorb for use sand or other non-combustible material.
 - 2) Large spill : Notification to central government, local government. When emissions at least of the standard amount Keep unnecessary people away, isolate hazard area and deny entry.

7.Handling and storage

- A.Precautions for safe handling : Use local ventilations and a full ventilation system when handling Close 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, hot body care Avoid strong oxidizing agents, acid and contacts. Storage temperature: 5 ~ 35 °C Storage outdoors is to avoid direct sunlight. Because evaporation and contamination concerns Keep container tightly closed in a good ventilation to the building.

8.Exposure controls/personal protection

A.Exposure Limits

1)Kaolin

1-1.ACGIH : NO DATA

1-2.Biological exposure indices : NO DATA

2)Naphtha (petroleum), hydrotreated heavy

2-1.ACGIH : NO DATA

2-2.Biological exposure indices : NO DATA

3)Rutile(TiO₂)

3-1.ACGIH : NO DATA

3-2.Biological exposure indices : NO DATA

4)Solvent naphtha (petroleum), light arom.

4-1.ACGIH : NO DATA

4-2.Biological exposure indices : NO DATA

- B.Engineering Controls : ▷ Spread water for reducing the suppression of generated steam ▷ Stay upwind and keep out of low areas.. ▷ NO DATA. ▷ NO DATA.

C.Personal Protective Equipment

- 1) Respiratory protection : Respiratory protection is ranked in order from minimum to maximum Under conditions of frequent use or heavy exposure, respiratory protection may be needed Consider warning properties before use will be If there is a possibility of direct contact or exposure to these substances should wear a dust mask or respirator for organic compounds 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. Wear respirator should be authorized by Korea Occupational Safety and Health Agency
- 2) Eye protection : If there is a possibility of direct contact or exposure to these substances should wear goggles or a face protection Let workers do wear the safety glasses in case hazard caused by mist may be expected. Cleansing

Organization (saline) or install washing facilities and an emergency washing facilities in the place close to workplace. Use the protect respirator for organic solvent or higher level of capacity.

- 3) Hand protection : Wear appropriate protective gloves If there is a possibility of direct contact or exposure to these substances should wear safety gloves for chemicals Wear the chemical protection of gloves Do the workers wear the impermeable protective gloves made from rubber/PVC due to skin irritation may be supposed by chronicle/long period exposure.
- 4) Skin protection : Wear 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 Wear appropriate chemical protective clothing. Work after wearing the impermeable protective apron made by rubber/PVC in case hazard caused by exposure or spill, if needed wear the impermeable whole body protective clothing.

9. Physical and chemical properties

- A. Appearance : 회색
- B. Odor : 자료 없음
- C. Odor threshold : 자료 없음
- D. PH : 자료 없음
- E. Melting point/Freezing point : 자료 없음
- F. Initial Boiling Point/Boiling Ranges : 180~190
- G. Flash point : 49
- H. Evaporating Rate : 자료 없음
- I. Flammability(solid, gas) : 자료 없음
- J. Upper/Lower Flammability or explosive limits : 자료 없음
- K. Vapour pressure : 자료 없음
- L. Solubility : 자료 없음
- M. Vapour density : 공기보다 높음
- N. Specific gravity : 1.40~1.60
- O. Partition coefficient of n-octanol/water : 자료 없음
- P. Autoignition temperature : 자료 없음
- Q. Decomposition temperature : 자료 없음
- R. Viscosity : 자료 없음
- S. Molecular weight : 자료 없음

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
 - 1) Respiratory tracts : Adverse lung effects, Dyspnoea, Hypothermia, Vomitting
 - 2) Oral : Vomitting, Diarrhea, Stomach pain, Irregular heartbeat
 - 3) Skin : Irritation, Burn, Adverse nerve effects
 - 4) Eye : Irritation, eye damage
- B. Delayed and immediate effects and also chronic effects from short and long term exposure
 - 1) Kaolin
 - 1-1. Acute toxicity
 - a. Oral : NO DATA
 - b. Dermal : NO DATA

- c. Inhalation : NO DATA
 - 1-2. Skin corrosion/irritation : NO DATA
 - 1-3. Serious eye damage/irritation : NO DATA
 - 1-4. Respiratory sensitization : NO DATA
 - 1-5. Skin sensitization : NO DATA
 - 1-6. Carcinogenicity
 - 6-1. IARC : NO DATA
 - 6-2. OSHA : NO DATA
 - 6-3. ACGIH : A4
 - 6-4. NTP : NO DATA
 - 6-5. EU CLP : NO DATA
 - 1-7. Germ cell mutagenicity : NO DATA
 - 1-8. Reproductive toxicity : NO DATA
 - 1-9. STOT-single exposure : NO DATA
 - 1-10. STOT-repeated exposure : NO DATA
 - 1-11. Aspiration hazard : NO DATA
- 2) Naphtha (petroleum), hydrotreated heavy
- 2-1. Acute toxicity
 - a. Oral : LD50 > 15000 mg/kg Rat
 - b. Dermal : LD50 > 3160 mg/kg Rabbit
 - c. Inhalation : LD50 > 3160 mg/kg Rabbit
 - 2-2. Skin corrosion/irritation : non-irritating(rabbit)
 - 2-3. Serious eye damage/irritation : Non-irritating(rabbit)
 - 2-4. Respiratory sensitization : NO DATA
 - 2-5. Skin sensitization : NO DATA
 - 2-6. Carcinogenicity
 - 6-1. IARC : NO DATA
 - 6-2. OSHA : NO DATA
 - 6-3. ACGIH : NO DATA
 - 6-4. NTP : NO DATA
 - 6-5. EU CLP : Carc. 1B
 - 2-7. Germ cell mutagenicity : in vitro, in vivo Mutagenic test result Negative
 - 2-8. Reproductive toxicity : in vitro, in vivo Mutagenic test result Negative
 - 2-9. STOT-single exposure : NO DATA
 - 2-10. STOT-repeated exposure : NO DATA
 - 2-11. Aspiration hazard : If swallowed, aspiration into the lungs with liquid may cause chemical pneumonitis.
- 3) Rutile(TiO₂)
- 3-1. Acute toxicity
 - a. Oral : LD50 > 24000 mg/kg Rat
 - b. Dermal : NO DATA
 - c. Inhalation : NO DATA
 - 3-2. Skin corrosion/irritation : NO DATA
 - 3-3. Serious eye damage/irritation : NO DATA
 - 3-4. Respiratory sensitization : NO DATA
 - 3-5. Skin sensitization : NO DATA
 - 3-6. Carcinogenicity
 - 6-1. IARC : NO DATA
 - 6-2. OSHA : NO DATA
 - 6-3. ACGIH : NO DATA
 - 6-4. NTP : NO DATA
 - 6-5. EU CLP : NO DATA
 - 3-7. Germ cell mutagenicity : NO DATA

- 3-8. Reproductive toxicity : NO DATA
- 3-9. STOT-single exposure : NO DATA
- 3-10. STOT-repeated exposure : This risk may be increased by exposure to a case : Respiratory disorders
- 3-11. Aspiration hazard : NO DATA
- 4) Solvent naphtha (petroleum), light arom.
 - 4-1. Acute toxicity
 - a. Oral : LD50 = 8400 mg/kg Rat
 - b. Dermal : LD50 > 2000 mg/kg Rabbit
 - c. Inhalation : LD50 > 2000 mg/kg Rabbit
 - 4-2. Skin corrosion/irritation : weakstimulus(rabbit)
 - 4-3. Serious eye damage/irritation : Mild irritant(rabbit)
 - 4-4. Respiratory sensitization : NO DATA
 - 4-5. Skin sensitization : Non-sensitizer (Guinea pig)
 - 4-6. Carcinogenicity
 - 6-1. IARC : NO DATA
 - 6-2. OSHA : NO DATA
 - 6-3. ACGIH : NO DATA
 - 6-4. NTP : NO DATA
 - 6-5. EU CLP : Carc. 1B
 - 4-7. 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)
 - 4-8. 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)
 - 4-9. STOT-single exposure : Affecting the central nervous system. Inhalation of high concentrations vapors may cause loss of consciousness.
 - 4-10. STOT-repeated exposure : NO DATA
 - 4-11. Aspiration hazard : Harmful aspiration concerns

12. Ecological information

A. Ecotoxicity

- 1) Kaolin
 - 1-1. Fish : NO DATA
 - 1-2. Crustaceans : NO DATA
 - 1-3. Algae : NO DATA
- 2) Naphtha (petroleum), hydrotreated heavy
 - 2-1. Fish : LC50 = 2200 mg/ℓ 96 hr *Pimephales promelas*
 - 2-2. Crustaceans : LC50 = 2.6 mg/ℓ 96 hr (Species: *Chaetogammarus marinus*)
 - 2-3. Algae : NO DATA
- 3) Rutile(TiO₂)
 - 3-1. Fish : LC50 = 35.988 mg/ℓ 96 hr
 - 3-2. Crustaceans : LC50 = 39.180 mg/ℓ 48 hr
 - 3-3. Algae : EC50 = 24.821 mg/ℓ 96 hr
- 4) Solvent naphtha (petroleum), light arom.
 - 4-1. Fish : LC50 = 9.22 mg/ℓ 96 hr *Oncorhynchus mykiss*
 - 4-2. Crustaceans : EC50 = 6.14 mg/ℓ 48 hr *Daphnia magna*
 - 4-3. Algae : EC50 = 19 mg/ℓ 72 hr *Selenastrum capricornutum*

B. Persistence and degradability

- 1) Kaolin
 - 1-1. Persistence : NO DATA
 - 1-2. Degradability : NO DATA
- 2) Naphtha (petroleum), hydrotreated heavy
 - 2-1. Persistence : log Kow = 2.1 ~ 6 (Estimates)

- 2-2. Degradability : NO DATA
 - 3) Rutile(TiO₂)
 - 3-1. Persistence : NO DATA
 - 3-2. Degradability : NO DATA
 - 4) Solvent naphtha (petroleum), light arom.
 - 4-1. Persistence : log Kow = 2.1 ~ 6 (Estimates)
 - 4-2. Degradability : BOD₅/COD = 0.43
- C. Bioaccumulative potential
- 1) Kaolin
 - 1-1. Bioaccumulative potential : NO DATA
 - 1-2. Biodegradation : NO DATA
 - 2) Naphtha (petroleum), hydrotreated heavy
 - 2-1. Bioaccumulative potential : NO DATA
 - 2-2. Biodegradation : Biodegradability = 10 (%) 28 day (Aerobic, Activated Sludge, Domestic wastewater, Does not decompose easily)
 - 3) Rutile(TiO₂)
 - 3-1. Bioaccumulative potential : BCF = 10.38
 - 3-2. Biodegradation : NO DATA
 - 4) Solvent naphtha (petroleum), light arom.
 - 4-1. Bioaccumulative potential : NO DATA
 - 4-2. Biodegradation : NO DATA
- D. Mobility in soil
- 1) Kaolin
 - ▷ NO DATA
 - 2) Naphtha (petroleum), hydrotreated heavy
 - ▷ NO DATA
 - 3) Rutile(TiO₂)
 - ▷ NO DATA
 - 4) Solvent naphtha (petroleum), light arom.
 - ▷ NO DATA
- E. Other adverse effects
- 1) Kaolin
 - ▷ NO DATA
 - 2) Naphtha (petroleum), hydrotreated heavy
 - ▷ NO DATA
 - 3) Rutile(TiO₂)
 - ▷ NO DATA
 - 4) Solvent naphtha (petroleum), light arom.
 - ▷ NO DATA

13. Disposal considerations

- A. Disposal methods : Spilled material should keep in the airtight container, and consign according to Waste Material 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, stain, shellac solutions, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)
C.Hazard class : 3
D.Packing group : III
E.Marine pollutant : N/A
F.Special precautions for user related to transport or transportation measures
1) EmS FIRE SCHEDULE : F-E
2) EmS SPILLAGE SCHEDULE : S-E

15. Regulatory information

1)Kaolin

1-1. Information of EU Classification

- ▷ Classification : NO DATA
- ▷ Risk Phrases : NO DATA
- ▷ Safety Phrase : NO DATA

1-2. 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

1-3. Rotterdam Convention listed ingredients : NO DATA

1-4. Stockholm Convention listed ingredients : NO DATA

1-5. Montreal Protocol listed ingredients : NO DATA

2)Naphtha (petroleum), hydrotreated heavy

2-1. Information of EU Classification

- ▷ Classification : NO DATA
- ▷ Risk Phrases : NO DATA
- ▷ Safety Phrase : NO DATA

2-2. 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

2-3. Rotterdam Convention listed ingredients : NO DATA

2-4. Stockholm Convention listed ingredients : NO DATA

2-5. Montreal Protocol listed ingredients : NO DATA

3)Rutile(TiO2)

3-1. Information of EU Classification

- ▷ Classification : NO DATA
- ▷ Risk Phrases : NO DATA
- ▷ Safety Phrase : NO DATA

3-2. 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
- 3-3. Rotterdam Convention listed ingredients : NO DATA
- 3-4. Stockholm Convention listed ingredients : NO DATA
- 3-5. Montreal Protocol listed ingredients : NO DATA
- 4)Solvent naphtha (petroleum), light arom.
 - 4-1. Information of EU Classification
 - ▷ Classification : NO DATA
 - ▷ Risk Phrases : NO DATA
 - ▷ Safety Phrase : NO DATA
 - 4-2. 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
 - 4-3. Rotterdam Convention listed ingredients : NO DATA
 - 4-4. Stockholm Convention listed ingredients : NO DATA
 - 4-5. Montreal Protocol listed ingredients : NO DATA

16.Other information

A.Reference : Occupational Health and Safety Act

Korea Industrial Safety Corporation Preparation of Material Safety Data Sheet

KOSHA CODE W-05-2007 【The guideline for MSDS , 2012.】

B.Issue date : 2016-05-20 오전 10:52:46

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