



Akzonobel Industrial Coatings Korea

MATERIAL SAFETY DATA SHEET

POLY HARD PM(TX-F)

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1. IDENTIFICATION

A. Product name

- POLY HARD PM(TX-F) [KF900010083]

B. Recommended use and restriction on use

- General use : Hardener
 - Restriction on use : Do not use for other purposes

C. Manufacturer / Supplier / Distributor information

○ Manufacturer information

- Company name : Akzonobel Industrial Coatings Korea Ltd.
 - Address : 60, Bonsan 1-ro 56beon-gil, Jinyeong-eup, Gimhae-si, Gyeongsangnam-do, Korea
 - Dept. :
 - Telephone number :
 - Emergency telephone number : (82) 55-720-0200
 - Fax number :
 - E-mail address :

○ Supplier/Distributor information

- Company name : Akzonobel Industrial Coatings Korea Ltd.
 - Address : 11, Byeolmang-ro 459beon-gil, Danwon-gu, Ansan-si, Gyeonggi-do, Korea
 - Dept. :
 - Telephone number :
 - Emergency telephone number : (82) 31-490-4200
 - Fax number :
 - E-mail address :

2. HAZARD IDENTIFICATION

A. GHS Classification

- Carcinogenicity : Category1B
 - Flammable liquids : Category3
 - Specific target organ toxicity(Single exposure) : Category1
 - Specific target organ toxicity(Single exposure) : Category3(Narcotic effects)
 - Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)

B. GHS label elements

○ Hazard symbols



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○ **Signal words**

- Danger

○ **Hazard statements**

- H226 Flammable liquid and vapour
- H335 May cause respiratory irritation.
- H336 May cause drowsiness and dizziness.
- H350 May cause cancer
- H370 Causes damage to organs(Refer Section SDS 11)

○ **Precautionary statements**

1) 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/lighting/equipment.
- P242 Use only non-sparking tools. Flammable liquids (chapter 2.6) 1, 2, 3
- P243 Take precautionary measures against static discharge.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required.

2) Response

- P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P307+P311 If exposed: Call a POISON CENTER or doctor/physician.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P321 Specific treatment
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

3) Storage

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P403+P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

4) 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)

○ **NFPA grade (0 ~ 4 level)**

- Health : 0, Flammability : 2, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol polymer with 1,3-diisocyanatomethylbenzene and 2,2'-oxybis[ethanol]	-	53317-61-6	40 ~ 50
Acetic acid ethyl ester	Ethyl acetate	141-78-6	30 ~ 40
n-Butyl acetate	Acetic acid, butyl ester	123-86-4	20 ~ 30
Secret	Secret	-	0 ~ 1



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4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Laundering enough contaminated clothing before reuse.
- Get medical attention immediately.
- Remove contaminated clothing, shoes and isolate.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- About whether I should induce vomiting Take the advice of a doctor.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- The extremely low flash point made by fire-fighters may be less effective at digesting weeks.

6. ACCIDENTAL RELEASE MEASURES



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A. Personal precautions, protective equipment and emergency procedures

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Remove all sources of ignition.
- Do not direct water at spill or source of leak.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.
- Do not use plastic containers.
- Spilled material should be treated as a potential risk of waste collected.

7. HANDLING AND STORAGE**A. Precautions for safe handling**

- Refer to Engineering controls and personal protective equipment.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- Operators should wear antistatic footwear and clothing.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Save in cool, dry and well ventilated place.
- Do not use damaged containers.
- Do not apply direct heat.
- No open fire.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**A. Exposure limits**

- o ACGIH TLV
 - [Acetic acid ethyl ester] : TWA, 400 ppm (1440 mg/m³)
 - [n-Butyl acetate] : TWA, 150 ppm (713 mg/m³), STEL, 200 ppm (950 mg/m³)

B. Engineering controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. The use of local exhaust ventilation is recommended to control emissions near the source.



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C. Personal protective equipment

○ Respiratory protection

- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.

○ Eye protection

- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.

○ Hand protection

- Wear appropriate chemical resistant glove.

○ Skin protection

- Wear appropriate chemical resistant protective clothing.

○ Others

- Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid(Viscous liquid)
- Color	clear
B. Odor	Not available
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	23 °C ~ 70 °C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	Not available
N. Specific gravity	1.039±0.03
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	Not available

10. STABILITY AND REACTIVITY

A. Chemical stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.



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C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION**A. Information on the likely routes of exposure**

- **(Respiratory tracts)**
 - May cause respiratory irritation.
- **(Oral)**
 - Not available
- **(Eye/Skin)**
 - Not available

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- **Acute toxicity**
 - * **Oral**
 - [Acetic acid ethyl ester] : LD50 5620 mg/kg Rat
 - [n-Butyl acetate] : LD50 = 14130 mg/kg Rat
 - [Secret] : LD50 4130 mg/kg Rat
 - * **Dermal**
 - [Acetic acid ethyl ester] : LD50 > 18000 mg/kg Rabbit
 - [n-Butyl acetate] : LD50 = 17600 mg/kg Rabbit
 - [Secret] : LD50 > 10 mg/kg Rabbit
 - * **Inhalation**
 - [Acetic acid ethyl ester] : Steam LC50 100 mg/ℓ 4 hr Rat (LC50 = 200 mg/L/1hr conversion $\frac{1}{2.4}$)
 - [n-Butyl acetate] : Steam LC50 = 0.74 mg/L/4hr Rat (GLP)
 - [Secret] : Mist LC50 98.96 mg/ℓ 4 hr Rat
- **Skin corrosion/irritation**
 - Not available
- **Serious eye damage/irritation**
 - Not available
- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - [Secret] : Group 2B
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - Not available
 - * **NTP**
 - [Secret] : R
 - * **EU CLP**
 - Not available



- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - Causes damage to organs(Refer Section SDS 11)
 - May cause drowsiness and dizziness.
 - May cause respiratory irritation.
- **STOT-repeated exposure**
 - Not available
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [Acetic acid ethyl ester] : LC50 230 mg/l 96 hr Pimephales promelas
 - [n-Butyl acetate] : LC50 = 62 mg/l 96 hr
 - [Secret] : LC50 133 mg/l 96 hr Oncorhynchus mykiss
- **Crustaceans**
 - [Acetic acid ethyl ester] : EC50 717 mg/l 48 hr Daphnia magna
 - [n-Butyl acetate] : LC50 = 32 mg/l 48 hr
 - [Secret] : EC50 12.5 mg/l 48 hr Daphnia magna
- **Algae**
 - [Acetic acid ethyl ester] : EC50 1800 ~ 3200 mg/l 72 hr (Selenastrum sp.)
 - [Secret] : EC50 3230 mg/l 96 hr Skeletonema costatum

B. Persistence and degradability

- **Persistence**
 - [Acetic acid ethyl ester] : log Kow 0.73
 - [n-Butyl acetate] : log Kow = 1.78
 - [Secret] : log Kow 3.74 (Estimates)
- **Degradability**
 - [Acetic acid ethyl ester] : BOD5/COD 0.81

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [Acetic acid ethyl ester] : BCF 30
 - [Secret] : BCF < 5 (25 °C, Cyprinus carpio(Fish, fresh water), 0.3mg/l)
- **Biodegradation**
 - [Acetic acid ethyl ester] : 100 (%) 28 day
 - [n-Butyl acetate] : Biodegradability = 98 (%)
 - [Secret] : 0 (%) 28 day (Aerobic, Activated Sludge)

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods



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- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.
- High temperature incinerate
- After taking off organic solvents that are supposed to be recycled, incinerate the rest of them at a high degree.

B. Special precautions for disposal

- The user of this product must dispose by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

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

C. Hazard class

- 3

D. Packing group

- III

E. Marine pollutant

- Not available
- Not applicable

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

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-E (Flammable liquids, floating on water)

15. REGULATORY INFORMATION

A. National and/or international regulatory information

- POPs Management Law
 - Not applicable
- Information of EU Classification
 - * Classification
 - [Acetic acid ethyl ester] : F; R11 Xi; R36 R66 R67
 - [n-Butyl acetate] : R10 R66 R67
 - [Secret] : Carc. Cat. 3; R40/T+; R26/Xi; R36/37/38/R42/43/R52-53
 - * Risk Phrases
 - [Acetic acid ethyl ester] : R11, R36, R66, R67
 - [n-Butyl acetate] : R10, R66, R67
 - [Secret] : R26, R36/37/38, R40, R42/43, R52/53
 - * Safety Phrase
 - [Acetic acid ethyl ester] : S2, S16, S26, S33
 - [n-Butyl acetate] : S2, S25
 - [Secret] : S1/2, S23, S36/37, S45, S61
- U.S. Federal regulations



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*** OSHA PROCESS SAFETY (29CFR1910.119)**

- Not applicable

*** CERCLA Section 103 (40CFR302.4)**

- [Acetic acid ethyl ester] : 2267.995 kg 5000 lb

- [n-Butyl acetate] : 2267.995 kg 5000 lb

- [Secret] : 45.3599 kg 100 lb

*** EPCRA Section 302 (40CFR355.30)**

- Not applicable

*** EPCRA Section 304 (40CFR355.40)**

- Not applicable

*** EPCRA Section 313 (40CFR372.65)**

- [Secret] : Applicable

○ **Rotterdam Convention listed ingredients**

- Not applicable

○ **Stockholm Convention listed ingredients**

- Not applicable

○ **Montreal Protocol listed ingredients**

- Not applicable

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

- 2015-01-20

C. Revision number and Last date revised

- 1 times, 2015-01-20

D. Other

- This MSDS is prepared according to the Globally Harmonized System (GHS).



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