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TCIR-ZR8690 PB

1. PRODUCT & COMPANY IDENTIFICATION

PRODUCT NAME: TCIR-ZR8690 PB

CREATION DATE: May 15, 2003 REVISION DATE: April 9, 2014 MSDS PREPARED BY: Safety & Environment Control Section, TOK JAPAN SUPPLIER: TOKYO OHKA KOGYO CO., LTD. SECTION: Safety & Environment Control Section ADDRESS: 150 Nakamaruko, Nakahara-ku, Kawasaki City, Kanagawa Prefecture 211-0012, JAPAN TELEPHONE NUMBER: +81-44-435-3000 FAX NUMBER: +81-44-435-3020 EMERGENCY RESPONSE: +81-44-435-3001 +81-44-435-3002

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2. COMPOSITION & INFORMATION ON INGREDIENTS

SIMPLE/MIXTURE: Mixture CHEMICAL NAME (GENERIC NAME): None SYNONYM (S): None INGREDIENT AND COMPOSITION:

INGREDIENTS	wt%	CHEMICAL FORMULA CAS NO.		EINECS NO.			
Propylene glycol monomethyl ether acetate	60~35	CH ₃ CH(OCOCH ₃)CH ₂ OCH ₃	108-65-6	203-603-9			
n-Butyl acetate	25~15	CH ₃ COO(CH ₂) ₃ CH ₃	123-86-4	204-658-1			
Cresol	5~1	(C ₆ H ₄)(OH)CH ₃	1319-77-3	215-293-2			
Gamma-Butyrolactone	<5	C ₄ H ₆ O ₂	96-48-0	202-509-5			
Novolak type resin	45~20						
Photoacid generator	<1						



3. HAZARDS IDENTIFICATION

Skin contact causes irritation. Prolonged skin contact may cause cracking or other damages on skin (such as dermatitis).

Eye contact causes irritation.

Inhalation causes irritation of the nose or the respiratory tract, and may cause headache, nausea, vomit, dizziness, or unconsciousness. It may also decrease the central nervous system function.

4. FIRST-AID MEASURES

SKIN CONTACT:

Wash the affected part with plenty of running water and mild soap.

If irritation continues, immediately take the patient to a physician for examination and treatment. EYE CONTACT:

Immediately rinse the eyes with running water to wash off the chemical completely. Immediately take the patient to a physician for examination and treatment.

INHALATION:

Move the patient at once to fresh air.

Immediately take the patient to a physician for examination and treatment.

INGESTION:

Rinse the mouth with water.

Immediately take the patient to a physician for examination and treatment.

5. FIRE FIGHTING MEASURES

SPECIFIC HAZARD REGARDING FIRE FIGHTING MEASURES:

Shut off fuel as much as possible.

Dry chemical or carbon dioxide should be used for small fires.

Evacuate unnecessary personnel to safe area.

Fire fighters should wear proper protective clothings.

Foam should be effective for large fires.

When sprayed, water should be effective for cooling and protection of the fire fighters. However, use of water may expand the fire.

EXTINGUISHING MEASURES:

Dry sand, foam, carbon dioxide, or dry chemical powder extinguisher should be used.

6. ACCIDENTAL RELEASE DEALING MEASURES

Evacuate the leeward personnel.

Ventilate the area.

Quickly shut off all ignition sources.

Equip extinguishers in case of ignition.

Wear proper protective clothings.

When the leak is small, wipe it with cloths. Leave the cloth in the draft, and burn it off after solvent



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has evaporated.

When the leak is large, try to stop the flow with cloths, and collect the spilt solution in an empty container as much as possible.

Prevent spilt solution from entering sewers, watercourses, rivers, or fields.

7. HANDLING & STORAGE

HANDLING:

Be careful in handling the container, and protect it from damages.

Wear proper protective clothings.

Use only in the well-ventilated area.

Seal the container after handling.

Avoid contact with oxidizing agents or reductants.

Shut off all sources of ignition.

The electric facility should be explosion proof.

Ground.

When moving the solution through pipings, ground the metallic part of the apparatuses, pipings and containers to prevent generation of electrostatic charges.

Pay attention to ventilation. This vapor is heavier than air, and easily stays at low position.

Do not expose to UV light. Use under tungsten or yellow light.

Solution should not remain in pipings when it is not used.

Water facility should be installed at every place where the solution is used. It should facilitate measures in case of adhesion or contact with eyes.

Do not bring contaminated protective tools, such as gloves, to the lounge.

Be careful of personal health after handling.

STORAGE:

Keep the container sealed, and store in a cool and dark place.

Keep away all sources of ignition.

Do not heat.

Do not let it evaporate without a reason.

Store in well-ventilated area.

OTHERS:

Follow all national and local regulations.

8. EXPOSURE PREVENTIVES

TOLERANCE LEVEL:

INGREDIENTS	ACGIH TLV	OSHA PEL	
Propylene glycol monomethyl ether acetate	Not Applicable	Not Applicable	
n-Butyl acetate	TWA 150 ppm (713 mg/m ³) STEL 200 ppm (950 mg/m ³)	TWA 150 ppm (710 mg/m ³)	
Cresol	TWA 5 ppm (22 mg/m ³) (skin)	TWA 5 ppm (22 mg/m ³) (skin)	
Gamma-Butyrolactone	Not Applicable	Not Applicable	



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FACILITY CONTROL:

When handling, try to use closed apparatuses, equipment or partial ventilator.

PERSONAL PROTECTIVE CLOTHINGS:

RESPIRATORY PROTECTOR: Chemical cartridge respirator with cartridge to protect against the organic vapor.

Airline respirator.

EYE PROTECTOR: Chemical goggles.

HAND, SKIN AND BODY PROTECTOR: Gloves and clothing to cover the whole body.

9. PHYSICAL & CHEMICAL PROPERTY

APPEARANCE: Red liquid SPECIFIC GRAVITY: 1.00~1.06 (d25@4) BOILING POINT: Not Available SOLIDIFYING POINT: Not Available RELATIVE VAPOR DENSITY: Not Available SOLUBILITY IN WATER: Insoluble

10. PHYSICAL HAZARD

MATERIAL	FLASH POINT	IGNITION POINT	EXPLOSION LIMIT
Product	39°C	Not Available	Not Available
Propylene glycol monomethyl ether acetate	47 °C	344 °C	1.5~7.0 vol%
n-Butyl acetate	24 °C	425 ℃	1.7~15.0 vol%
Cresol	81 °C	Not Available	1.35 vol% (lower limit)
Gamma-Butyrolactone	98 °C	455 <i>°</i> C	2.2~15.0 vol%

STABILITY: Reactive to UV light. Use under tungsten or yellow light. REACTIVITY: Emit carbon monoxide when burned with insufficient oxygen.

11. TOXICOLOGICAL INFORMATION (Only data for each component is available.)

Propylene glycol monomethyl ether acetate

ACUTE TOXICITY:

Oral LD50 (rat): 8532 mg/kg Inhalation LC50 (rat): >4350 ppm

Intraperitoneal LD50 (mouse): 750 mg/kg

Skin LD50 (rabbit): >5000 mg/kg

SUBCHRONIC TOXICITY AND CHRONIC TOXICITY:

Inhalation of 300 ppm/6 hours/day caused no effects on rats. Exposure to 1000 ppm effected kidney, and male rat exposed to 3000 ppm showed increase of the liver weight and effected kidney.

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MATERIAL SAFETY DATA SHEET

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Inhalation of concentrated mist or vapor caused headache, vomiting, and coma.

MUTAGENIC EFFECT:

Chromosome aberration test (mammalia) is negative.

CARCINOGENIC EFFECT:

No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH.

TERATOGENIC EFFECT:

Inhalation of 500 or 1500 ppm on rats on days 6-15 of gestation caused no effects.

Exposure to 3000 ppm showed fetotoxicity.

Inhalation of 110 ppm on rats on days 6-15 of gestation caused no effects. Exposure to 560 ppm showed maternal toxicity, and to 2800 ppm showed maternal toxicity, increase of slight spinal malformation, and fetotoxicity.

n-Butyl acetate

ACUTE TOXICITY:

Oral LD50 (rat): 10768 mg/kg

Oral LD50 (mouse): 6000 mg/kg

Inhalation LC50 (rat): 2000 ppm/4 hours

Inhalation LC50 (mouse): 6000 mg/m³/2 hours

Intraperitoneal LD50 (mouse): 1230 mg/kg

Intraperitoneal LDLo (guinea pig): 1500 mg/kg

Skin LD50 (rabbit): >17600 mg/kg

SUBCHRONIC TOXICITY AND CHRONIC TOXICITYY:

Sub-acute intoxication of rats (route unspecified) with 0.8-1.6 g/kg/day for 1 month caused glomerulonephritis.

Administration of 0.5 mg/kg for 6 mouths caused no change in organs.

MUTAGENIC EFFECT:

The mutation test was performed in the absence and presence of rat microsomal activation. No mutagenic activity was observed with n-butyl acetate.

CARCINOGENIC EFFECT:

No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH.

TERATOGENIC EFFECT:

Pregnant rats and rabbits were made to inhale 1500 ppm an average. The fetotoxicity of rats are evidenced by delayed growth and slight rib malformation. However, these responses are not enough to conclude its teratogenicity.

<u>Cresol</u>

ACUTE TOXICITY:

Oral LD50 (rat): 1450 mg/kg

Oral LD50 (mouse): 760 mg/kg

Dermal LD50 (rabbit): 2000 mg/kg

SUBCHRONIC TOXICITY AND CHRONIC TOXICITY:

No relevant information found.

MUTAGENIC EFFECT:

No relevant information found.

CARCINOGENIC EFFECT:

No carcinogenic effects were noted in OSHA, EPA, EU, NTP, IARC, and ACGIH.



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TERATOGENIC EFFECT:

No relevant information found. Gamma-Butyrolactone ACUTE TOXICITY: Oral LD50 (rat): 1540 mg/kg Oral LD50 (mouse): 1720 mg/kg Intraperitoneal LD50 (rat): 1000 mg/kg Intraperitoneal LD50 (mouse): 1100 mg/kg Skin LD50 (guinea pig): >5000 mg/kg Intravenous LDLo (rabbit): 500 mg/kg SUBCHRONIC TOXICITY AND CHRONIC TOXICITYY:

No relevant information found.

MUTAGENIC EFFECT:

Bacillus subtilis H17, M45 with metabolic activation positive.

No chromosome damage in rat liver RL₁ cell line.

CARCINOGENIC EFFECT:

IARC - Group 3; Unclassifiable as to carcinogenicity in humans.

No carcinogenic effects were noted in OSHA, EPA, EU, NTP, and ACGIH.

TERATOGENIC EFFECT:

Gavage Sprague-Dawley rats (days 6-15 gestation) 0, 10, 50, 125, 250 or 500 mg/kg. Necropsy showed lung oedema, hyperaemia and emphysema. Foetal weights significantly increased in high dosage groups.

12. ECOLOGICAL INFORMATION (Only data for each component is available.)

Propylene glycol monomethyl ether acetate

BIODEGRADABILITY: Biodegradable.

FISH TOXICITY:

Fatal to brown trout after 21 hours and to yellow perch after 24 hours at 5 ppm. Not toxic to bluegill sunfish or goldfish after 24 hours at 5 ppm. Test condition; pH 7, dissolved oxygen content 7.5 ppm, total hardness (soap method) 300 ppm, methyl orange alkalinity 310 ppm, free carbon dioxide 5 ppm and temperature 12.8 °C.

OTHER INFORMATION ON ECOTOXICITY

Octanol/Water Partition Coefficient: No relevant information found.

BOD: No relevant information found.

COD: No relevant information found.

n-Butyl acetate

BIODEGRADABILITY: Direct: 87%

Indirect: 38%

(butyl acetate 284 mg/l, activated sludge 30 mg/l, in coulometer for 120 hours)

FISH TOXICITY:

LC50 (96 hours, fathead minnow): 18 mg/l

LC50 (96 hours, bluegill sunfish): 100 ppm



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OTHER INFORMATION ON ECOTOXICITY Octanol/Water Partition Coefficient: 1.82 BOD: BOD₅ 23.5%, BOD₂₀ 57.4% (settled sewage seed) COD: COD_{Mn} 110 mg/g, COD_{Cr} 1880 mg/g Cresol BIODEGRADABILITY: Biodegradable. FISH TOXICITY: No relevant information found. OTHER INFORMATION ON ECOTOXICITY Octanol/Water Partition Coefficient: 1.94~1.96 BOD: No relevant information found. COD: No relevant information found. Gamma-Butyrolactone BIODEGRADABILITY: Biodegradable. FISH TOXICITY: Listed as negative in tests on trout, bluegill sunfish and goldfish. However the authors state that the high mineral content of the water used in the studies adds an additional source of error. Therefore the compound listed as negative might be toxic in softer water supplies. OTHER INFORMATION ON ECOTOXICITY: Octanol/Water Partition Coefficient: 0.64 BOD: No relevant information found. COD: No relevant information found.

13. DISPOSAL CONSIDERATION

All excess material must be collected and transferred to a professional waste disposal company for incineration.

Carefully review information in - 7.HANDLING & STORAGE.

Comply with all national and local regulations.

14. TRANSPORT INFORMATION

UN CLASS: 3 (Flammable Liquids) UN NUMBER: 1866 HAZCHEM CODE: Not Applicable ADR/RID (GGVS/GGVE): 31°(c) IATA/ICAO: Class 3 packing group III

Keep away from incompatibilities and all sources of ignition. Follow all national and local regulations.

15. REGULATION INFORMATION

NATIONAL REGULATION UN CLASS: 3 (Flammable Liquids)



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UN NUMBER: 1866 LABELLING IN ACCORDANCE WITH EC GUIDELINES HAZARD SYMBOL: Xn



HAZARD CLASSIFICATION: R10

Xn; R21/22 Xi; R36/38 Xi:R43 R67

REGULATION IN ACCORDANCE WITH EC GUIDELINES

R-REGULATIONS: R10 - Flammable.

R21/22 - Harmful in contact with skin and if swallowed.

R36/38 - Irritating to eyes and skin.

R43 - May cause sensitization by skin contact.

R67 - Vapours may cause drowsiness and dizziness.

S-REGULATIONS: S25 - Avoid contact with eyes.

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

Follow all your national regulations.

16. OTHER INFORMATION

Reference:

- 1. HSDB
- 2. RTECS
- 3. The Dictionary of Substance and Their Effects (The Royal Society of Chemistry)

4. Material Safety Data Sheet (of the raw material manufacturer)

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.