



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER : FUJIFILM Arch CO., Ltd.
 15TH ARAI BLDG. 19-20, JINGUHMAE 6-CHOME,
 SHIBUYA-KU, TOKYO, 150-0001 JAPAN
 TEL 81-3-3406-6911 FAX 81-3-3498-0567

EMERGENCY CALL : **81-548-32-7005**
FUJIFILM Arch Co., LTD. Shizuoka Factory

Revision No. : -
 Issued Date : September 19, 2001
 MSDS No. : GPR-606E

Product Name : **FH-6400L 32mPa·s**

Chemical Family : Organic Mixture
 Formula : Not Applicable/Mixture
 Use Description : Positive Photo resist

2. COMPONENT DATA

| Chemical Name | Ethyl lactate (EL) | Ethyl-3-ethoxy Propionate (EEP) | Novolac resin | Naphthoquinone diazide ester derivative |
|--------------------------------|-----------------------|---------------------------------------|------------------|---|
| CAS Number | 97-64-3 | 763-69-9 | Proprietary | Proprietary |
| Content Range | 50-70% | 10-30% | 10-30% | 2.0-9.0% |
| Hazardous Per 29 CFR 1910.1200 | Yes | Yes | Yes | Yes |

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW : Flammable liquid. This material has not been fully investigated.

Avoid inhaling vapor. Avoid contact with skin and eyes.

POTENTIAL HEALTH EFFECTS :

Inhalation : High vapor concentration may cause headache, drowsiness, dizziness, nausea, cough and irritation. Solvent can cause irritation.

Eye contact : May cause irritation.

Skin contact : Prolonged or repeated contact may cause drying, cracking or irritation.

Ingestion : Solvent is harmful if swallowed.

Chronic : No known effects.

OSHA Hazard Classification : Flammable Liquid;
Skin, eye and respiratory tract irritant.

4. FIRST AID

1. **EYES** : Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation develops, call a physician at once.

2. **SKIN** : Immediately flush with water for at least 15 minutes. If the irritation develops, call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before reuse.

3. **INGESTION** :

Immediately drink large quantities of water to dilute. Do not induce vomiting. Call a physician at once. Do not give anything by mouth if the person is unconscious or if having convulsions.

4. **INHALATION** :

If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapors to lose consciousness, person should be moved to fresh air at once and a physician should be given immediately. If breathing has stopped, artificial respiration should be called immediately. In all cases ensure adequate ventilation and provide respiratory protection before the person returns to work.

5. FIRE AND EXPROSION HAZARD INFORMATION

1. Flammability data :

Flammable : Yes
Combustible : No
Pyrophoric : No
Flash point : 54Deg. C Test Method : Tag closed cup (EL)
59Deg. C Test Method : Tag closed cup (EEP)
Auto ignition temperature : No data
Flammable limits (vol% in air): LEL 1.05vol%, UEL 11.4vol% (EL)
LEL No data, UEL 1.05vol% (EEP)

2. Extinguishing media : Carbon dioxide, dry chemical, soda acid, regular form (alcohol resistant),
water spray

3. Fire fighting techniques : Use water to cool containers exposed to fire.

6. ACCIDENTAL RELEASE MEASURES

GENERAL : Eliminate all ignition sources. Consult an expert on the disposal of recovered material. Ensure disposal is in compliance with government requirements and ensure conformity of local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

LAND SPILL : Absorb it with commercially available absorbing materials.

7. HANDLING AND STORAGE

Do not take internally. Do not inhale mist or vapor. Avoid contact with skin, eyes, and clothing.

Upon contact with skin or eyes, wash off with water.

Storage conditions : Store in cool, preferably below 10 Deg. C (50 Deg. F) above 5 Deg. C (41 Deg. F), dry, well ventilated place, away from all source of ignition. Outside or detached storage is preferable. Inside storage should be in standard flammable liquids storage room or cabinet. There is a possibility for the glass bottle of the resist to be broken under long time storage because of a rise of inner pressure caused by decomposition of components. The viscosity of this product may go to up under long time storage.

Do not expose to direct light.

Do not subject to mechanical shock.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS (VENTILATION) : Use local ventilation at places where vapor can be released into the workplace air. Keep vapor concentrations below the recommended TLV.

ACGIH TLV for EL : Not established

OSHA PEL for EL : Not established

ACGIH TLV for EEP : Not established

OSHA PEL for EEP : Not established

PERSONAL PROTECTION

RESPIRATORY : Not required for occasional handling if adequate ventilation is available.
A respirator is recommended for prolonged handling or exposure.

PROTECTIVE GLOVES : Wear chemical resistant gloves.

EYE PROTECTION : Wear safety goggles or equivalent eye protection.

OTHER : Wear appropriate protective clothing to prevent skin contact.

WORK/HYGIENIC PRACTICES : Always clean protective equipment and workplace.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------------------------|---------------------------|---------------------|------------------------|
| Appearance | : Clear, red brown liquid | Odor | : Fruity ester odor |
| Freezing point | : No data | Solubility in water | : Slightly |
| Boiling point | : No data | Evaporation rate | : 0.2-2.9 |
| Decomposition temperature | : Above 50 Deg. C | | (Butyl Acetate=1) |
| Specific gravity | : Approximately 1 | Vapor density | : 3.5-4.0(Air=1) |
| Vapor pressure at 20 Deg. C | : 1.5-2.0mmHg | Molecular weight | : |
| Coefficient of oil/water distribution | : No data | | Not Applicable/Mixture |

10. STABILITY AND REACTIVITY

Stability : Stable in cool and dry area. Stable in intercepting light area.

Hazardous polymerization : Will not occur.

Conditions to avoid : Exposure to the light.

Incompatibility : Oxidizing materials.

Hazardous decomposition products : See section 5.

11. TOXICOLOGICAL INFORMATION

1. Routes of absorption

Inhalation, ingestion, skin and eye contact.

2. Warning statement and warning properties

May cause skin, eye and respiratory irritation may be harmful.

If inhaled or ingested, do not take internally.

3. Human threshold response data

Odor threshold : No data

Irritation threshold : The irritation threshold has not been established for this product.

Immediately dangerous life or health : The IDLH concentration has not been established for this product.

4. Signs, Symptoms and Effects of exposure

Inhalation

Acute :

High vapor concentrations are irritating to the eyes and the respiratory tract and may cause headaches, dizziness, anesthesia and other effects of central nervous system depression.

Any irritation would be transient with no permanent damage expected.

Chronic :

No other effect would be expected except for those listed under acute inhalation exposure.

Skin

Acute :

Skin contact may cause irritation consisting of transient redness. This effect will not result in permanent damage.

Chronic :

No other effects expected except those listed under acute exposure. Prolonged exposure may result in drying and flaking of the skin due to its defeating properties.

Eye

Contact with the eyes would cause stinging and pain and irritation consisting of reversible redness, swelling and mucous discharge to the conjunctive.

5. Interactions with other chemicals which enhance toxicity

None known or reported.

6. Animal toxicology

Acute toxicology

There is no data available for this product. Individual constituents are as follows ;

EL :

Inhalation LC₅₀ : >5400mg/m³/4hrs
Dermal LD₅₀ : >2000mg/kg(rabbit)
Oral LD₅₀ : 2500mg/kg(mouse), 5000mg/kg(rabbit)
Irritation : Irritant to skin and eyes.

EEP :

Inhalation LC₅₀ : >1000ppm/6hrs(rat)
Dermal LD₅₀ : 10g/kg(rabbit)
Oral LD₅₀ : >3200mg/kg(rat)
Irritation : Irritant to skin and eyes.

Acute target organ toxicity

Irritation to skin and eyes. Central nervous system depression.

Chronic target organ toxicity

These are no known or reported effects from chronic exposure to this product.

Reproductive and developmental toxicity

This product is not known or reported to affect reproductive performance or fetal development.

Carcinogenicity

This product is not known or reported to be carcinogenic by any reference source including OSHA, IARC, NTP or EPA.

Mutagenicity

This product is not known or reported to be mutagenic.

Aquatic toxicity

There is no available data for this product.

12. ECOLOGICAL INFORMATION

1. Product : No data available.
2. Solvent(EL)
COD : 0.38g/g BOD : 1.02g/g

13. DISPOSAL CONSIDERATIONS

To be incinerated by adequate method. Dispose in accordance with federal, state and local regulations.

The owner of the materials responsible for proper waste disposal.

14. TRANSPORTATION INFORMATION

This material is regulated as a DOT hazardous material.

Land : Combustible liquids, N.O.S.(EL, EEP), 3, UN1993, PG

Water : Flammable liquids, N.O.S. (EL, EEP), 3.3, UN1993, PG

Air : See water above.

Hazard label/placard : Land-None ; Air/Water : Flammable liquid

Reportable quantity(per 49 CFR 172.101, Appendix) : Not applicable

15. REGULATORY INFORMATION

No additional information.

16. ADDITIONAL INFORMATION

REVISION SUMMARY : Newly prepared.

REFERENCES :

- (1) ACGIH; Threshold Limit Values and Biological Exposure Indices for 1995-1996(1995)
- (2) OSHA; Federal Register, 54(No.12), 2332-2983
- (3) IPCS; International Chemical Safety Cards(Japanese), The Chemical Daily Co., Ltd.
- (4) ECETOC; The toxicology of Glycol Ethers and its Relevance to Man, Technical Report No.64(1995)

The information is believed to be accurate and represents the best information currently available to us.

However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.