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## Safety Data Sheet

### 1. Product and Company Identification

Product name :Polyester resin FH-123

Name of supplier :SOLAR CO., LTD.

Address :1-7, Nunobiki-cho-2-chome, Chuo-ku, Kobe, Hyogo-Pref. 651-0097 JAPAN

Division :R & D DEPT.

Phone :+81-790-49-2366

FAX :+81-790-49-1588

Product code(SDS NO) :EN770560-3

### 2. Hazards Identification

GHS classification and label elements of the product

GHS classification

PHYSICAL HAZARDS

Flammable liquids : Category 3

HEALTH HAZARDS

Skin corrosion/irritation : Category 2

Eye damage /eye irritation : Category 2

Respiratory sensitization : Category 1

Germ cell mutagenicity : Category 2

Reproductive toxicity : Category 1B

Specific target organ toxicity-single exposure : Category 1

Specific target organ toxicity - single exposure; Respiratory tract irritation Category 3

Specific target organ toxicity-repeated exposure : Category 1

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment-acute toxicity : Category 2



Signal word : Danger

HAZARD STATEMENT

Flammable liquid and Vapor

Causes skin irritation.

Causes eye irritation

May cause allergy or asthma symptoms or breathing difficulties if inhaled

Suspected of causing genetic defects

May damage fertility or the unborn child

Causes damage to organs after single exposure.

May cause respiratory irritation

Causes damage to organs following repeated exposure.

Toxic to aquatic life

PRECAUTIONARY STATEMENT

Prevention

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Keep container tightly closed.

Use explosion-proof electrical/ventilating/lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe dust/fume/gas/mist/vapors/spray.

Wash contaminated parts thoroughly after handling.  
 Do not eat, drink or smoke when using this product.  
 Use only outdoors or in a well-ventilated area.  
 Avoid release to the environment.  
 Wear protective gloves/eye protection/face protection.  
 Use personal protective equipment as required.  
 In case of inadequate ventilation wear respiratory protection (as specified by the manufacturer/supplier or the competent authority.)

**Response**

Get medical advice/attention if you feel unwell.  
 Take off contaminated clothing and wash before reuse.  
 IF ON SKIN: Wash with plenty of soap and water.  
 IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.  
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 IF exposed or concerned: Get medical advice/attention.  
 If skin irritation occurs: Get medical advice/attention.  
 If eye irritation persists: Get medical advice/attention.  
 If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.  
 In case of fire: Use appropriate media other than water for extinction.

**Storage**

Store locked up.  
 Store in well-ventilated place. Keep container tightly closed.  
 Store in well-ventilated place. Keep cool .

**Disposal**

Dispose of contents/container in accordance with local/national regulation.

**3. Composition/Information on Ingredients**

Substance/Preparation :Preparation

Ingredient name	content(%)	CAS No.	PRTR law No, Japan
Unsaturated polyester resin	50 - 55	Non Public	-
Phthalic anhydride	<1.0	85-44-9	-
Styrene	45.0	100-42-5	1-240
Cobalt naphthenate	<1.0	61789-51-3	-
Silica	0.1 - 1	112945-52-5	-
Ethylene glycol	0.1 - 1	107-21-1	-

**4. First-Aid Measures****IF INHALED**

Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.

**IF ON SKIN**

Never use solvent or thinner.  
 Wash with plenty of soap and water.  
 If you observe unusual symptom, have irritation/pain and/or feel unwell, seek medical advice.

**IF IN EYES :**

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 If eye irritation persists: Get medical advice/attention.

**IF SWALLOWED**

Rinse mouth.  
Do NOT induce vomiting.  
Immediately call a POISON CENTER or doctor/physician.

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#### 5. Fire-Fighting Measures

##### Suitable extinguishing media

In case of fire, use water mist, foam, dry powder or CO2.

##### Specific fire-fighting measures

Use appointed fire extinguisher.  
Remove flammable matters quickly from nearby.  
Apply water from a safe distance to cool and protect surrounding area.

##### Special protective equipment and precautions for fire-fighters

Fire extinguishing work has to be done from windward.  
Wear proper protective equipment.

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#### 6. Accidental Release Measures

##### Personnel precautions, protective equipment and emergency procedures

Ventilate area after material pick up is complete.  
Wear proper protective equipment.  
Keep unauthorized personnel away.

##### Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

##### Methods and materials for neutralization, containment and cleaning up

Place in a covered container.  
Use non-sparking tools to collect absorbed material.

##### Preventive measures for secondary accident

Prepare extinguishers before catching fire.

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#### 7. Handling and Storage

##### Precautions for safe handling

###### Preventive measures

Use personal protective equipment as required.  
Take precautionary measures against static discharge.

##### Safety treatments

Used waste or spray-dust has to be dipped in water until disposition.

##### Safety Measures/Incompatibility

Handle in good ventilation.  
Do not handle until all safety precautions have been read and understood.

##### Conditions for safe storage, including any incompatibilities

###### Recommendation for storage

Keep container tightly closed.  
Protect from sunlight. Store in a well-ventilated place.

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#### 8. Exposure Control/Personal Protection

##### Control parameters e.g. occupational exposure limit values or biological limit values

##### Control value

(Styrene)  
Japan control value (2004) <= 20ppm

##### Adopted value

(Styrene)  
JSOH(1999) 20ppm; 85mg/m3 (dermal)  
(Cobalt naphthenate)  
JSOH(1992) 0.05mg-Co/m3  
(Phthalic anhydride)

JSOH(1998) (ceiling limit) 0.33ppm; 2mg/m<sup>3</sup>  
(Phthalic anhydride)  
ACGIH(1992) TWA: 1ppm (SEN)(URT, eye & skin irr)  
(Styrene)  
ACGIH(1996) TWA: 20ppm  
STEL: 40ppm (CNS impair; URT irr; periph neuropathy)  
(Ethylene glycol)  
ACGIH(1992) STEL: C 100mg/m<sup>3</sup>(H) (URT & eye irr)

Appropriate engineering controls

Do not use in areas without adequate ventilation.  
Exhaust/ventilator should be available.

Protective equipment

Respiratory protection

Wear respiratory protection.

Hand protection

Wear protective gloves.

Eye protection

Wear eye/face protection.

Skin and body protection

Wear protective gloves/clothing

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9. Physical and Chemical Properties

Physical properties

Appearance :viscous liquid  
Color :pale brown  
Flash point :31 (Styrene)  
Specific gravity :1.0 ~ 1.2(25 )

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10. Stability and Reactivity

Stability

Stable under normal storage/handling conditions.

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11. Toxicological Information

Symptoms related to the physical, chemical and toxicological characteristics

Acute toxicity

Oral toxicity component(s) data

(Styrene)

rat LD<sub>50</sub> 2,650 mg/kg (RTECS (2005))

(Ethylene glycol)

rat LD<sub>50</sub>=4000 mg/kg (CICAD 45 (2002))

(Cobalt naphthenate)

rat 3900 mg/kg (JPMA 5th ed.)

(Phthalic anhydride)

rat LD<sub>50</sub> =1530 mg/kg (evaluated by EPA\_JP vol.2 (2003))

Inhalation toxicity component(s) data

(Styrene)

vapor : rat LC<sub>50</sub> = 2770 ppm/4hr (cal.)

Labor standard law, Japan; Toxic

Styrene; Phthalic anhydride; Cobalt naphthenate

Irritant properties

Skin corrosion/Irritation component(s) data

(Styrene)

rabbit 500 mg open ; MILD

(Ethylene glycol)

rabbit 555 mg open ; MILD  
 (Phthalic anhydride)  
 rabbit 500 mg/24H ; MILD  
 Serious eye damage /irritation  
 Eye damage/irritation component(s) data  
 (Ethylene glycol)  
 rabbit 500 mg/24H ; MILD rabbit 100 mg/1H ; MILD rabbit 1.44 g/6H ; MODERATE  
 (Phthalic anhydride)  
 rabbit 100 mg ; SEVERE  
 Allergenic and sensitizing effects  
 (Phthalic anhydride) Occupational/Environmental Allergy Society? Japan (2004)  
 Mutagenic effects  
 (Styrene) ACGIH (2001) et al  
 Carcinogenic effects  
 (Styrene)  
 IARC-Gr.2B ; Possibly carcinogenic to humans.  
 (Styrene)  
 ACGIH-A4(1996) : Not Classifiable as a Human Carcinogen  
 (Ethylene glycol)  
 ACGIH-A4(1992) : Not Classifiable as a Human Carcinogen  
 (Phthalic anhydride)  
 ACGIH-A4(1992) : Not Classifiable as a Human Carcinogen  
 (Styrene)  
 JSOH-2B; Insufficient Evidence of Carcinogenicity for Humans  
 Toxicity for reproduction  
 (Styrene) CERl/NITE hazard assessment No.52 (2004)  
 Delayed and immediate effects and also chronic effects from short- and long-term exposure  
 Specific target organ toxicity (single exposure cat.1)  
 (Styrene) CNS(central nervous system)  
 Specific target organ toxicity (single exposure cat.3 respiratory irritation)  
 (Styrene) Respiratory tract irritation  
 Specific target organ toxicity (repeated exposure cat.1)  
 (Styrene) blood;nervous system;liver;respiratory apparatus/system  
 Aspiration hazard  
 (Styrene) ID151(2006), hydrocarbon, kinematic viscosity =0.772 mm<sup>2</sup>/s (25 C) (CERl cal.)

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## 12. Ecological Information

### Ecotoxicity

#### Aquatic toxicity

Toxic to aquatic life

(Styrene)

Fish (fat head minnow) LC<sub>50</sub>=4.02 mg/L/96hr (CERl/NITE, 2004)

(Ethylene glycol)

Fish (top minnow) LC<sub>50</sub> > 100mg/L/96hr (EPA\_Japan, 2001)

(Phthalic anhydride)

Algae (selenastrum) ErC<sub>50</sub>=68mg/L/72hr (EPA\_Japan, 2003)

#### Water solubility

(Ethylene glycol)

1000 g/L (PHYSROP Database, 2005)

(Cobalt naphthenate)

none (ICSC, 2000)

(Phthalic anhydride)

slow reaction (ICSC, 2003)

(Styrene)

0.03 g/100 ml (20 C) (ICSC, 2006)

Persistence and degradability

(Styrene)

BOD\_Degradation : 100%(Registered chemicals data check & review, Japan)

(Phthalic anhydride)

BOD\_Degradation : 85.2%(Registered chemicals data check & review, Japan)

Bioaccumulative potential

(Styrene)

log Pow=2.95 (PHYSPROP Database, 2005)

(Ethylene glycol)

log Pow=-1.93 (ICSC, 1999)

(Phthalic anhydride)

log Pow=1.6 (PHYSPROP Database, 2005)

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13. Disposal Considerations

Waste residues

Avoid release to the environment (- if this is not the intended use).

Dispose of contents/container in accordance with local/national regulation.

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14. Transport Information

UN No, UN CLASS

UN No :1866

UN CLASS :3

PG :III

Proper shipping name :RESIN SOLUTION, flammable

ERG GUIDE NO :128

Sea pollutants control law

Noxious Liquid ; Cat. Y :Styrene; Ethylene glycol; Phthalic anhydride

Special precautions in connection with transport or conveyance

Follow instruction in Handling & Storage.

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15. Regulatory Information

Industrial Safety and Health law, Japan

Organic Solvents Class II :Styrene

Harmful substances to be indicated :Styrene

Flammable

Chemical name et al should be informed :Phthalic anhydride; Ethylene glycol;

Cobalt naphthenate; Silica; Styrene

PRTR law, Japan

Listed chemicals Gr.1 :Styrene

Fire protection law, Japan

Petroleums Gr.2, ( Class III )

Ship cargo control law, Japan

Flammable liquids

Air cargo control law, Japan

Flammable liquids

Chemical Substances Control Law, Japan

Priority Assessment Chemical Substances :Styrene

Malodorants control law, Japan

TLVs at the border ; 0.4 - 2 ppm

Styrene

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16. Other Information/References

Reference Book

Globally Harmonized System of classification and labelling of chemicals, (4th ed., 2011), UN  
Recommendations on the TRANSPORT OF DANGEROUS GOODS 17th edit. UN  
Classification, labelling and packaging of substances and mixtures (reg.(EC) No 1272/2008)  
2008 EMERGENCY RESPONSE GUIDEBOOK(US DOT)  
2011 TLVs and BEIs. (ACGIH)  
<http://monographs.iarc.fr/monoeval/grlist.html>  
Supplier's SDS  
ezCric(Retrieval System/ Japan Chemical Database Ltd.)

Other information

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own test