



SAFETY DATA SHEET

FL-20 Primer

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Revision date: Not applicable

Version: R0001.0001

1. IDENTIFICATION

A. Product name

- FL-20 Primer

B. Recommended use and restriction on use

- General use : Improving bonding strength
- Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

o Manufacturer information

- Company name : ITW Polymers Adhesives, North America
- Address : 30 Endicott Street, Danvers, MA 01923
- Telephone number : (978)777-1100
- Emergency telephone number : (800)424-9300

o Supplier/Distributor information

- Company name : ITW PP&F KOREA
- Address : 13th Fl., Unit B, PAX Tower, 609, Eonju-ro, Gangnam-Gu, Seoul, Korea 06108
- Telephone number : 02-2088-2560
- Emergency telephone number :
- Fax number : 02-513-3567

2. HAZARD IDENTIFICATION

A. GHS Classification

- Flammable liquids : Category2
- Acute Toxicity (Inhalation: dust / mist) : Category4
- Acute toxicity (inhalation: vapor) : Category4
- Skin corrosion/irritation : Category2
- Respiratory sensitization : Category1
- Skin sensitization : Category1
- Specific target organ toxicity(Repeated exposure) : Category2

B. GHS label elements

o Hazard symbols



o Signal words

- Danger

o Hazard statements

- H225 Highly flammable liquid and vapour
- H315 Causes skin irritation

- H317 May cause an allergic skin reaction
- H332 Harmful if inhaled
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

○ **Precautionary statements**

1) Prevention

- 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 gas/mist/vapours/spray.
- P261 Avoid breathing gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P285 In case of inadequate ventilation wear respiratory protection.

2) Response

- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- 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.
- P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P314 Get medical advice/attention if you feel unwell.
- P321 Specific treatment
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
- P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- P362 Take off contaminated clothing and wash before reuse.
- P363 Wash contaminated clothing before reuse.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

3) Storage

- P403+P235 Store in a well-ventilated place. Keep cool.

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 : 2, Flammability : 3, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Acetic acid ethyl ester	Acetic ether ; Acetidin ; Acetoxyethane ; Ethyl acetic ester ; Ethyl ester ; Ethyl ethanoate ; Vinegar naphtha ; Acetoxy ethane ;	141-78-6	90~100
Isocyanic acid polymethylenepolyphenylene ester	-	9016-87-9	1~10

Diphenyl methane diisocyanate	Diphenylmethane 4,4'-diisocyanate ; Methylene bisphenyl isocyanate ; 4,4'-Diisocyanatodiphenylmethane ; Isocyanic acid, methylenedi-P-phenylene ester ; Di-(4-isocyanatophenyl)methane ; Methylenebis(para-phenyl isocyanate) ; Methylenebis(para-phenylene isocyanate) ; Bis(4-isocyanatophenyl)methan ;	101-68-8	1~10
Proprietary ingredient(s)	-	-	0.1~1.0

4. FIRST AID MEASURES

A. Eye contact

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

B. Skin contact

- Flush skin with plenty of wter for at least 15 minutes while removing contaminated clothing and shoes.
- Laundering enough contaminated clothing before reuse.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Wash thoroughly after handling.

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.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- 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.
- Remove to fresh air and keep at rest in a position comfortable for breathing.

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

- Move containers from fire area, if you can do without the risk.
- Avoid inhalation of materials or combustion by-products.
- Do not access if the tank on fire.

- 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.
- Due to the extremely low flash point, irrigating fire extinguishing may be less effective when put out a fire.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Move container to safe area from the leak area.
- Handling the damaged containers or spilled material after wearing protective equipment.
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.

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.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Get the manual before use.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with heat, sparks, flame or other ignition sources.

B. Conditions for safe storage, including any incompatibilities

- Save in cool, dry and well ventilated place.
- Do not apply any physical shock to container.
- Avoid direct sunlight.
- Keep sealed when not in use.
- No open fire.
- 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)
 - [Diphenyl methane diisocyanate] : TWA, 0.005 ppm (0.051 mg/m³)
- o **OSHA PEL**
 - [Acetic acid ethyl ester]:400ppm 1400mg/m³
 - [Diphenyl methane diisocyanate]:(C) 0.02 (C) 0.2

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.

C. Individual protection measures, such as 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
- Color	Orange
B. Odor	Solvent
C. Odor threshold	Not available
D. pH	7 @ 5 Percent Solution
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	77.7 °C
G. Flash point	> -4.4 °C
H. Evaporation rate	4.1
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	86 mm Hg @ 68 °F
L. Solubility	moderately soluble .
M. Vapour density	3.0 (air = 1)
N. Specific gravity(Relative density)	0.91
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.

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 allergy or asthma symptoms or breathing difficulties if inhaled
- **(Oral)**
 - Not available
- **(Eye·Skin)**
 - Causes skin irritation
 - May cause an allergic skin reaction

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

- **Acute toxicity**
 - * **Oral - >5000mg/kg**
 - [Acetic acid ethyl ester] : LD50 5620 mg/kg Rat (IUCILID)
 - [Isocyanic acid polymethylenepolyphenylene ester] : LD50 = 49000 mg/kg Rat (Thomson)
 - [Diphenyl methane diisocyanate] : LD50 31600 mg/kg Rat
 - * **Dermal - ATE MIX : >5000mg/kg**
 - [Acetic acid ethyl ester] : LD50 > 18000 mg/kg Rabbit (IUCILID)
 - [Isocyanic acid polymethylenepolyphenylene ester] : LD50 > 9500 mg/kg Rabbit (Thomson)
 - * **Inhalation - ATE MIX : 0.05mg/L < ATEmix <= 0.5mg/L**
 - [Acetic acid ethyl ester] : Steam LC50 100 mg/l 4 hr Rat (LC50 = 200 mg/L/1hr)(IUCILID)
 - [Isocyanic acid polymethylenepolyphenylene ester] : Steam LC50 = 0.49 mg/L 4 hr Rat (ChemIDPlus)
 - [Diphenyl methane diisocyanate] : dust LC50 0.369 mg/l 4 hr Rat
- **Skin corrosion/irritation**
 - Causes skin irritation
- **Serious eye damage/irritation**
 - Not available
- **Respiratory sensitization**
 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- **Skin sensitization**
 - May cause an allergic skin reaction
- **Carcinogenicity**
 - * **IARC**
 - [Isocyanic acid polymethylenepolyphenylene ester] : Group 3
 - [Diphenyl methane diisocyanate] : Group 3
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - Not available
 - * **NTP**
 - Not available
 - * **EU CLP**
 - [Diphenyl methane diisocyanate] : Carc.2
- **Germ cell mutagenicity**
 - Not available

- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - Not available
- **STOT-repeated exposure**
 - May cause damage to organs through prolonged or repeated exposure
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [Acetic acid ethyl ester] : LC50 230 mg/ℓ 96 hr Pimephales promelas (IUCLID)
- **Crustaceans**
 - [Acetic acid ethyl ester] : EC50 717 mg/ℓ 48 hr Daphnia magna (IUCLID)
- **Algae**
 - [Acetic acid ethyl ester] : EC50 1800 ~ 3200 mg/ℓ 72 hr (Selenastrum sp.) (ECOTOX)

B. Persistence and degradability

- **Persistence**
 - [Acetic acid ethyl ester] : log Kow 0.73 (ICSC)
 - [Isocyanic acid polymethylenepolyphenylene ester] : log Kow 10.46 (Estimate)
- **Degradability**
 - [Acetic acid ethyl ester] : BOD5/COD 0.81 (IUCLID)

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [Acetic acid ethyl ester] : BCF 30 (IUCLID)
- **Biodegradation**
 - [Acetic acid ethyl ester] : 100 (%) 28 day (IUCLID)

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, 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.

B. Special precautions for disposal

- The user of this product must disposal 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 No. (IMDG CODE/IATA DGR)

- 1173

B. Proper shipping name

- ETHYL ACETATE

C. Hazard Class

- 3

D. IMDG CODE/IATA DGR Packing group

- II

E. Marine pollutant

- 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-D (Flammable liquids)

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
 - [Diphenyl methane diisocyanate] : Carc. Cat.; R40 Xn; R20-48/20 Xi; R36/37/38 R42/43
 - * **Risk Phrases**
 - [Acetic acid ethyl ester] : R11, R36, R66, R67
 - [Diphenyl methane diisocyanate] : R20, R36/37/38, R40, R42/43, R48/20
 - * **Safety Phrase**
 - [Acetic acid ethyl ester] : S2, S16, S26, S33
 - [Diphenyl methane diisocyanate] : S1/2, S23, S36/37, S45
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [Acetic acid ethyl ester] : 2267.995 kg 5000 lb
 - [Diphenyl methane diisocyanate] : 2267.995 kg 5000 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - [Diphenyl methane diisocyanate] : Applicable
 - [Isocyanic acid polymethylenepolyphenylene ester] : 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

- 2017-07-11

C. Revision number and Last date revised

- Not applicable

D. Other

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