Material Safety Data Sheet of ITO PET

Name of Supplier : BIG FRONT CO., LTD
Address: #203, 1-26-7, Kami ochiai, Shinjuku-ku, Tokyo 131-0034 Japan.
Phone : 03-5386-6397 Fax : 03-5386-6399

Product name : 125 μ m METAFORCE R-30

Identification of the material

A chemical name : Polyethylene terephthalate (PET)
A single or a mixture product : a mixture
An ingredient, content : PET / More than 98.5%
Oxidation indium / Less than
Others / Less than 0.5%

Dangerous hazardousness

The dangerous risk : Non risk on the normal handling.
Burn with a firing source
Hazardousness : Non danger in particular.
Influence on environment : No measures in particular

Emergency measure

When it gets into eyes : Remove an alien substance and wash
When touch the skin : No dermatopathy in usually.
When inhale it : Not correspond.
When swallow it : It cannot be the normal handling.

Information about the fire prevention.

Fire extinguisher : The water jet, the powdery, the bubble and the carbon dioxide are available.
Protection for breathing : Needs air respiratory organs on the fire extinguishing

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Attention of the handling

1. Do not drop and do not hit the corner.
2. ITO film is fragile, do not give a shock
3. Because static electricity is easy to be generated in the property of the film, you should use an electrostatic removal device at the time of the processing appropriately.

Attention in the storage

1. Non direct rays of the sun and high temperature and humidity to prevent quality deterioration, and keep it in normal temperature warehouses
2. Because It's the combustibility, please keep it away from heat .

Physical & Chemical property

1. Appearance : Transparence

2. A melting point : PET / 255~265℃
   Oxidation indium(In_2O_3)/ 1555℃

3. Specific gravity : PET / 1.35~1.45g/㎤
   Oxidation indium(In203)/ 7.15g/㎤

Risk information

Flashing point : PET /346-399 ℃
Fire ignition point : PET /More than 483℃
The combustibility : Available. Burn within a firing source.
Spontaneous combustion & explosiveness : None
Reactivity with the water : None
Dust explosiveness : There is the risk of the explosion caused by the static electricity at the time of crush work.
The setting of the electrostatic removal device is desirable.
Stability, reactivity: Stability. The reactivity is low

Continue to P-3-

Noxious information

Skin is corrosive	: Classification not possible
Acridity (skin, eyes)	: Classification not possible
Sensitization characteristics	: Classification not possible
Acute toxicity	: Classification not possible
Chronic toxicity	: Classification not possible
Cancer onset characteristics	: Classification not possible
Variation onset characteristics	: Classification not possible
Reproductive toxicity	: Classification not possible
Teratogenicity	: Classification not possible
Others	: Classification not possible

Information of influence on environment

Disintegrate	: Non
Accumulation characteristics	: Non
Fish toxicity	: Classification not possible
Others	: Non

Attention of the disposal

Generally, it's burned or buried.

Attention in the transportation

Do not a water leak, direct rays of the sun.
Do not high temperature and humidity.
Do not fall down.
Fire strict prohibition

Over the all

Material Safety Data Sheet of Anti-Fog TAC

Name of Supplier : L OTUS CORPORATION
Address: #1105, 1-5-10,Shimoochiai,Shinjuku-ku, Tokyo 131-0033 Japan.
Phone : 03-5386-6591 Fax : 03-5386-6399

Product name : TAC180A F−B

Chemical name : Cellulose triacetate (TAC)

Noxious presence : Not applicable

Emergency measure

Acute Toxicity (Oral) : Classification not possible
Acute Toxicity(Dermal) : Classification not possible.
Eye damage/ Irritation : Classification not possible.
(When it gets into eyes : The alien substance removal & washing)

Information about the fire prevention

Fire extinguisher : The water jet, the powdery, the bubble and the carbon dioxide are available.
Protection for breathing : Needs air respiratory organs at the fire extinguishing.

The handling : The preventive measures are not necessary
Storage :Temperature 15 - 20 degrees , relative humidity 45% - 55%

Labor circumstances condition

The protection of the worker : No measures in particular
Safe hygiene management : General management
Protection of the hand & eyes : No measures in particular

Product data

A shape : Film
A color : Water-clear
A smell : Unscented
A melting point : More than 250 degrees
Specific gravity : 1.3g/ cm^3
Solubility : Indissolubility
pH : Not applicable
Viscosity : Not applicable

continue -2-

A chemical reaction　:

A dangerous chemical reaction does not occur under the normal use, and storage situation.
The possibility of the chemical change is considered by the contact with the oxidizer.
Acetic acid and carbon dioxide occurred by thermo lysis.

Toxic information

The oral toxicity　: None
There is not the health harm on the appropriate use

Information of influence on environment

Disintegrate　: Non
Venomousness　: Non

Attention of the disposal

Generally, it's burned or buried.

Attention in the transportation

Do not a water leak, direct rays of the sun.
Do not high temperature and humidity.
Do not fall down.
Fire strict prohibition

Laws and regulations related information　:

Not the special regulation in Japan

That's　All

Material Safety Data Sheet of PDS1

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PDS1

Name of manufacturer: PANAC Co., Ltd.
Address: 5-31-19 Shiba, Minato-ku, Tokyo
Department/section in charge: Quality Assurance Dept.
Phone: 03-5442-8743 Fax: 03-5442-2041

Reference number: OCO-NE-0187

Date of preparation: May 20, 2005
Date of Revision: July 1, 2011
Date of Revision: March 25, 2013

2. SUMMARY OF HAZARDS & TOXICITY

GHS Classification

Physical and Chemical Hazards

Flammable solids : Classification not possible.
Pyrophoric solids : Classification not possible.
Corrosive to metals : Classification not possible.
Self-reactive chemical materials : Classification not possible.
Self-heating chemical products : Classification not possible.

Health Hazards

Acute toxicity (Oral) : Classification not possible.
Acute toxicity (Dermal) : Classification not possible.
Acute toxicity (Inhalation: gas) : Classification not possible.
Acute toxicity (Inhalation: vapor) : Classification not possible.

Acute toxicity (Inhalation: dust, mist) : Classification not possible.
Skin corrosion/irritation : Classification not possible.
Serious eye damage/eye irritation : Classification not possible.
Respiratory sensitization : Classification not possible.
Skin sensitization : Classification not possible.
Germ cell mutagenicity : Classification not possible.
Carcinogenicity : Classification not possible.
Reproductive toxicity : Classification not possible.
Specific target organ/systemic toxicity (Single exposure) : Classification not possible.
Specific target organ/systemic toxicity (Repeated exposure) : Classification not possible.
Aspiration hazard : Classification not possible.

Environmental Hazards:

Hazardous to the aquatic environment (Acute) : Classification not possible.

Hazardous to the aquatic environment (Chronic) : Classification not possible.

GHS Label Elements:

Symbol : Classification not possible.

Precautionary statement : Classification not possible.

3. COMPOSITION/INFORMATION ON INGREDIENTS

1.Classification of substance or mixture

Classification of substance or mixture : Mixture

General product description : Adhesive tape

Ingredients and concentration :

Ingredients and concentration : 1. Polyethylene terephthalate 80 -85%

2. (Meth)acrylic acid alkyl ester copolymer 15 -20%

Chemical formula or structural formula:

1. [-OCH2 CH2 OCO(C6H4)CO-]n

2. [-CH2 CR1 COOR2-]n

Reference number in gazetted list in Japan:

1. (7)-1022

2. Not disclosed

CAS No.:

1. 25038-59-9

2. Not disclosed

4. FIRST-AID MEASURES

Eye exposure:

Flush well with clean water without rubbing because the material could scratch the eye. Seek medical attention in case of problems. Remove contact lenses immediately.

Skin exposure:

Wash with soap if skin is irritated. In cases where molten material adheres to the skin, cool the affected area by flushing immediately with copious of water, in order to prevent burns. Do not try to forcibly remove any polymer adhering to the skin. In case of burns, promptly seek medical treatment.

Inhalation:

The material will not vaporize under ordinary conditions. In the event of severe inhalation of gas generated by film heated to high temperatures or molten film, remove the victim to fresh air. If victim shows symptoms such as coughing or difficulty of breathing, seek medical attention.

Ingestion:

Although ingestion will not cause acute poisoning, induce vomiting immediately. If ingested in large quantities, seek medical attention.

5. FIRE-FIGHTING MEASURES

Fire extinguishing materials : Water, carbon dioxide, dry chemical powder, foam

Fire extinguishing methods:

The best method is to extinguish fire by water spray. Fire-fighting operations should be conducted from upwind. Fire fighters must wear protective clothing. Keep unnecessary people away from the fire site and surroundings. Hazardous gases and vapors generated during combustion include carbon dioxide, carbon monoxide, aldehydes, organic acid and alcohol.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency responses:

No special precautions. Use protective equipment such as protective gloves, protective glasses, protective clothing, safety footwear, helmets, and face masks as appropriate to conditions.

Environmental precautions : Do not wash material away into sewers or drainage.

Methods and equipment for containment and cleaning up:

In the case of film scrap, collect the material by sweeping up with broom, vacuum cleaner or similar equipment, then incinerate or discard the material. In the case of flakes, static electricity removers or similar equipment must be used as appropriate because a dust explosion could occur.

7. HANDLING AND STORAGE

Handling:

Engineering measures:

Avoid contact with flames, sparks or high-temperature objects to prevent fires. Do not inhale decomposition gas generated in a high-temperature, molten state.

When handling heavy objects, use equipment to protect the hands and feet, and to prevent lower back pain as appropriate.

Precautions:

Keep the handling area clean and tidy. Avoid dangerous handling that could result in a collapse of items, falls or destruction of packaging. Avoid rough handling that causes damage from external surfaces. Take care to remove film from walkways to prevent people from falling. When handling the film, static electricity removers must be installed appropriately at the necessary locations to protect the human body.

Storage:

Avoid storage under direct sunlight and water leaks, and sharp changes in temperature and humidity. Storage is desirable in places that do not become hot and humid. Store material so that items do not collapse or fall, etc.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Facility control:

Concentration control:

Not applicable.

Concentration threshold:

Not applicable.

Install static electricity removers, as appropriate, to prevent the discharge of static electricity.

Protective equipment:

Respiratory protection : Not ordinarily required. In the case that dust is generated during processing, use dust masks.

Hand protection : Not ordinarily required.

Eye protection : Not ordinarily required. Keep the material away from the eyes. In the case that dust is generated during processing or other situation, wear protective glasses or safety goggles as appropriate.

Skin and body protection : Not ordinarily required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Solid, rolls or sheets

Color : Transparent

Odor : Acrylic odor

Boiling point : No application.

pH : No application.

Vapor pressure : No application.

Vaporization point None.

Melting point : 250~265oC (polyethylene terephthalate)

Density/specific gravity : 1.33

Solubility : Insoluble in water.

Flash point : 390oC or more (polyethylene terephthalate)

Auto-ignition point : 508oC or more (polyethylene terephthalate)

Flammability : Yes

10. STABILITY AND REACTIVITY

Stability and reactivity : Stable and not reactive in isolation at normal temperature.

Conditions to avoid : Keep away from fire.

Hazardous decomposition products:

Carbon monoxide, carbon dioxide, aldehydes, organic acid, alcohol and others.

Stable under anticipated normal storage and handling conditions.

11. TOXICOLOGICAL INFORMATION

Acute toxicity : No reports of hazardousness.
Skin corrosion/irritation : No reports of hazardousness.
Serious eye damage/eye irritation : No reports of hazardousness.
Respiratory sensitization or skin sensitization : No reports of hazardousness.
Mutagenicity : Not known.
Carcinogenicity: Not known.
Reproductive toxicity : Not known.
Specific target organ/systemic toxicity (Single exposure) : Not known.
Specific target organ/systemic toxicity (Repeated exposure) : Not known.
Aspiration hazard : No reports of hazardousness.
Other information : No reports of hazardousness.

12. ECOLOGICAL INFORMATION

Eco-toxicity : Not known.
Persistence/degradability : Not known.
Bioaccumulation : Not known.
Movement in soil : Not known.

13. DISPOSAL CONSIDERATIONS

Incineration:
Burn in an incinerator conformant to air pollution prevention ordinances and other regulations.

Landfill:
In accordance with the Waste Disposal and Public Cleansing Act, disposal must be commissioned to a publicly certified industrial waste management contractor or a municipal body in cases where municipalities conduct waste disposal.

14. TRANSPORTATION INFORMATION

International regulations : Not applicable.
Domestic regulations : Not applicable.
Specific transportation safety considerations :
Avoid exposure to water or rough handling to prevent damage to packaging container.

15. REGULATORY INFORMATION

Fire Service Act : Designated flammable goods.synthetic resins
(designated quantity: 3,000 kg.)
Poisonous and Deleterious Substances Control Act : Non-applicable.
PRTR Act : Does not apply.

16. OTHER INFORMATION

Handling of information contained in MSDS

The information contained in this MSDS was prepared to the best of PANAC Co., Ltd.'s knowledge based on materials, information and data currently available. However, the MSDS may be revised as new knowledge, tests and other information become available. Furthermore, the MSDS covers only the material properties of the product identified in this document, and does not cover its use in combination with other materials, or usage under all processing conditions.

Users are responsible for the use of this product. It is the responsibility of each user to refer to this MSDS to ensure the safe use of the product, irrespective of whether the product is used in isolation or in combination with other products, and to establish handling precautions in accordance with each company's particular manner of use.

Bibliography

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Material Safety Data Sheet (MSDS) Preparation Handbook / The Chemical Daily Co., Ltd. (Revised Edition)
JIS Z 7250:2005 Safety data sheet for chemical products (MSDS) . Part 1: Content and order of sections
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