

**Material Safety Data Sheet****METGLAS<sup>®</sup> 2605 SA1 Iron Based Alloy****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME:** METGLAS<sup>®</sup> 2605 SA1 Iron Based Alloy**OTHER/GENERIC NAMES:** METGLAS<sup>®</sup> Iron Based Ribbon;  
SA1 is a magnetic component of the following:  
METGLAS<sup>®</sup> SA1 Transformer Core;  
Micro-Lite<sup>™</sup> Distributed Gapped Core;  
Power-Lite<sup>™</sup> C- Core**PRODUCT USE:** Manufacture of electric transformers**MANUFACTURER:** Metglas<sup>®</sup>, Inc.  
440 Allied Dr.  
Conway, SC - 29526**FOR MORE INFORMATION CALL:**  
(Monday-Friday, 8:00am-5:00pm)  
1-800-581-7654**IN CASE OF EMERGENCY CALL:**  
(24 Hours/Day, 7 Days/Week)  
1-800-581-7654 or Chemtrec 1-800-424-9300**2. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>INGREDIENT NAME</b>	<b>CAS NUMBER</b>	<b>WEIGHT %</b>
Boron	7440-42-8	1 – 5
Iron	7439-89-6	85 - 95
Silicon	7440-21-3	5 – 10

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

**3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW:** A silver to gray metallic foil. As shipped, the primary hazard is the sharp edges of the product. If melted in a fire, toxic fumes may be released.**POTENTIAL HEALTH HAZARDS**

This material is non-hazardous as shipped. Potential health hazards are related to dusts, vapors and fumes that may be generated during grinding, sanding, cutting and/or welding.

**SKIN:** No health hazard but handling of sharp edges may cause cuts.**EYES:** Not a normal route of entry. Solid particles generated by grinding and sanding may cause irritation.

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- INHALATION:** Vapors and fumes resulting from the grinding, sanding, cutting and/or welding of this material are harmful if inhaled. Symptoms may include irritation of throat and respiratory tract.
- INGESTION:** Not a route of entry.
- DELAYED EFFECTS:** Repeated inhalation of vapors and fumes may result in toxic effects to the lungs. Cobalt and cobalt compounds and nickel and nickel compounds have caused cancer in laboratory animals and should be treated as 'possible' carcinogens. At present there is no reliable evidence that cobalt or nickel metal has caused cancer in humans. Long term nickel exposure may affect kidney function.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
Cobalt (possible trace impurity)	None	2b - possible carcinogen	None
Nickel (possible trace impurity)	Suspect carcinogen	2b - possible carcinogen	None

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**4. FIRST AID MEASURES**

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- SKIN:** Wash hands with soap and water.
- EYES:** For irritation caused by particles of dust flush eyes with running water. Seek medical assistance if irritation persists.
- INHALATION:** Remove to fresh air immediately. If breathing is difficult, get immediate medical assistance. Oxygen may be given by a person trained and qualified to administer it.
- INGESTION:** Not a route of entry.
- ADVICE TO PHYSICIAN:** Treat symptomatically.

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**5. FIRE FIGHTING MEASURES**

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**FLAMMABLE PROPERTIES**

- FLASH POINT:** None
- FLASH POINT METHOD:** Not applicable
- AUTOIGNITION TEMPERATURE:** Not applicable
- UPPER FLAME LIMIT (volume % in air):** Not applicable
- LOWER FLAME LIMIT (volume % in air):** Not applicable
- FLAME PROPAGATION RATE (solids):** Not determined.
- OSHA FLAMMABILITY CLASS:** None

**EXTINGUISHING MEDIA:**

Use any standard agent for surrounding fire but flooding amounts of water is recommended if the metallic ribbon starts to burn.

## *Material Safety Data Sheet*

### **METGLAS<sup>®</sup> 2605 SA1 Iron Based Alloy**

#### **UNUSUAL FIRE AND EXPLOSION HAZARDS:**

Product may burn if involved in a structural fire.

#### **SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:**

Toxic and irritating vapors may be released if the product melts (Melting Point is 1,133-1,178°C) or burns in a fire. Use self-contained respiratory protection.

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#### **6. ACCIDENTAL RELEASE MEASURES**

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##### **IN CASE OF SPILL OR OTHER RELEASE:**

Material is shipped as an article. Pick up and place into proper storage. Use caution in handling as edges are very sharp.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

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#### **7. HANDLING AND STORAGE**

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**NORMAL HANDLING:** (Always wear recommended personal protective equipment.)

Handle with care. Edges of material are very sharp.

##### **STORAGE RECOMMENDATIONS:**

Store in a facility that will protect product from physical damage and/or contamination with foreign material. (Do not exposure to moisture or any other substance.)

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#### **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

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##### **ENGINEERING CONTROLS:**

Use mechanical ventilation when cutting, grinding, sanding and/or welding product.

##### **PERSONAL PROTECTIVE EQUIPMENT**

###### **SKIN PROTECTION:**

Wear cut-resistant gloves.

###### **EYE PROTECTION:**

Wear safety glasses when grinding, sanding, cutting and/or welding product.

###### **RESPIRATORY PROTECTION:**

If necessary to meet exposure limits listed in section 8, wear an air-purifying respirator during grinding, sanding, cutting and/or welding activities.

###### **ADDITIONAL RECOMMENDATIONS:**

A safety shower, eyewash or another source of running water should be available in areas where grinding, sanding, cutting and/or welding operations take place.

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<b><u>INGREDIENT NAME</u></b>	<b><u>ACGIH TLV</u></b>	<b><u>OSHA PEL</u></b>	<b><u>OTHER LIMIT</u></b>
Cobalt (possible trace impurity)	0.02 mg/m <sup>3</sup> (TWA)	0.1 mg/m <sup>3</sup> (TWA)	***End of shift: 15 ug/l – urine 1 ug/l - blood
Iron	5 mg/m <sup>3</sup> (TWA) as iron oxide	10 mg/m <sup>3</sup> (TWA) as iron oxide fume	None
Nickel (possible trace impurity)	1.5 mg/m <sup>3</sup> (TWA) inhalable fraction	1 mg/m <sup>3</sup> (TWA)	None
Silicon	10 mg/m <sup>3</sup> (TWA)	15 mg/m <sup>3</sup> (TWA) as total dust. 5 mg/m <sup>3</sup> (TWA) as respirable dust.	None

\* = Limit established by Honeywell International, Inc.

\*\* = Workplace Environmental Exposure Level (AIHA).

\*\*\* = Biological Exposure Index (ACGIH).

**OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:**

None

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE:</b>	A shiny silver to gray metallic ribbon.		
<b>PHYSICAL STATE:</b>	Solid		
<b>MOLECULAR WEIGHT:</b>	Metal alloy mixture		
<b>CHEMICAL FORMULA:</b>	Metal alloy mixture		
<b>ODOR:</b>	None		
<b>SPECIFIC GRAVITY (water = 1.0):</b>	7.19		
<b>SOLUBILITY IN WATER (weight %):</b>	None		
<b>pH:</b>	Not applicable		
<b>CURIE TEMPERATURE:</b>	738 °F (392 °C)		
<b>CRYSTALLIZATION TEMP:</b>	945 °F (507 °C)		
<b>VAPOR PRESSURE:</b>	Not applicable		
<b>VAPOR DENSITY (air = 1.0):</b>	Not applicable		
<b>EVAPORATION RATE:</b>	Not applicable	<b>COMPARED TO:</b>	
<b>% VOLATILES:</b>	None		
<b>FLASH POINT:</b>	None		
(Flash point method and additional flammability data are found in Section 5.)			

**10. STABILITY AND REACTIVITY****NORMALLY STABLE? (CONDITIONS TO AVOID):**

Normally stable.

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**INCOMPATIBILITIES:**

Product can be attacked by moisture and corrosive materials.

**HAZARDOUS DECOMPOSITION PRODUCTS:**

Toxic vapors and metallic fumes may be released if melted or ignited in a fire (see section 3).

**HAZARDOUS POLYMERIZATION:**

Not applicable.

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**11. TOXICOLOGICAL INFORMATION**

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**IMMEDIATE (ACUTE) EFFECTS:**

Iron: LD<sub>50</sub> (oral, rat) 30 g/kg

Silicon: LD<sub>50</sub> (oral, rat) 3.16 g/kg

**DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:**

Silicon: Repeated inhalation of silicon may cause lung effects.

**OTHER DATA:**

None

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**12. ECOLOGICAL INFORMATION**

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Not anticipated to present an ecological hazard.

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**13. DISPOSAL CONSIDERATIONS**

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**RCRA**

Is the unused product a RCRA hazardous waste if discarded?

No

If yes, the RCRA ID number is:

**OTHER DISPOSAL CONSIDERATIONS:** Observe all Federal, State, and Local Environmental regulations. Some local regulations may restrict disposal of metallic waste based on composition. Recycling of metallic products is recommended where recycling programs are available.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

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**14. TRANSPORT INFORMATION**

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**US DOT PROPER SHIPPING NAME:** Not regulated

**US DOT HAZARD CLASS:** Not regulated

**US DOT ID NUMBER:** Not regulated

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

**Material Safety Data Sheet****METGLAS<sup>®</sup> 2605 SA1 Iron Based Alloy**

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**15. REGULATORY INFORMATION**

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**TOXIC SUBSTANCES CONTROL ACT (TSCA)**

**TSCA INVENTORY STATUS:** An article manufactured from ingredients listed on the TSCA Inventory.  
**OTHER TSCA ISSUES:** None

**SARA TITLE III/CERCLA**

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<b><u>INGREDIENT NAME</u></b>	<b><u>SARA/CERCLA RQ (lb)</u></b>	<b><u>SARA EHS TPQ (lb)</u></b>
Nickel	100	None

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

**SECTION 311 HAZARD CLASS:** Not hazardous as shipped.

**SARA 313 TOXIC CHEMICALS:**

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<b><u>INGREDIENT NAME</u></b>	<b><u>COMMENT</u></b>
Cobalt	None
Nickel	None

**STATE RIGHT-TO-KNOW**

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<b><u>INGREDIENT NAME</u></b>	<b><u>WEIGHT %</u></b>	<b><u>COMMENT</u></b>
Cobalt		Listed as California Proposition 65 carcinogen.
Nickel		Listed as California Proposition 65 carcinogen.

**ADDITIONAL REGULATORY INFORMATION:**

None

**Material Safety Data Sheet****METGLAS<sup>®</sup> 2605 SA1 Iron Based Alloy****WHMIS CLASSIFICATION (CANADA):**

Not a controlled product. Basis: Product as shipped.

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**FOREIGN INVENTORY STATUS:**

Article: Ingredients are listed on Canadian DSL and European EINECS.

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**16. OTHER INFORMATION**

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**OTHER INFORMATION:** Contact Metglas<sup>®</sup>, Inc. if you have specific questions regarding the handling of or applications for this product.

Date	Rev. Number	Revision Description
October 2003	00	Initial release
02/06/13	01	Content review per J. Schwindel (system revised to maintain all Material Safety Data Sheets within ISODOC system and require minimum, a three year content review)
04/16/13	02	Removed percentage amount on Cobalt and Nickel trace elements

Issue Date: October 2003	Rev. Date: 02/06/13	Confidential	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<u>HS&amp;E Leader</u> J. Schwindel	<u>Quality Manager</u> J. Smith			

# Material Safety Data Sheet

## 1. Chemical product and company identification

I . Product : KJ-0714BBS+RS50C-03

II. Recommended use of the chemical and restrictions on use

Recommended use of the chemical : Film

Restrictions on use of the product : Food

III. Manufacturers/ Company Information

Company Name : KOOKJE LA-TECH CORPORATION

Address : #100-2 Munhyung-ri, Opo-eup, Gwangju-si, Gyeonggi-do, Korea 464-894

Information service or emergency contact phone number : 82-31-766-0255

## 2. Hazard · Risk

I . HAZARDS IDENTIFICATION : Classification(Classification and labelling of chemicals  
Hlobally Harmonized System GHS)

- Physical hazards : Not applicable.
- Health hazards : Not applicable.
- Environmental hazards : Not applicable.

II. GHS label elements

- Glyph : Not applicable.
- Signal word : Not applicable.
- Hazardous · Risk phrases : Not applicable.
- Precautions : Not applicable.

III. NFPA Risk rate

- Health : 0                      Fire : 1                      Reactivity : 0                      Water reactive : 0



### 3. Designation of composition Ingredient & Content

Division	Content(%)	Matter	CAS NO
Polyester Film	55~60	Polyethylene terephthalate	25038-59-9
Silicone Adhesive	5~6	Dimethyl siloxane dimethylvinyl-terminated	68083-19-2
Ink	2~3	Methyl ethyl ketone	78-93-3
		Carbon Black	1333-86-4
Polyester Film	1~2	Polyethylene terephthalate	25038-59-9
Acrylic Adhesive	2~3	Acryl copolymer	35239-19-1
Polyester Film	24~26	Polyethylene terephthalate	25038-59-9

Division	Reference value(ppm)	Detecting whether	CAS NO.
TVOC	20 ↓	1	
toluene	16 ↓	n.d	108-88-3
benzene	0.8 ↓	n.d	71-43-2
formaldehyde	0.08 ↓	n.d	50-00-0
phosphine	0.08 ↓	n.d	7803-51-2

### 4. First aid measures

#### I . Eyecontact

- Rinse with plenty of water for at least 15 minutes and consult a doctor Keep

#### II . In case of skin contact

- Not available

#### III. Inhalation

- If you inhaled move to fresh air immediately Make.
- Keep breathing, give artificial respiration if not.

#### IV. Ingestion

- If you do not give anything by mouth to an unconscious do.

#### V . Potential risks

- May be harmful if swallowed.

#### VI. Other medical attention.

- Medical personnel are aware of the material protected take precautionary measures against

## 5. Explosion · In case of fire measures measures

### I . Combustion

- Flash point : It does not print at less than 110°C (Rapid equilibrium method)
- Autoignition temperature : Not less than 330°C degrees from the spontaneous combustion
- Burning Rate : < 1.3 mm/s (UN TDC test & criteria – Test N1)

### II. Appropriate fire extinguishers

- : Water spray, Resistance achol form, Powder Fire Extinguisher, Carbon dioxide

### III. Specific hazards arising from the chemical

- Not available.

### IV. Special protective equipment for fire-fighters precautions

- If you need air breathing apparatus should be worn

## 6. Accidental release measures

### I . Personal precautions and emergency procedures

- Not available.

### II. Necessary measures to protect the environment.

- Not available.

### III. Purification or How to remove

- Not available.

## 7. Handling and Storage

### I . Safe handling cheats

- Products that may be exposed to the dust of the appropriate exhaust ventilation Keep away

### II. How to save

- Keep away from ignition.

## 8. Exposure prevention and personal protection

### I . Exposure limits of chemical, Biological exposure limits

- National regulations : Not available.
- ACGIH Provision : Not available..

### II. Biological exposure limits : Not available.

### III. Engineering Administration(Facilities necessary) : Not available.

### IV. Personal Protection

- Respiratory Protection : Not available.
- Eye Protection : Goggles
- Hand Protection : Protective gloves
- Skin and body protection : Not available.

## 9. Physical and chemical properties

- PHYSICAL : Solid at 20°C
- externals : Film
- Hydrogen ion concentration(pH) : 6.5 ~ 7.5 at 20°C    ※ Sample : H<sub>2</sub> O = 1:5(V/V)
- Flash point : It does not print at less than 110°C (Rapid equilibrium )
- Autoignition temperature : Not less than 300°C degrees from the spontaneous combustion
- Water Solubility : Non-aqueous at 20°C
- specific gravity(Surface) : 1.3 ~ 1.4 at 20°C
- Melting point range : >130°C
- Combustion specificity
  - Burning rate : < 1.3mm/s    ※ UN TDG test & criteria – Test N1
- Explosive Properties : no Risk response.    ※ UN TDG test & criteria – Test E3
- Risk of oxidation : Not available.
- Boiling Point : Not available.
- Vapor pressure : Not available.
- Decomposition temperature : Not available.
- n-Octanol/ Water distribution coefficient : Not available.
- Viscosity : Not available.
- Lower Explosive Limit(LEL) : Not available.
- Upper Explosive Limit(UEL) : Not available.

## 10. Stability & Reactivity

- I . Chemical Stability and Possibility of hazardous reactions
  - In general condition is safe.
- II. Conditions to avoid
  - Avoid the formation of dust
- III. Materials to avoid
  - Strong oxidizing materials
- IV. Hazardous substances that are generated by the state fire
  - Carbon oxides

## 11. Toxicological Information

#### I . Acute Toxicity

- Oral            rat            LD50 : > 2,000 mg/kg ※ from IUCLID / US NLM
- Skin           rabbit        LD50 : > 2,000 mg/kg
- Inhalation   rat            LC50 : > 10 mg/L (dust, 4h)

II. Skin Irritation : Not available.

III. Serious eye damage : Not available.

IV. Respiratory sensitization : Not available.

V. Skin Sensitization : Not available.

VI. Carcinogenic : Unclassified.    ※ from IARC

VII. Germ cell mutagenicity : Not available.

VIII. Specific target long time(Once exposed) : Not available.

IX. Specific target long time(Repeat exposed) : Not available.

X. Aspiration Hazard : Not available.

## 12. Impact on the environment

#### I . Ecology Toxicity

- Fish                    LC50 : > 100 mg/L - 96 h    ※ from IUCLID / US NLM
- Crustacean            EC50 : > 100 mg/L - 48h
- Algae                    EC50 : > 100 mg/L - 72h

## 13. Disposal Considerations

#### I . How to dispose

- Environmental regulations halgeot.

#### II. Precautions when disposing

- DO NOT waste emissions to the environment.

## 14. TRANSPORT INFORMATION

I . UN Transport of dangerous goods regulation classified : Not dangerous goods

II. International Maritime Transport of Dangerous Goods Classification(IMDG)

: Not dangerous goods

III. International Air Transport of Dangerous Goods Classification(IATA) : Not dangerous goods

IV. Marine pollutants : Occupational health and safety Act

V. Transport users or Need to know in relation to the means of transport

or special safety measures required :

- In case of fire emergency : F-A
- In case of emergency spill : Not dangerous goods

## 15. Legal regulatory status

- I . Occupational health and safety Act(GHS) : Not available.
- II . Hazardous chemicals act : Toxic/Observed material/Restricted substances – Not available.
- III. Dangerous goods safety management Act : Non-hazardous
- IV. Other domestic and one of the regulations on foreign
  - Domestic laws of persistent organic pollutants : Not available.
  - US OSHA hazard (GHS) : Not available.

## 16. Other Notes

- I . Date First : 2016.01.06
- II . Revision Number : 0
- III. Date of revision : –
- IV. Source of reference material
  - Hazard · Risk GHS fractionation  
: KOREA MSDS Testing Laboratory Test Certificate (Report No. 2012-03-10-280), IUCLID, EC ESIS
  - The value of the physical characteristics : KOREA MSDS Testing Laboratory Test Certificate
  - UN TRANSPORT INFORMATION : KOREA MSDS Testing Laboratory Test Certificate
  - Toxicity and Information on the environment  
: OECD SIDS, IUCLID, US NLM, HSDB, IARC, EC ESIS, CCRIS

This MSDS material is current knowledge of the known, experience and but on the basis of data relating to written.

The product itself is not completely guaranteed. Unknown hazards and should be used with care because this will appear.

Whether any final decision on the appropriateness of the material are the sole responsibility of the user will tell you that.

- ☐ This MSDS material is Occupational Health and Safety Act in accordance with Article 41 "Keep writing the employer's MSDS" and In order to protect the health of workers is written material.
- ☐ Provided by the Korea Occupational Safety and Health Agency with reference materials and standards was prepared.

# Material Safety Data Sheet

## 1. Chemical product and company identification

I. Product : Non-pet double adhesive tape 3

II. Recommended use of the chemical and restrictions on use

Recommended use of the chemical : Film

Restrictions on use of the product : Food

III. Manufacturers/ Company Information

Company Name : KOOKJE LA-TECH CORPORATION

Address : #100-2 Munhyung-ri, Opo-eup, Gwangju-si, Gyeonggi-do, Korea 464-894

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- Glyph : Not applicable.
- Signal word : Not applicable.
- Hazardous · Risk phrases : Not applicable.
- Precautions : Not applicable.

III. NFPA Risk rate

- Health : 0                      Fire : 1                      Reactivity : 0                      Water reactive : 0

### 3. Designation of composition Ingredient & Content

Division	Content(%)	Matter	CAS NO
Polyester Film	77~78	Polyethylene terephthalate	25038-59-9
Acrylic Adhesive	3~4	Acryl copolymer	35239-19-1
Polyester Film	19~21	Polyethylene terephthalate	25038-59-9

Division	Reference value(ppm)	Detecting whether	CAS NO.
TVOC	20 ↓	1	
toluene	16 ↓	n.d	108-88-3
benzene	0.8 ↓	n.d	71-43-2
formaldehyde	0.08 ↓	n.d	50-00-0
phosphine	0.08 ↓	n.d	7803-51-2

### 4. First aid measures

#### I . Eyecontact

- Rinse with plenty of water for at least 15 minutes and consult a doctor Keep

#### II . In case of skin contact

- Not available

#### III. Inhalation

- If you inhaled move to fresh air immediately Make.
- Keep breathing, give artificial respiration if not.

#### IV. Ingestion

- If you do not give anything by mouth to an unconscious do.

#### V . Potential risks

- May be harmful if swallowed.

#### VI. Other medical attention.

- Medical personnel are aware of the material protected take precautionary measures against

### 5. Explosion · In case of fire measures measures

#### I . Combustion

- Flash point : It does not print at less than 110°C (Rapid equilibrium method)
- Autoignition temperature : Not less than 330°C degrees from the spontaneous combustion
- Burning Rate : < 1.3 mm/s (UN TDC test & criteria – Test N1)

#### II. Appropriate fire extinguishers

: Water spray, Resistance achol form, Powder Fire Extinguisher, Carbon dioxide

#### III. Specific hazards arising from the chemical

- Not available.

#### IV. Special protective equipment for fire-fighters precautions

- If you need air breathing apparatus should be worn

## 6. Accidental release measures

#### I . Personal precautions and emergency procedures

- Not available.

#### II. Necessary measures to protect the environment.

- Not available.

#### III. Purification or How to remove

- Not available.

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#### I . Safe handling cheats

- Products that may be exposed to the dust of the appropriate exhaust ventilation Keep away

#### II. How to save

- Keep away from ignition.

## 8. Exposure prevention and personal protection

#### I . Exposure limits of chemical, Biological exposure limits

- National regulations : Not available.
- ACGIH Provision : Not available..

#### II. Biological exposure limits : Not available.

#### III. Engineering Administration(Facilities necessary) : Not available.

#### IV. Personal Protection

- Respiratory Protection : Not available.
- Eye Protection : Goggles
- Hand Protection : Protective gloves
- Skin and body protection : Not available.



## 9. Physical and chemical properties

- PHYSICAL : Solid at 20°C
- externals : Film
- Hydrogen ion concentration(pH) : 6.5 ~ 7.5 at 20°C    ※ Sample : H<sub>2</sub> O = 1:5(V/V)
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- specific gravity(Surface) : 1.3 ~ 1.4 at 20°C
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- Combustion specificity
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- Explosive Properties : no Risk response.    ※ UN TDG test & criteria – Test E3
- Risk of oxidation : Not available.
- Boiling Point : Not available.
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- n-Octanol/ Water distribution coefficient : Not available.
- Viscosity : Not available.
- Lower Explosive Limit(LEL) : Not available.
- Upper Explosive Limit(UEL) : Not available.

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  - In general condition is safe.
- II . Conditions to avoid
  - Avoid the formation of dust
- III. Materials to avoid
  - Strong oxidizing materials
- IV. Hazardous substances that are generated by the state fire
  - Carbon oxides

## 11. Toxicological Information

- I . Acute Toxicity
  - Oral            rat            LD50 : > 2,000 mg/kg ※ from IUCLID / US NLM
  - Skin            rabbit        LD50 : > 2,000 mg/kg
  - Inhalation   rat            LC50 : > 10 mg/L (dust, 4h)
- II . Skin Irritation : Not available.

- III. Serious eye damage : Not available.
- IV. Respiratory sensitization : Not available.
- V. Skin Sensitization : Not available.
- VI. Carcinogenic : Unclassified.    ✖ from IARC
- VII. Germ cell mutagenicity : Not available.
- VIII. Specific target long time(Once exposed) : Not available.
- IX. Specific target long time(Repeat exposed) : Not available.
- X. Aspiration Hazard : Not available.

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### II . International Maritime Transport of Dangerous Goods Classification(IMDG)

: Not dangerous goods

### III. International Air Transport of Dangerous Goods Classification(IATA) : Not dangerous goods

### IV. Marine pollutants : Occupational health and safety Act

### V . Transport users or Need to know in relation to the means of transport

or special safety measures required :

- In case of fire emergency : F-A
- In case of emergency spill : Not dangerous goods

## 15. Legal regulatory status

### I . Occupational health and safety Act(GHS) : Not available.

### II . Hazardous chemicals act : Toxic/Observed material/Restricted substances – Not available.

III. Dangerous goods safety management Act : Non-hazardous

IV. Other domestic and one of the regulations on foreign

- Domestic laws of persistent organic pollutants : Not available.
- US OSHA hazard (GHS) : Not available.

## 16. Other Notes

I . Date First : 2017.09.11

II . Revision Number : 0

III. Date of revision : -

IV. Source of reference material

- Hazard · Risk GHS fractionation  
: KOREA MSDS Testing Laboratory Test Certificate (Report No. 2012-03-10-280), IUCLID, EC ESIS
- The value of the physical characteristics : KOREA MSDS Testing Laboratory Test Certificate
- UN TRANSPORT INFORMATION : KOREA MSDS Testing Laboratory Test Certificate
- Toxicity and Information on the environment  
: OECD SIDS, IUCLID, US NLM, HSDB, IARC, EC ESIS, CCRIS

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- Provided by the Korea Occupational Safety and Health Agency with reference materials and standards was prepared.

# Material Safety Data Sheet

## 1. Chemical product and company identification

I. Product : KJ-0701(F-F)

II. Recommended use of the chemical and restrictions on use

Recommended use of the chemical : Film

Restrictions on use of the product : Food

III. Manufacturers/ Company Information

Company Name : KOOKJE LA-TECH CORPORATION

Address : #100-2 Munhyung-ri, Opo-eup, Gwangju-si, Gyeonggi-do, Korea 464-894

Information service or emergency contact phone number : 82-31-766-0255

## 2. Hazard · Risk

I. HAZARDS IDENTIFICATION : Classification(Classification and labelling of chemicals  
Hlobally Harmonized System GHS)

- Physical hazards : Not applicable.
- Health hazards : Not applicable.
- Environmental hazards : Not applicable.

II. GHS label elements

- Glyph : Not applicable.
- Signal word : Not applicable.
- Hazardous · Risk phrases : Not applicable.
- Precautions : Not applicable.

III. NFPA Risk rate

- Health : 0                      Fire : 1                      Reactivity : 0                      Water reactive : 0

### 3. Designation of composition Ingredient & Content

Division	Content(%)	Matter	CAS NO
Polyester Film	70 ~ 75	Polyethylene terephthalate	25038-59-9
Acrylic Adhesive	6 ~ 7	Acryl copolymer	35239-19-1
Polyester Film	1 ~ 2	Polyethylene terephthalate	25038-59-9
Acrylic Adhesive	6 ~ 7	Acryl copolymer	35239-19-1
Polyester Film	17 ~ 20	Polyethylene terephthalate	25038-59-9

Division	Reference value(ppm)	Detecting whether	CAS NO.
TVOC	20 ↓	1	
toluene	16 ↓	n.d	108-88-3
benzene	0.8 ↓	n.d	71-43-2
formaldehyde	0.08 ↓	n.d	50-00-0
phosphine	0.08 ↓	n.d	7803-51-2

### 4. First aid measures

#### I . Eyecontact

- Rinse with plenty of water for at least 15 minutes and consult a doctor Keep

#### II . In case of skin contact

- Not available

#### III. Inhalation

- If you inhaled move to fresh air immediately Make.
- Keep breathing, give artificial respiration if not.

#### IV. Ingestion

- If you do not give anything by mouth to an unconscious do.

#### V . Potential risks

- May be harmful if swallowed.

#### VI. Other medical attention.

- Medical personnel are aware of the material protected take precautionary measures against

## 5. Explosion · In case of fire measures

### I . Combustion

- Flash point : It does not print at less than 110°C (Rapid equilibrium method)
- Autoignition temperature : Not less than 330°C degrees from the spontaneous combustion
- Burning Rate : < 1.3 mm/s (UN TDC test & criteria – Test N1)

### II. Appropriate fire extinguishers

: Water spray, Resistance alcohol foam, Powder Fire Extinguisher, Carbon dioxide

### III. Specific hazards arising from the chemical

- Not available.

### IV. Special protective equipment for fire-fighters precautions

- If you need air breathing apparatus should be worn

## 6. Accidental release measures

### I . Personal precautions and emergency procedures

- Not available.

### II. Necessary measures to protect the environment.

- Not available.

### III. Purification or How to remove

- Not available.

## 7. Handling and Storage

### I . Safe handling cheats

- Products that may be exposed to the dust of the appropriate exhaust ventilation Keep away

### II. How to save

- Keep away from ignition.

## 8. Exposure prevention and personal protection

### I . Exposure limits of chemical, Biological exposure limits

- National regulations : Not available.
- ACGIH Provision : Not available..

### II. Biological exposure limits : Not available.

### III. Engineering Administration(Facilities necessary) : Not available.

### IV. Personal Protection

- Respiratory Protection : Not available.
- Eye Protection : Goggles

- Hand Protection : Protective gloves
- Skin and body protection : Not available.

## 9. Physical and chemical properties

- PHYSICAL : Solid at 20°C
- externals : Film
- Hydrogen ion concentration(pH) : 6.5 ~ 7.5 at 20°C    ※ Sample : H<sub>2</sub> O = 1:5(V/V)
- Flash point : It does not print at less than 110°C (Rapid equilibrium )
- Autoignition temperature : Not less than 300°C degrees from the spontaneous combustion
- Water Solubility : Non-aqueous at 20°C
- specific gravity(Surface) : 1.3 ~ 1.4 at 20°C
- Melting point range : >130°C
- Combustion specificity
  - Burning rate : < 1.3mm/s    ※ UN TDG test & criteria – Test N1
- Explosive Properties : no Risk response.    ※ UN TDG test & criteria – Test E3
- Risk of oxidation : Not available.
- Boiling Point : Not available.
- Vapor pressure : Not available.
- Decomposition temperature : Not available.
- n-Octanol/ Water distribution coefficient : Not available.
- Viscosity : Not available.
- Lower Explosive Limit(LEL) : Not available.
- Upper Explosive Limit(UEL) : Not available.

## 10. Stability & Reactivity

- I . Chemical Stability and Possibility of hazardous reactions
  - In general condition is safe.
- II. Conditions to avoid
  - Avoid the formation of dust
- III. Materials to avoid
  - Strong oxidizing materials
- IV. Hazardous substances that are generated by the state fire
  - Carbon oxides

## 11. Toxicological Information

- I . Acute Toxicity

- Oral            rat            LD50 : > 2,000 mg/kg ※ from IUCLID / US NLM
- Skin            rabbit        LD50 : > 2,000 mg/kg
- Inhalation   rat            LC50 : > 10 mg/L (dust, 4h)

II. Skin Irritation : Not available.

III. Serious eye damage : Not available.

IV. Respiratory sensitization : Not available.

V. Skin Sensitization : Not available.

VI. Carcinogenic : Unclassified.    ※ from IARC

VII. Germ cell mutagenicity : Not available.

VIII. Specific target long time(Once exposed) : Not available.

IX. Specific target long time(Repeat exposed) : Not available.

X. Aspiration Hazard : Not available.

## 12. Impact on the environment

### I. Ecology Toxicity

- Fish                      LC50 : > 100 mg/L - 96 h    ※ from IUCLID / US NLM
- Crustacean            EC50 : > 100 mg/L - 48h
- Algae                    EC50 : > 100 mg/L - 72h

## 13. Disposal Considerations

### I. How to dispose

- Environmental regulations halgeot.

### II. Precautions when disposing

- DO NOT waste emissions to the environment.

## 14. TRANSPORT INFORMATION

I. UN Transport of dangerous goods regulation classified : Not dangerous goods

II. International Maritime Transport of Dangerous Goods Classification(IMDG)

: Not dangerous goods

III. International Air Transport of Dangerous Goods Classification(IATA) : Not dangerous goods

IV. Marine pollutants : Occupational health and safety Act

V. Transport users or Need to know in relation to the means of transport

or special safety measures required :

- In case of fire emergency : F-A
- In case of emergency spill : Not dangerous goods



## 15. Legal regulatory status

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- IV. Other domestic and one of the regulations on foreign
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## 16. Other Notes

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- II . Revision Number : 0
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