

# Material Safety Data Sheet (MSDS)

## 1. Product and Company

- A. Product Name : Pigment for micro-inking (MADLUVV)  
Color : NO.110 BLONDE
- B. General Characteristic : Cosmetic ink
- C. The Harmfulness Classification : Irritation
- D. The product use : The pigment under use of make-up including eyebrows
- E. Supplier/Distributor Information: identical to Company above
- F. The department and person in charge for this document: Technical department
- G. The confirmation Date: 2020.05.19
- H. The number of Amendment and final amendment date: 00

## 2. The Name and Composition of The Constituents

Product Name	Synonym	CAS No. / Identification No.	Content (%)
WATER	Not Applicable	7732-18-5	40 ~ 49
CHROMIUM OXIDE GREEN	Coloring	1308-38-9	5 ~ 14
YELLOW IRON OXIDE	Coloring	20344-49-4	5 ~ 14
BROWN IRON OXIDE	Coloring	1309-37-1/20344-49-4/1317-61-9	10 ~ 19
S1(Operational Secret)		S1(Operational Secret)	0 ~ 9

## 3. Danger & Harmfulness

### A. Information of Urgent Danger & Harmfulness (NFPA Index)

Product Name	Health	Fire	Reactivity
WATER	0	0	0
CHROMIUM OXIDE GREEN	0	0	0
YELLOW IRON OXIDE	0	0	0
BROWN IRON OXIDE	0	0	0
S1(Operational Secret)	No Data	No Data	No Data

Do not inhale steam and dust. If exposed in excessive quantity, it can be detrimental to health. It is required to have a proper ventilation measures and to wear the personal protective equipment for minimizing the exposure. Do not contact with eyes and skin.

### B. Influence on Eyes

Short-term Influence: It can cause eye irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause sight obscurity, eye damage and loss of eyesight.

### C. Influence on Skin

Short-term Influence: It can cause skin irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause blister, rash, and other skin ailments.

### D. Influence in case of Inhalation

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, and unconsciousness.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer.

#### E. Influence if case of ingestion

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, aspiration risk, and coma.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer. Also, it can cause digestive troubles, and in case of inhalation to lung, this can cause pneumonia, bronchitis, nerve abnormality, coma and death.

#### F. Chronic Symptoms

Reference to the section of Influence on Eyes, Influence on Skin, and Influence if case of ingestion

### 4. The Emergency Measures

A. If contact in eyes: Rub the substance out from eyes with a lot of flowing water or physiological saline for about 15 minutes. Then rub it out ultimately even the inside of eyelid and get the examination of the medical specialist as soon as possible.

B. If contact on skin: Rub the substance out from skin with a lot of water or soap. Do not use any solvent or other thinner. Get rid of the contaminated clothes, and wear after the washing. If the changes including itchiness, soreness, redness or pain on outer surface of your skin are spotted, surely get a treatment from the medical specialist.

C. If inhaled: If inhaled large amount of steam, gas, move immediately to place with fresh air and get the rest. If respiration seems irregular or placed in abnormal condition, get an immediate treatment from the medical specialist. If the person does not breathe, operate CPR and get an immediate treatment from the medical specialist.

D. If ingested: Do not vomit. If the vomiting starts, lower the head under the buttocks to prevent the vomitus blocking respiratory tracts. Next, get an immediate treatment from the medical specialist.

E. Guidelines for medical specialist: In case of inhalation, consider the provision of air. If in ingestion, consider the gastrolavage and injection of activated carbon slurry.

### 5. Explosion and fire-fighting measures

A. The ignition point: No ignition point

B. Natural ignition point: No possibility for Natural ignition

C. Minimum Explosion Threshold/ Maximum Explosion Threshold (VOL. %): No possibility

D. Classification and Regulations by Fire Defense Regulations: Not Applicable

E. Fire Extinguisher: Not Applicable

F. Fire Defense Measures and Devices: Not Applicable

G. The Hazardous Materials in case of combustion: No Data

H. Fire Extinguisher in Prohibited use: No Data

### 6. The guidelines in case of leakage accident

A. Guidelines for human body protection: Wear the protective equipment such as but not limited to; Protection glasses, Protection gloves, Gas masks, and protection gowns/clothes. Be isolated from the hazard area and prohibit the entrance. Do not contact with leaked materials.

B. Guidelines for environmental protection: Immediately get rid of the contaminated materials and if the material is leaked to other regions, build embankment and prevent it from additional leak. Prevent the leakage through soil and water.

C. Purification and termination measures: Absorb and sponge out with the materials such as dry sand, cloth or other nonflammable equipment. Put them in ultimately sealed disposable container and dispose it in procedures under Wastes Control Act.

## **7. Handling and Storage Measures**

A. Safe Handling Measures: Work under the place with fine ventilation measures and wear the protective equipment including proper respiratory protection clothes, gloves with chemical resistance, protection glasses, and protection clothes.

If working in sealed space, install a ventilation facility which can ventilate the working space and even the bottom space. If not guaranteed for bottom space, wear the hose mask (the mask for air provision). Do ground connection when delivering the liquid, dragging the liquid or stirring. After the work, wash your hand and face thoroughly, and do not carry the contaminated protection equipment to places including staff lounge.

B. Storage Measures: Isolate with the compound dangerousness and do not contact with acid or oxidant. Isolate from heat, spark or flames. Store it in dry and cool space with no static electricity. If not in use, seal the container. Make sure to place it far from children's touch.

## **8. Prevention of exposure and personal protection equipment**

A. Engineered Management: Install the local equipment for exhaustion or dilution facility to conform to required standards.

B. Respiratory Protection: Wear the chemical protection measures embedding organic solvent cartridge. If terminating the dry fragment with sanding, wear the proper protection equipment for dust and powder (dustproof, gas-proof, steam supply, filtered mask).

C. Eye Protection: Wear the protection glasses for exclusively on spray protection or dust protection.

D. Hand Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

E. Body Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

F. Hygienic Guidelines: Conform to the guidelines of government and local official government. Wash your hand and body before the intake of food or after the work. Reuse the work clothes after the thorough washing.

G. leakage threshold: ppm

※ There is no leakage threshold guidelines of the product, and the reference of composing constituents is described. (Reference)

1) WATER

OSHA No Data

ACGIH No Data

NIOSH No Data

Germany No Data

UK No Data

EU (European Union) No Data

2) CHROMIUM OXIDE GREEN

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 3) YELLOW IRON OXIDE

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 4) BROWN IRON OXIDE

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 5) S1 (Operation Secret)

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

## 9. Physical and Chemical Characteristics

- A. Exterior: Fluid liquid
- B. Smell: Mild Stimulant Smell
- C. pH: 5.0 - 7.0
- D. Solubility: No Data
- E. Boiling Point/ Boiling Range: Approx. 100 °C
- F. Melting Point/ Melting Range: Approx. 0 °C
- G. Explosiveness: No Data
- H. Oxidation: No Data
- I. Vapor Pressure: No Data
- J. Weight: 1.0-1.2
- K. Distribution Coefficient: No Data
- L. Vapor Density: No Data
- M. Viscosity: 80-110KU/25°C
- N. Molecular Weight: Mixture, No Data

## 10. Stability and Reactivity

- A. Chemical Stability: Stable under room temperature, and atmospheric pressure
- B. Conditions and Materials to avoid: Do not apply heat to container. Do not contact with acid, base or oxidizer.
- C. Hazardous Materials generated during decomposition: Carbon Monoxide, Carbon Dioxide, Other hazardous carbon compounds
- D. The probability of hazardous materials generation: No Data

## 11. Information about toxicity

### 1) WATER

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

### 2) CHROMIUM OXIDE GREEN

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

### 3) YELLOW IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

### 4) BROWN IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence

IARC No Data  
OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

5) S1 (Operation Secret)  
A. Acute Oral Toxicity Test No Data  
B. Acute Dermal Toxicity No Data  
C. Acute Inhalation Toxicity No Data  
D. Sub-Acute Toxicity No Data  
E. Chronic Toxicity No Data  
F. Mutagenicity Influence No Data  
G. Developmental Toxicity Study (Reproduction Toxicity) No Data  
H. Carcinogenesis Influence  
IARC No Data  
OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

## **12. Environmental Method**

A. Aqua & Ecotoxicology: It can affect water organisms if leaked without filter in lake or river. It easily attaches to the exterior or skin of natural organisms, and may cause detrimental effect.

B. Soil Mobility: No Data

C. Residual & Resolvability: No Data

D. Possibility of internal accumulation in the body of animals and plants: No Data

## **13. Disposal Guidelines**

A. The current regulation situation under Wastes Control Act: Wastes Control Act No.2, and its implementing ordinances No.3 asterisked no.1 designated waste / Wastes Control Act No.12 and its implementing ordinances No.6

B. Disposal Method: Under Wastes Control Act No.12, and its implementing ordinances No.6, the waste from paint or container should be disposed under the consignment contract with industrial waste handling parties. The wasted paint should be absorbed to diatomite if combusted, and handled in high-temperature pyrolysis in small doses in open incinerator.

C. Guidelines when disposal: Do not operate unauthorized disposal. Conform to Wastes Control Act No.24 about requirements for disposal, government regulations and corresponding local government regulations.

## **14. Information for delivery and transfer**

A. The classification and regulations on ship transport and storage rules under Ships Safety Act: Not regulated

B. Guidelines on delivery: Transfer in ultimate-sealed circumstances and prevent the materials from leakage to drainage, pipe, river or streams.

C. Other foreign classification and regulations for delivery and transfer

UN Level: No Data  
USDOT: No Data  
RID/ADR: No Data  
IMO: No Data  
IATA/ICAO: No Data

## **15. Legal Regulations**

- A. Other department regulations regarding Chemicals Control Act  
Chemicals Control Act: Not Applicable  
Fire Services Act: Not Applicable
- B. Other foreign classification and regulations  
OSHA: No Regulation  
TSCA: No Data  
CERCLA: No Data  
SARA (US Superfund Amendments and Reauthorization Act) : No Data  
EU (European Union): No Data

## **16. Other Remarks**

### **A. The References**

- 1) The regulations on documentation and placement of Material Safety Data Sheet (Ministry of Labor Official No. 97-27, Oct.1997)
- 2) Material Safety Data Sheet Practical Methodology (Occupational Safety Authority, Nov.1996)
- 3) Material Safety Data Sheet Practical Methodology for compounds (Occupational Safety Authority, Nov.1996)
- 4) MSDS for raw materials obtained from each company

# Material Safety Data Sheet (MSDS)

## 1. Product and Company

- A. Product Name : Pigment for micro-inking (MADLUVV)  
Color : NO.111 SOFT BROWN
- B. General Characteristic : Cosmetic ink
- C. The Harmfulness Classification : Irritation
- D. The product use : The pigment under use of make-up including eyebrows
- E. Supplier/Distributor Information: identical to Company above
- F. The department and person in charge for this document: Technical department
- G. The confirmation Date: 2020.05.19
- H. The number of Amendment and final amendment date: 00

## 2. The Name and Composition of The Constituents

Product Name	Synonym	CAS No. / Identification No.	Content (%)
WATER	Not Applicable	7732-18-5	40 ~ 49
RED IRON OXIDE	Coloring	1309-37-1	10 ~ 19
YELLOW IRON OXIDE	Coloring	20344-49-4	10 ~ 19
BLACK IRON OXIDE	Coloring	1317-61-9	10 ~ 19
S1(Operational Secret)		S1(Operational Secret)	0 ~ 9

## 3. Danger & Harmfulness

### A. Information of Urgent Danger & Harmfulness (NFPA Index)

Product Name	Health	Fire	Reactivity
WATER	0	0	0
RED IRON OXIDE	0	0	0
YELLOW IRON OXIDE	0	0	0
BLACK IRON OXIDE	0	0	0
S1(Operational Secret)	No Data	No Data	No Data

Do not inhale steam and dust. If exposed in excessive quantity, it can be detrimental to health. It is required to have a proper ventilation measures and to wear the personal protective equipment for minimizing the exposure. Do not contact with eyes and skin.

### B. Influence on Eyes

Short-term Influence: It can cause eye irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause sight obscurity, eye damage and loss of eyesight.

### C. Influence on Skin

Short-term Influence: It can cause skin irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause blister, rash, and other skin ailments.

### D. Influence in case of Inhalation

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, and unconsciousness.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function,

pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer.

#### E. Influence if case of ingestion

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, aspiration risk, and coma.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer. Also, it can cause digestive troubles, and in case of inhalation to lung, this can cause pneumonia, bronchitis, nerve abnormality, coma and death.

#### F. Chronic Symptoms

Reference to the section of Influence on Eyes, Influence on Skin, and Influence if case of ingestion

### 4. The Emergency Measures

A. If contact in eyes: Rub the substance out from eyes with a lot of flowing water or physiological saline for about 15 minutes. Then rub it out ultimately even the inside of eyelid and get the examination of the medical specialist as soon as possible.

B. If contact on skin: Rub the substance out from skin with a lot of water or soap. Do not use any solvent or other thinner. Get rid of the contaminated clothes, and wear after the washing. If the changes including itchiness, soreness, redness or pain on outer surface of your skin are spotted, surely get a treatment from the medical specialist.

C. If inhaled: If inhaled large amount of steam, gas, move immediately to place with fresh air and get the rest. If respiration seems irregular or placed in abnormal condition, get an immediate treatment from the medical specialist. If the person does not breathe, operate CPR and get an immediate treatment from the medical specialist.

D. If ingested: Do not vomit. If the vomiting starts, lower the head under the buttocks to prevent the vomitus blocking respiratory tracts. Next, get an immediate treatment from the medical specialist.

E. Guidelines for medical specialist: In case of inhalation, consider the provision of air. If in ingestion, consider the gastrolavage and injection of activated carbon slurry.

### 5. Explosion and fire-fighting measures

A. The ignition point: No ignition point

B. Natural ignition point: No possibility for Natural ignition

C. Minimum Explosion Threshold/ Maximum Explosion Threshold (VOL. %): No possibility

D. Classification and Regulations by Fire Defense Regulations: Not Applicable

E. Fire Extinguisher: Not Applicable

F. Fire Defense Measures and Devices: Not Applicable

G. The Hazardous Materials in case of combustion: No Data

H. Fire Extinguisher in Prohibited use: No Data

### 6. The guidelines in case of leakage accident

A. Guidelines for human body protection: Wear the protective equipment such as but not limited to; Protection glasses, Protection gloves, Gas masks, and protection gowns/clothes. Be isolated from the hazard area and prohibit the entrance. Do not contact with leaked materials.

B. Guidelines for environmental protection: Immediately get rid of the contaminated materials and if the

material is leaked to other regions, build embankment and prevent it from additional leak. Prevent the leakage through soil and water.

C. Purification and termination measures: Absorb and sponge out with the materials such as dry sand, cloth or other nonflammable equipment. Put them in ultimately sealed disposable container and dispose it in procedures under Wastes Control Act.

## **7. Handling and Storage Measures**

A. Safe Handling Measures: Work under the place with fine ventilation measures and wear the protective equipment including proper respiratory protection clothes, gloves with chemical resistance, protection glasses, and protection clothes.

If working in sealed space, install a ventilation facility which can ventilate the working space and even the bottom space. If not guaranteed for bottom space, wear the hose mask (the mask for air provision). Do ground connection when delivering the liquid, dragging the liquid or stirring. After the work, wash your hand and face thoroughly, and do not carry the contaminated protection equipment to places including staff lounge.

B. Storage Measures: Isolate with the compound dangerousness and do not contact with acid or oxidant. Isolate from heat, spark or flames. Store it in dry and cool space with no static electricity. If not in use, seal the container. Make sure to place it far from children's touch.

## **8. Prevention of exposure and personal protection equipment**

A. Engineered Management: Install the local equipment for exhaustion or dilution facility to conform to required standards.

B. Respiratory Protection: Wear the chemical protection measures embedding organic solvent cartridge. If terminating the dry fragment with sanding, wear the proper protection equipment for dust and powder (dustproof, gas-proof, steam supply, filtered mask).

C. Eye Protection: Wear the protection glasses for exclusively on spray protection or dust protection.

D. Hand Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

E. Body Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

F. Hygienic Guidelines: Conform to the guidelines of government and local official government. Wash your hand and body before the intake of food or after the work. Reuse the work clothes after the thorough washing.

G. leakage threshold: ppm

※ There is no leakage threshold guidelines of the product, and the reference of composing constituents is described. (Reference)

### **1) WATER**

OSHA No Data

ACGIH No Data

NIOSH No Data

Germany No Data

UK No Data

EU (European Union) No Data

### **2) RED IRON OXIDE**

OSHA No Data

ACGIH No Data

NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 3) YELLOW IRON OXIDE

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 4) BLACK IRON OXIDE

OSHA No Data  
ACGIH No Data  
No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 5) S1 (Operation Secret)

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

## 9. Physical and Chemical Characteristics

- A. Exterior: Fluid liquid
- B. Smell: Mild Stimulant Smell
- C. pH: 5.0 - 7.0
- D. Solubility: No Data
- E. Boiling Point/ Boiling Range: Approx. 100 °C
- F. Melting Point/ Melting Range: Approx. 0 °C
- G. Explosiveness: No Data
- H. Oxidation: No Data
- I. Vapor Pressure: No Data
- J. Weight: 1.0-1.2
- K. Distribution Coefficient: No Data
- L. Vapor Density: No Data
- M. Viscosity: 80-110KU/25°C
- N. Molecular Weight: Mixture, No Data

## 10. Stability and Reactivity

- A. Chemical Stability: Stable under room temperature, and atmospheric pressure
- B. Conditions and Materials to avoid: Do not apply heat to container. Do not contact with acid, base or oxidizer.
- C. Hazardous Materials generated during decomposition: Carbon Monoxide, Carbon Dioxide, Other hazardous carbon compounds
- D. The probability of hazardous materials generation: No Data

## 11. Information about toxicity

1) WATER

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

2) RED IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

3) YELLOW IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

4) BLACK IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence

IARC No Data  
OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

5) S1 (Operation Secret)  
A. Acute Oral Toxicity Test No Data  
B. Acute Dermal Toxicity No Data  
C. Acute Inhalation Toxicity No Data  
D. Sub-Acute Toxicity No Data  
E. Chronic Toxicity No Data  
F. Mutagenicity Influence No Data  
G. Developmental Toxicity Study (Reproduction Toxicity) No Data  
H. Carcinogenesis Influence  
IARC No Data  
OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

## **12. Environmental Method**

A. Aqua & Ecotoxicology: It can affect water organisms if leaked without filter in lake or river. It easily attaches to the exterior or skin of natural organisms, and may cause detrimental effect.

B. Soil Mobility: No Data

C. Residual & Resolvability: No Data

D. Possibility of internal accumulation in the body of animals and plants: No Data

## **13. Disposal Guidelines**

A. The current regulation situation under Wastes Control Act: Wastes Control Act No.2, and its implementing ordinances No.3 asterisked no.1 designated waste / Wastes Control Act No.12 and its implementing ordinances No.6

B. Disposal Method: Under Wastes Control Act No.12, and its implementing ordinances No.6, the waste from paint or container should be disposed under the consignment contract with industrial waste handling parties. The wasted paint should be absorbed to diatomite if combusted, and handled in high-temperature pyrolysis in small doses in open incinerator.

C. Guidelines when disposal: Do not operate unauthorized disposal. Conform to Wastes Control Act No.24 about requirements for disposal, government regulations and corresponding local government regulations.

## **14. Information for delivery and transfer**

A. The classification and regulations on ship transport and storage rules under Ships Safety Act: Not regulated

B. Guidelines on delivery: Transfer in ultimate-sealed circumstances and prevent the materials from leakage to drainage, pipe, river or streams.

C. Other foreign classification and regulations for delivery and transfer

UN Level: No Data  
USDOT: No Data  
RID/ADR: No Data  
IMO: No Data  
IATA/ICAO: No Data

## **15. Legal Regulations**

- A. Other department regulations regarding Chemicals Control Act  
Chemicals Control Act: Not Applicable  
Fire Services Act: Not Applicable
- B. Other foreign classification and regulations  
OSHA: No Regulation  
TSCA: No Data  
CERCLA: No Data  
SARA (US Superfund Amendments and Reauthorization Act) : No Data  
EU (European Union): No Data

## **16. Other Remarks**

### **A. The References**

- 1) The regulations on documentation and placement of Material Safety Data Sheet (Ministry of Labor Official No. 97-27, Oct.1997)
- 2) Material Safety Data Sheet Practical Methodology (Occupational Safety Authority, Nov.1996)
- 3) Material Safety Data Sheet Practical Methodology for compounds (Occupational Safety Authority, Nov.1996)
- 4) MSDS for raw materials obtained from each company

# Material Safety Data Sheet (MSDS)

## 1. Product and Company

- A. Product Name : Pigment for micro-inking (MADLUVV)  
Color : NO.112 MEDIUM BROWN
- B. General Characteristic : Cosmetic ink
- C. The Harmfulness Classification : Irritation
- D. The product use : The pigment under use of make-up including eyebrows
- E. Supplier/Distributor Information: identical to Company above
- F. The department and person in charge for this document: Technical department
- G. The confirmation Date: 2020.05.19
- H. The number of Amendment and final amendment date: 00

## 2. The Name and Composition of The Constituents

Product Name	Synonym	CAS No. / Identification No.	Content (%)
WATER	Not Applicable	7732-18-5	40 ~ 49
CHROMIUM OXIDE GREEN	Coloring	1308-38-9	5 ~ 14
YELLOW IRON OXIDE	Coloring	20344-49-4	5 ~ 14
BROWN IRON OXIDE	Coloring	1309-37-1/20344-49-4/1317-61-9	10 ~ 19
S1(Operational Secret)		S1(Operational Secret)	0 ~ 9

## 3. Danger & Harmfulness

### A. Information of Urgent Danger & Harmfulness (NFPA Index)

Product Name	Health	Fire	Reactivity
WATER	0	0	0
CHROMIUM OXIDE GREEN	0	0	0
YELLOW IRON OXIDE	0	0	0
BROWN IRON OXIDE	0	0	0
S1(Operational Secret)	No Data	No Data	No Data

Do not inhale steam and dust. If exposed in excessive quantity, it can be detrimental to health.  
It is required to have a proper ventilation measures and to wear the personal protective equipment for minimizing the exposure. Do not contact with eyes and skin.

### B. Influence on Eyes

Short-term Influence: It can cause eye irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause sight obscurity, eye damage and loss of eyesight.

### C. Influence on Skin

Short-term Influence: It can cause skin irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause blister, rash, and other skin ailments.

### D. Influence in case of Inhalation

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, and unconsciousness.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness,

intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer.

#### E. Influence if case of ingestion

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, aspiration risk, and coma.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer. Also, it can cause digestive troubles, and in case of inhalation to lung, this can cause pneumonia, bronchitis, nerve abnormality, coma and death.

#### F. Chronic Symptoms

Reference to the section of Influence on Eyes, Influence on Skin, and Influence if case of ingestion

### 4. The Emergency Measures

A. If contact in eyes: Rub the substance out from eyes with a lot of flowing water or physiological saline for about 15 minutes. Then rub it out ultimately even the inside of eyelid and get the examination of the medical specialist as soon as possible.

B. If contact on skin: Rub the substance out from skin with a lot of water or soap. Do not use any solvent or other thinner. Get rid of the contaminated clothes, and wear after the washing. If the changes including itchiness, soreness, redness or pain on outer surface of your skin are spotted, surely get a treatment from the medical specialist.

C. If inhaled: If inhaled large amount of steam, gas, move immediately to place with fresh air and get the rest. If respiration seems irregular or placed in abnormal condition, get an immediate treatment from the medical specialist. If the person does not breathe, operate CPR and get an immediate treatment from the medical specialist.

D. If ingested: Do not vomit. If the vomiting starts, lower the head under the buttocks to prevent the vomitus blocking respiratory tracts. Next, get an immediate treatment from the medical specialist.

E. Guidelines for medical specialist: In case of inhalation, consider the provision of air. If in ingestion, consider the gastrolavage and injection of activated carbon slurry.

### 5. Explosion and fire-fighting measures

A. The ignition point: No ignition point

B. Natural ignition point: No possibility for Natural ignition

C. Minimum Explosion Threshold/ Maximum Explosion Threshold (VOL. %): No possibility

D. Classification and Regulations by Fire Defense Regulations: Not Applicable

E. Fire Extinguisher: Not Applicable

F. Fire Defense Measures and Devices: Not Applicable

G. The Hazardous Materials in case of combustion: No Data

H. Fire Extinguisher in Prohibited use: No Data

### 6. The guidelines in case of leakage accident

A. Guidelines for human body protection: Wear the protective equipment such as but not limited to; Protection glasses, Protection gloves, Gas masks, and protection gowns/clothes. Be isolated from the hazard area and prohibit the entrance. Do not contact with leaked materials.

B. Guidelines for environmental protection: Immediately get rid of the contaminated materials and if the material is leaked to other regions, build embankment and prevent it from additional leak. Prevent the leakage through soil and water.

C. Purification and termination measures: Absorb and sponge out with the materials such as dry sand, cloth or other nonflammable equipment. Put them in ultimately sealed disposable container and dispose it in procedures under Wastes Control Act.

## **7. Handling and Storage Measures**

A. Safe Handling Measures: Work under the place with fine ventilation measures and wear the protective equipment including proper respiratory protection clothes, gloves with chemical resistance, protection glasses, and protection clothes.

If working in sealed space, install a ventilation facility which can ventilate the working space and even the bottom space. If not guaranteed for bottom space, wear the hose mask (the mask for air provision). Do ground connection when delivering the liquid, dragging the liquid or stirring. After the work, wash your hand and face thoroughly, and do not carry the contaminated protection equipment to places including staff lounge.

B. Storage Measures: Isolate with the compound dangerousness and do not contact with acid or oxidant. Isolate from heat, spark or flames. Store it in dry and cool space with no static electricity. If not in use, seal the container. Make sure to place it far from children's touch.

## **8. Prevention of exposure and personal protection equipment**

A. Engineered Management: Install the local equipment for exhaustion or dilution facility to conform to required standards.

B. Respiratory Protection: Wear the chemical protection measures embedding organic solvent cartridge. If terminating the dry fragment with sanding, wear the proper protection equipment for dust and powder (dustproof, gas-proof, steam supply, filtered mask).

C. Eye Protection: Wear the protection glasses for exclusively on spray protection or dust protection.

D. Hand Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

E. Body Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

F. Hygienic Guidelines: Conform to the guidelines of government and local official government. Wash your hand and body before the intake of food or after the work. Reuse the work clothes after the thorough washing.

G. leakage threshold: ppm

※ There is no leakage threshold guidelines of the product, and the reference of composing constituents is described. (Reference)

### **1) WATER**

OSHA No Data

ACGIH No Data

NIOSH No Data

Germany No Data

UK No Data

EU (European Union) No Data

### **2) CHROMIUM OXIDE GREEN**

OSHA No Data

ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 3) YELLOW IRON OXIDE

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 4) BROWN IRON OXIDE

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 5) S1 (Operation Secret)

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

## 9. Physical and Chemical Characteristics

- A. Exterior: Fluid liquid
- B. Smell: Mild Stimulant Smell
- C. pH: 5.0 - 7.0
- D. Solubility: No Data
- E. Boiling Point/ Boiling Range: Approx. 100 °C
- F. Melting Point/ Melting Range: Approx. 0 °C
- G. Explosiveness: No Data
- H. Oxidation: No Data
- I. Vapor Pressure: No Data
- J. Weight: 1.0-1.2
- K. Distribution Coefficient: No Data
- L. Vapor Density: No Data
- M. Viscosity: 80-110KU/25°C
- N. Molecular Weight: Mixture, No Data

## 10. Stability and Reactivity

- A. Chemical Stability: Stable under room temperature, and atmospheric pressure
- B. Conditions and Materials to avoid: Do not apply heat to container. Do not contact with acid, base or oxidizer.
- C. Hazardous Materials generated during decomposition: Carbon Monoxide, Carbon Dioxide, Other hazardous carbon compounds
- D. The probability of hazardous materials generation: No Data

## 11. Information about toxicity

1) WATER

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

2) CHROMIUM OXIDE GREEN

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

3) YELLOW IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

4) BROWN IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data

OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

5) S1 (Operation Secret)  
A. Acute Oral Toxicity Test No Data  
B. Acute Dermal Toxicity No Data  
C. Acute Inhalation Toxicity No Data  
D. Sub-Acute Toxicity No Data  
E. Chronic Toxicity No Data  
F. Mutagenicity Influence No Data  
G. Developmental Toxicity Study (Reproduction Toxicity) No Data  
H. Carcinogenesis Influence  
IARC No Data  
OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

## **12. Environmental Method**

A. Aqua & Ecotoxicology: It can affect water organisms if leaked without filter in lake or river. It easily attaches to the exterior or skin of natural organisms, and may cause detrimental effect.

B. Soil Mobility: No Data

C. Residual & Resolvability: No Data

D. Possibility of internal accumulation in the body of animals and plants: No Data

## **13. Disposal Guidelines**

A. The current regulation situation under Wastes Control Act: Wastes Control Act No.2, and its implementing ordinances No.3 asterisked no.1 designated waste / Wastes Control Act No.12 and its implementing ordinances No.6

B. Disposal Method: Under Wastes Control Act No.12, and its implementing ordinances No.6, the waste from paint or container should be disposed under the consignment contract with industrial waste handling parties. The wasted paint should be absorbed to diatomite if combusted, and handled in high-temperature pyrolysis in small doses in open incinerator.

C. Guidelines when disposal: Do not operate unauthorized disposal. Conform to Wastes Control Act No.24 about requirements for disposal, government regulations and corresponding local government regulations.

## **14. Information for delivery and transfer**

A. The classification and regulations on ship transport and storage rules under Ships Safety Act: Not regulated

B. Guidelines on delivery: Transfer in ultimate-sealed circumstances and prevent the materials from leakage to drainage, pipe, river or streams.

C. Other foreign classification and regulations for delivery and transfer

UN Level: No Data  
USDOT: No Data  
RID/ADR: No Data  
IMO: No Data  
IATA/ICAO: No Data

## **15. Legal Regulations**

- A. Other department regulations regarding Chemicals Control Act
  - Chemicals Control Act: Not Applicable
  - Fire Services Act: Not Applicable
- B. Other foreign classification and regulations
  - OSHA: No Regulation
  - TSCA: No Data
  - CERCLA: No Data
  - SARA (US Superfund Amendments and Reauthorization Act) : No Data
  - EU (European Union): No Data

## **16. Other Remarks**

- A. The References
  - 1) The regulations on documentation and placement of Material Safety Data Sheet (Ministry of Labor Official No. 97-27, Oct.1997)
  - 2) Material Safety Data Sheet Practical Methodology (Occupational Safety Authority, Nov.1996)
  - 3) Material Safety Data Sheet Practical Methodology for compounds (Occupational Safety Authority, Nov.1996)
  - 4) MSDS for raw materials obtained from each company

# Material Safety Data Sheet (MSDS)

## 1. Product and Company

- A. Product Name : Pigment for micro-inking (MADLUVV)  
Color : NO.113 BRUNETTE
- B. General Characteristic : Cosmetic ink
- C. The Harmfulness Classification : Irritation
- D. The product use : The pigment under use of make-up including eyebrows
- E. Supplier/Distributor Information: identical to Company above
- F. The department and person in charge for this document: Technical department
- G. The confirmation Date: 2020.05.19
- H. The number of Amendment and final amendment date: 00

## 2. The Name and Composition of The Constituents

Product Name	Synonym	CAS No. / Identification No.	Content (%)
WATER	Not Applicable	7732-18-5	40 ~ 49
BLACK IRON OXIDE	Coloring	1317-61-9	0 ~ 4
BROWN IRON OXIDE	Coloring	1309-37-1/20344-49-4/1317-61-9	20 ~ 29
CHROMIUM OXIDE GREEN	Coloring	1308-38-9	5 ~ 14
S1(Operational Secret)		S1(Operational Secret)	0 ~ 9

## 3. Danger & Harmfulness

### A. Information of Urgent Danger & Harmfulness (NFPA Index)

Product Name	Health	Fire	Reactivity
WATER	0	0	0
BLACK IRON OXIDE	0	0	0
BROWN IRON OXIDE	0	0	0
CHROMIUM OXIDE GREEN	0	0	0
S1(Operational Secret)	No Data	No Data	No Data

Do not inhale steam and dust. If exposed in excessive quantity, it can be detrimental to health. It is required to have a proper ventilation measures and to wear the personal protective equipment for minimizing the exposure. Do not contact with eyes and skin.

### B. Influence on Eyes

Short-term Influence: It can cause eye irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause sight obscurity, eye damage and loss of eyesight.

### C. Influence on Skin

Short-term Influence: It can cause skin irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause blister, rash, and other skin ailments.

### D. Influence in case of Inhalation

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, and unconsciousness.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness,

intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer.

#### E. Influence if case of ingestion

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, aspiration risk, and coma.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer. Also, it can cause digestive troubles, and in case of inhalation to lung, this can cause pneumonia, bronchitis, nerve abnormality, coma and death.

#### F. Chronic Symptoms

Reference to the section of Influence on Eyes, Influence on Skin, and Influence if case of ingestion

### **4. The Emergency Measures**

A. If contact in eyes: Rub the substance out from eyes with a lot of flowing water or physiological saline for about 15 minutes. Then rub it out ultimately even the inside of eyelid and get the examination of the medical specialist as soon as possible.

B. If contact on skin: Rub the substance out from skin with a lot of water or soap. Do not use any solvent or other thinner. Get rid of the contaminated clothes, and wear after the washing. If the changes including itchiness, soreness, redness or pain on outer surface of your skin are spotted, surely get a treatment from the medical specialist.

C. If inhaled: If inhaled large amount of steam, gas, move immediately to place with fresh air and get the rest. If respiration seems irregular or placed in abnormal condition, get an immediate treatment from the medical specialist. If the person does not breathe, operate CPR and get an immediate treatment from the medical specialist.

D. If ingested: Do not vomit. If the vomiting starts, lower the head under the buttocks to prevent the vomitus blocking respiratory tracts. Next, get an immediate treatment from the medical specialist.

E. Guidelines for medical specialist: In case of inhalation, consider the provision of air. If in ingestion, consider the gastrolavage and injection of activated carbon slurry.

### **5. Explosion and fire-fighting measures**

A. The ignition point: No ignition point

B. Natural ignition point: No possibility for Natural ignition

C. Minimum Explosion Threshold/ Maximum Explosion Threshold (VOL. %): No possibility

D. Classification and Regulations by Fire Defense Regulations: Not Applicable

E. Fire Extinguisher: Not Applicable

F. Fire Defense Measures and Devices: Not Applicable

G. The Hazardous Materials in case of combustion: No Data

H. Fire Extinguisher in Prohibited use: No Data

### **6. The guidelines in case of leakage accident**

A. Guidelines for human body protection: Wear the protective equipment such as but not limited to; Protection glasses, Protection gloves, Gas masks, and protection gowns/clothes. Be isolated from the hazard area and prohibit the entrance. Do not contact with leaked materials.

B. Guidelines for environmental protection: Immediately get rid of the contaminated materials and if the material is leaked to other regions, build embankment and prevent it from additional leak. Prevent the leakage through soil and water.

C. Purification and termination measures: Absorb and sponge out with the materials such as dry sand, cloth or other nonflammable equipment. Put them in ultimately sealed disposable container and dispose it in procedures under Wastes Control Act.

## **7. Handling and Storage Measures**

A. Safe Handling Measures: Work under the place with fine ventilation measures and wear the protective equipment including proper respiratory protection clothes, gloves with chemical resistance, protection glasses, and protection clothes.

If working in sealed space, install a ventilation facility which can ventilate the working space and even the bottom space. If not guaranteed for bottom space, wear the hose mask (the mask for air provision). Do ground connection when delivering the liquid, dragging the liquid or stirring. After the work, wash your hand and face thoroughly, and do not carry the contaminated protection equipment to places including staff lounge.

B. Storage Measures: Isolate with the compound dangerousness and do not contact with acid or oxidant. Isolate from heat, spark or flames. Store it in dry and cool space with no static electricity. If not in use, seal the container. Make sure to place it far from children's touch.

## **8. Prevention of exposure and personal protection equipment**

A. Engineered Management: Install the local equipment for exhaustion or dilution facility to conform to required standards.

B. Respiratory Protection: Wear the chemical protection measures embedding organic solvent cartridge. If terminating the dry fragment with sanding, wear the proper protection equipment for dust and powder (dustproof, gas-proof, steam supply, filtered mask).

C. Eye Protection: Wear the protection glasses for exclusively on spray protection or dust protection.

D. Hand Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

E. Body Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

F. Hygienic Guidelines: Conform to the guidelines of government and local official government. Wash your hand and body before the intake of food or after the work. Reuse the work clothes after the thorough washing.

G. leakage threshold: ppm

※ There is no leakage threshold guidelines of the product, and the reference of composing constituents is described. (Reference)

### **1) WATER**

OSHA No Data

ACGIH No Data

NIOSH No Data

Germany No Data

UK No Data

EU (European Union) No Data

### **2) BLACK IRON OXIDE**

OSHA No Data

ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

3) BROWN IRON OXIDE

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

4) CHROMIUM OXIDE GREEN

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

5) S1 (Operation Secret)

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

## 9. Physical and Chemical Characteristics

- A. Exterior: Fluid liquid
- B. Smell: Mild Stimulant Smell
- C. pH: 5.0 - 7.0
- D. Solubility: No Data
- E. Boiling Point/ Boiling Range: Approx. 100 °C
- F. Melting Point/ Melting Range: Approx. 0 °C
- G. Explosiveness: No Data
- H. Oxidation: No Data
- I. Vapor Pressure: No Data
- J. Weight: 1.0-1.2
- K. Distribution Coefficient: No Data
- L. Vapor Density: No Data
- M. Viscosity: 80-110KU/25°C
- N. Molecular Weight: Mixture, No Data

## 10. Stability and Reactivity

- A. Chemical Stability: Stable under room temperature, and atmospheric pressure
- B. Conditions and Materials to avoid: Do not apply heat to container. Do not contact with acid, base or oxidizer.
- C. Hazardous Materials generated during decomposition: Carbon Monoxide, Carbon Dioxide, Other hazardous carbon compounds
- D. The probability of hazardous materials generation: No Data

## 11. Information about toxicity

1) WATER

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

2) BLACK IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

3) BROWN IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

4) CHROMIUM OXIDE GREEN

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data

OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

5) S1 (Operation Secret)  
A. Acute Oral Toxicity Test No Data  
B. Acute Dermal Toxicity No Data  
C. Acute Inhalation Toxicity No Data  
D. Sub-Acute Toxicity No Data  
E. Chronic Toxicity No Data  
F. Mutagenicity Influence No Data  
G. Developmental Toxicity Study (Reproduction Toxicity) No Data  
H. Carcinogenesis Influence  
IARC No Data  
OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

## **12. Environmental Method**

A. Aqua & Ecotoxicology: It can affect water organisms if leaked without filter in lake or river. It easily attaches to the exterior or skin of natural organisms, and may cause detrimental effect.

B. Soil Mobility: No Data

C. Residual & Resolvability: No Data

D. Possibility of internal accumulation in the body of animals and plants: No Data

## **13. Disposal Guidelines**

A. The current regulation situation under Wastes Control Act: Wastes Control Act No.2, and its implementing ordinances No.3 asterisked no.1 designated waste / Wastes Control Act No.12 and its implementing ordinances No.6

B. Disposal Method: Under Wastes Control Act No.12, and its implementing ordinances No.6, the waste from paint or container should be disposed under the consignment contract with industrial waste handling parties. The wasted paint should be absorbed to diatomite if combusted, and handled in high-temperature pyrolysis in small doses in open incinerator.

C. Guidelines when disposal: Do not operate unauthorized disposal. Conform to Wastes Control Act No.24 about requirements for disposal, government regulations and corresponding local government regulations.

## **14. Information for delivery and transfer**

A. The classification and regulations on ship transport and storage rules under Ships Safety Act: Not regulated

B. Guidelines on delivery: Transfer in ultimate-sealed circumstances and prevent the materials from leakage to drainage, pipe, river or streams.

C. Other foreign classification and regulations for delivery and transfer

UN Level: No Data  
USDOT: No Data  
RID/ADR: No Data  
IMO: No Data  
IATA/ICAO: No Data

## **15. Legal Regulations**

- A. Other department regulations regarding Chemicals Control Act
  - Chemicals Control Act: Not Applicable
  - Fire Services Act: Not Applicable
- B. Other foreign classification and regulations
  - OSHA: No Regulation
  - TSCA: No Data
  - CERCLA: No Data
  - SARA (US Superfund Amendments and Reauthorization Act) : No Data
  - EU (European Union): No Data

## **16. Other Remarks**

### A. The References

- 1) The regulations on documentation and placement of Material Safety Data Sheet (Ministry of Labor Official No. 97-27, Oct.1997)
- 2) Material Safety Data Sheet Practical Methodology (Occupational Safety Authority, Nov.1996)
- 3) Material Safety Data Sheet Practical Methodology for compounds (Occupational Safety Authority, Nov.1996)
- 4) MSDS for raw materials obtained from each company

# Material Safety Data Sheet (MSDS)

## 1. Product and Company

- A. Product Name : Pigment for micro-inking (MADLUVV)  
Color : NO.114 DARKEST BROWN
- B. General Characteristic : Cosmetic ink
- C. The Harmfulness Classification : Irritation
- D. The product use : The pigment under use of make-up including eyebrows
- E. Supplier/Distributor Information: identical to Company above
- F. The department and person in charge for this document: Technical department
- G. The confirmation Date: 2020.05.19
- H. The number of Amendment and final amendment date: 00

## 2. The Name and Composition of The Constituents

Product Name	Synonym	CAS No. / Identification No.	Content (%)
WATER	Not Applicable	7732-18-5	40 ~ 49
CHROMIUM OXIDE GREEN	Coloring	1308-38-9	5 ~ 14
BROWN IRON OXIDE	Coloring	1309-37-1/20344-49-4/1317-61-9	20 ~ 29
BLACK IRON OXIDE	Coloring	1317-61-9	0 ~ 4
S1(Operational Secret)		S1(Operational Secret)	0 ~ 9

## 3. Danger & Harmfulness

### A. Information of Urgent Danger & Harmfulness (NFPA Index)

Product Name	Health	Fire	Reactivity
WATER	0	0	0
CHROMIUM OXIDE GREEN	0	0	0
BROWN IRON OXIDE	0	0	0
BLACK IRON OXIDE	0	0	0
S1(Operational Secret)	No Data	No Data	No Data

Do not inhale steam and dust. If exposed in excessive quantity, it can be detrimental to health. It is required to have a proper ventilation measures and to wear the personal protective equipment for minimizing the exposure. Do not contact with eyes and skin.

### B. Influence on Eyes

Short-term Influence: It can cause eye irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause sight obscurity, eye damage and loss of eyesight.

### C. Influence on Skin

Short-term Influence: It can cause skin irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause blister, rash, and other skin ailments.

### D. Influence in case of Inhalation

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, and unconsciousness.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness,

intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer.

#### E. Influence if case of ingestion

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, aspiration risk, and coma.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrimus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer. Also, it can cause digestive troubles, and in case of inhalation to lung, this can cause pneumonia, bronchitis, nerve abnormality, coma and death.

#### F. Chronic Symptoms

Reference to the section of Influence on Eyes, Influence on Skin, and Influence if case of ingestion

### 4. The Emergency Measures

A. If contact in eyes: Rub the substance out from eyes with a lot of flowing water or physiological saline for about 15 minutes. Then rub it out ultimately even the inside of eyelid and get the examination of the medical specialist as soon as possible.

B. If contact on skin: Rub the substance out from skin with a lot of water or soap. Do not use any solvent or other thinner. Get rid of the contaminated clothes, and wear after the washing. If the changes including itchiness, soreness, redness or pain on outer surface of your skin are spotted, surely get a treatment from the medical specialist.

C. If inhaled: If inhaled large amount of steam, gas, move immediately to place with fresh air and get the rest. If respiration seems irregular or placed in abnormal condition, get an immediate treatment from the medical specialist. If the person does not breathe, operate CPR and get an immediate treatment from the medical specialist.

D. If ingested: Do not vomit. If the vomiting starts, lower the head under the buttocks to prevent the vomitus blocking respiratory tracts. Next, get an immediate treatment from the medical specialist.

E. Guidelines for medical specialist: In case of inhalation, consider the provision of air. If in ingestion, consider the gastrolavage and injection of activated carbon slurry.

### 5. Explosion and fire-fighting measures

A. The ignition point: No ignition point

B. Natural ignition point: No possibility for Natural ignition

C. Minimum Explosion Threshold/ Maximum Explosion Threshold (VOL. %): No possibility

D. Classification and Regulations by Fire Defense Regulations: Not Applicable

E. Fire Extinguisher: Not Applicable

F. Fire Defense Measures and Devices: Not Applicable

G. The Hazardous Materials in case of combustion: No Data

H. Fire Extinguisher in Prohibited use: No Data

### 6. The guidelines in case of leakage accident

A. Guidelines for human body protection: Wear the protective equipment such as but not limited to; Protection glasses, Protection gloves, Gas masks, and protection gowns/clothes. Be isolated from the hazard area and prohibit the entrance. Do not contact with leaked materials.

B. Guidelines for environmental protection: Immediately get rid of the contaminated materials and if the material is leaked to other regions, build embankment and prevent it from additional leak. Prevent the leakage through soil and water.

C. Purification and termination measures: Absorb and sponge out with the materials such as dry sand, cloth or other nonflammable equipment. Put them in ultimately sealed disposable container and dispose it in procedures under Wastes Control Act.

## **7. Handling and Storage Measures**

A. Safe Handling Measures: Work under the place with fine ventilation measures and wear the protective equipment including proper respiratory protection clothes, gloves with chemical resistance, protection glasses, and protection clothes.

If working in sealed space, install a ventilation facility which can ventilate the working space and even the bottom space. If not guaranteed for bottom space, wear the hose mask (the mask for air provision). Do ground connection when delivering the liquid, dragging the liquid or stirring. After the work, wash your hand and face thoroughly, and do not carry the contaminated protection equipment to places including staff lounge.

B. Storage Measures: Isolate with the compound dangerousness and do not contact with acid or oxidant. Isolate from heat, spark or flames. Store it in dry and cool space with no static electricity. If not in use, seal the container. Make sure to place it far from children's touch.

## **8. Prevention of exposure and personal protection equipment**

A. Engineered Management: Install the local equipment for exhaustion or dilution facility to conform to required standards.

B. Respiratory Protection: Wear the chemical protection measures embedding organic solvent cartridge. If terminating the dry fragment with sanding, wear the proper protection equipment for dust and powder (dustproof, gas-proof, steam supply, filtered mask).

C. Eye Protection: Wear the protection glasses for exclusively on spray protection or dust protection.

D. Hand Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

E. Body Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

F. Hygienic Guidelines: Conform to the guidelines of government and local official government. Wash your hand and body before the intake of food or after the work. Reuse the work clothes after the thorough washing.

G. leakage threshold: ppm

※ There is no leakage threshold guidelines of the product, and the reference of composing constituents is described. (Reference)

### **1) WATER**

OSHA No Data

ACGIH No Data

NIOSH No Data

Germany No Data

UK No Data

EU (European Union) No Data

### **2) CHROMIUM OXIDE GREEN**

OSHA No Data

ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 3) BROWN IRON OXIDE

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 4) BLACK IRON OXIDE

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

### 5) S1 (Operation Secret)

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

## 9. Physical and Chemical Characteristics

- A. Exterior: Fluid liquid
- B. Smell: Mild Stimulant Smell
- C. pH: 5.0 - 7.0
- D. Solubility: No Data
- E. Boiling Point/ Boiling Range: Approx. 100 °C
- F. Melting Point/ Melting Range: Approx. 0 °C
- G. Explosiveness: No Data
- H. Oxidation: No Data
- I. Vapor Pressure: No Data
- J. Weight: 1.0-1.2
- K. Distribution Coefficient: No Data
- L. Vapor Density: No Data
- M. Viscosity: 80-110KU/25°C
- N. Molecular Weight: Mixture, No Data

## 10. Stability and Reactivity

- A. Chemical Stability: Stable under room temperature, and atmospheric pressure
- B. Conditions and Materials to avoid: Do not apply heat to container. Do not contact with acid, base or oxidizer.
- C. Hazardous Materials generated during decomposition: Carbon Monoxide, Carbon Dioxide, Other hazardous carbon compounds
- D. The probability of hazardous materials generation: No Data

## 11. Information about toxicity

1) WATER

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

2) CHROMIUM OXIDE GREEN

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

3) BROWN IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

4) BLACK IRON OXIDE

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data

OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

5) S1 (Operation Secret)  
A. Acute Oral Toxicity Test No Data  
B. Acute Dermal Toxicity No Data  
C. Acute Inhalation Toxicity No Data  
D. Sub-Acute Toxicity No Data  
E. Chronic Toxicity No Data  
F. Mutagenicity Influence No Data  
G. Developmental Toxicity Study (Reproduction Toxicity) No Data  
H. Carcinogenesis Influence  
IARC No Data  
OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

## **12. Environmental Method**

A. Aqua & Ecotoxicology: It can affect water organisms if leaked without filter in lake or river. It easily attaches to the exterior or skin of natural organisms, and may cause detrimental effect.

B. Soil Mobility: No Data

C. Residual & Resolvability: No Data

D. Possibility of internal accumulation in the body of animals and plants: No Data

## **13. Disposal Guidelines**

A. The current regulation situation under Wastes Control Act: Wastes Control Act No.2, and its implementing ordinances No.3 asterisked no.1 designated waste / Wastes Control Act No.12 and its implementing ordinances No.6

B. Disposal Method: Under Wastes Control Act No.12, and its implementing ordinances No.6, the waste from paint or container should be disposed under the consignment contract with industrial waste handling parties. The wasted paint should be absorbed to diatomite if combusted, and handled in high-temperature pyrolysis in small doses in open incinerator.

C. Guidelines when disposal: Do not operate unauthorized disposal. Conform to Wastes Control Act No.24 about requirements for disposal, government regulations and corresponding local government regulations.

## **14. Information for delivery and transfer**

A. The classification and regulations on ship transport and storage rules under Ships Safety Act: Not regulated

B. Guidelines on delivery: Transfer in ultimate-sealed circumstances and prevent the materials from leakage to drainage, pipe, river or streams.

C. Other foreign classification and regulations for delivery and transfer

UN Level: No Data  
USDOT: No Data  
RID/ADR: No Data  
IMO: No Data  
IATA/ICAO: No Data

## **15. Legal Regulations**

A. Other department regulations regarding Chemicals Control Act  
Chemicals Control Act: Not Applicable  
Fire Services Act: Not Applicable  
B. Other foreign classification and regulations  
OSHA: No Regulation  
TSCA: No Data  
CERCLA: No Data  
SARA (US Superfund Amendments and Reauthorization Act) : No Data  
EU (European Union): No Data

## **16. Other Remarks**

### A. The References

- 1) The regulations on documentation and placement of Material Safety Data Sheet (Ministry of Labor Official No. 97-27, Oct.1997)
- 2) Material Safety Data Sheet Practical Methodology (Occupational Safety Authority, Nov.1996)
- 3) Material Safety Data Sheet Practical Methodology for compounds (Occupational Safety Authority, Nov.1996)
- 4) MSDS for raw materials obtained from each company

# Material Safety Data Sheet (MSDS)

## 1. Product and Company

- A. Product Name : Pigment for micro-inking (MADLUVV)  
Color : NO.115 JET BLACK
- B. General Characteristic : Cosmetic ink
- C. The Harmfulness Classification : Irritation
- D. The product use : The pigment under use of make-up including eyebrows
- E. The department and person in charge for this document: Technical department
- F. The confirmation Date: 2020.05.19
- G. The number of Amendment and final amendment date: 00

## 2. The Name and Composition of The Constituents

Product Name	Synonym	CAS No. / Identification No.	Content (%)
WATER	Not Applicable	7732-18-5	40 ~ 49
BLACK IRON OXIDE	Coloring	1317-61-9	40 ~ 49
S1(Operational Secret)		S1(Operational Secret)	0 ~ 9

## 3. Danger & Harmfulness

### A. Information of Urgent Danger & Harmfulness (NFPA Index)

Product Name	Health	Fire	Reactivity
WATER	0	0	0
BLACK IRON OXIDE	0	0	0
S1(Operational Secret)	No Data	No Data	No Data

Do not inhale steam and dust. If exposed in excessive quantity, it can be detrimental to health. It is required to have a proper ventilation measures and to wear the personal protective equipment for minimizing the exposure. Do not contact with eyes and skin.

### B. Influence on Eyes

Short-term Influence: It can cause eye irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause sight obscurity, eye damage and loss of eyesight.

### C. Influence on Skin

Short-term Influence: It can cause skin irritation if in contact, by the constituents.

Long-term Influence: If in long-term contact, it can cause blister, rash, and other skin ailments.

### D. Influence in case of Inhalation

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, and unconsciousness.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer.

### E. Influence if case of ingestion

Short-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function,

pulmonary edema, internal hemorrhage, aspiration risk, and coma.

Long-term Influence: It can cause irritating stimulation, nausea, vomiting, headache, syrigmus, dopiness, intoxication symptom, disorientation, bluish skin color, cramps, coma, dizziness, loss of mediation function, pulmonary edema, internal hemorrhage, unconsciousness, nerves abnormality, liver abnormality, heart abnormality, and cancer. Also, it can cause digestive troubles, and in case of inhalation to lung, this can cause pneumonia, bronchitis, nerve abnormality, coma and death.

#### F. Chronic Symptoms

Reference to the section of Influence on Eyes, Influence on Skin, and Influence if case of ingestion

### 4. The Emergency Measures

A. If contact in eyes: Rub the substance out from eyes with a lot of flowing water or physiological saline for about 15 minutes. Then rub it out ultimately even the inside of eyelid and get the examination of the medical specialist as soon as possible.

B. If contact on skin: Rub the substance out from skin with a lot of water or soap. Do not use any solvent or other thinner. Get rid of the contaminated clothes, and wear after the washing. If the changes including itchiness, soreness, redness or pain on outer surface of your skin are spotted, surely get a treatment from the medical specialist.

C. If inhaled: If inhaled large amount of steam, gas, move immediately to place with fresh air and get the rest. If respiration seems irregular or placed in abnormal condition, get an immediate treatment from the medical specialist. If the person does not breathe, operate CPR and get an immediate treatment from the medical specialist.

D. If ingested: Do not vomit. If the vomiting starts, lower the head under the buttocks to prevent the vomitus blocking respiratory tracts. Next, get an immediate treatment from the medical specialist.

E. Guidelines for medical specialist: In case of inhalation, consider the provision of air. If in ingestion, consider the gastrolavage and injection of activated carbon slurry.

### 5. Explosion and fire-fighting measures

A. The ignition point: No ignition point

B. Natural ignition point: No possibility for Natural ignition

C. Minimum Explosion Threshold/ Maximum Explosion Threshold (VOL. %): No possibility

D. Classification and Regulations by Fire Defense Regulations: Not Applicable

E. Fire Extinguisher: Not Applicable

F. Fire Defense Measures and Devices: Not Applicable

G. The Hazardous Materials in case of combustion: No Data

H. Fire Extinguisher in Prohibited use: No Data

### 6. The guidelines in case of leakage accident

A. Guidelines for human body protection: Wear the protective equipment such as but not limited to; Protection glasses, Protection gloves, Gas masks, and protection gowns/clothes. Be isolated from the hazard area and prohibit the entrance. Do not contact with leaked materials.

B. Guidelines for environmental protection: Immediately get rid of the contaminated materials and if the material is leaked to other regions, build embankment and prevent it from additional leak. Prevent the leakage through soil and water.

C. Purification and termination measures: Absorb and sponge out with the materials such as dry sand, cloth or other nonflammable equipment. Put them in ultimately sealed disposable container and dispose it in procedures under Wastes Control Act.

## 7. Handling and Storage Measures

A. Safe Handling Measures: Work under the place with fine ventilation measures and wear the protective equipment including proper respiratory protection clothes, gloves with chemical resistance, protection glasses, and protection clothes.

If working in sealed space, install a ventilation facility which can ventilate the working space and even the bottom space. If not guaranteed for bottom space, wear the hose mask (the mask for air provision). Do ground connection when delivering the liquid, dragging the liquid or stirring. After the work, wash your hand and face thoroughly, and do not carry the contaminated protection equipment to places including staff lounge.

B. Storage Measures: Isolate with the compound dangerousness and do not contact with acid or oxidant. Isolate from heat, spark or flames. Store it in dry and cool space with no static electricity. If not in use, seal the container. Make sure to place it far from children's touch.

## 8. Prevention of exposure and personal protection equipment

A. Engineered Management: Install the local equipment for exhaustion or dilution facility to conform to required standards.

B. Respiratory Protection: Wear the chemical protection measures embedding organic solvent cartridge. If terminating the dry fragment with sanding, wear the proper protection equipment for dust and powder (dustproof, gas-proof, steam supply, filtered mask).

C. Eye Protection: Wear the protection glasses for exclusively on spray protection or dust protection.

D. Hand Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

E. Body Protection: Wear the protective gloves that are embedded with impermeability function towards organic solvent or chemicals such as polyethylene, Butyl-rubber, and PVC.

F. Hygienic Guidelines: Conform to the guidelines of government and local official government. Wash your hand and body before the intake of food or after the work. Reuse the work clothes after the thorough washing.

G. leakage threshold: ppm

※ There is no leakage threshold guidelines of the product, and the reference of composing constituents is described. (Reference)

### 1) WATER

OSHA No Data

ACGIH No Data

NIOSH No Data

Germany No Data

UK No Data

EU (European Union) No Data

### 2) BLACK IRON OXIDE

OSHA No Data

ACGIH No Data

NIOSH No Data

Germany No Data

UK No Data

EU (European Union) No Data

### 3) S1 (Operation Secret)

OSHA No Data  
ACGIH No Data  
NIOSH No Data  
Germany No Data  
UK No Data  
EU (European Union) No Data

## 9. Physical and Chemical Characteristics

A. Exterior: Fluid liquid  
B. Smell: Mild Stimulant Smell  
C. pH: 5.0 - 7.0  
D. Solubility: No Data  
E. Boiling Point/ Boiling Range: Approx. 100 °C  
F. Melting Point/ Melting Range: Approx. 0 °C  
G. Explosiveness: No Data  
H. Oxidation: No Data  
I. Vapor Pressure: No Data  
J. Weight: 1.0-1.2  
K. Distribution Coefficient: No Data  
L. Vapor Density: No Data  
M. Viscosity: 80-110KU/25°C  
N. Molecular Weight: Mixture, No Data

## 10. Stability and Reactivity

A. Chemical Stability: Stable under room temperature, and atmospheric pressure  
B. Conditions and Materials to avoid: Do not apply heat to container. Do not contact with acid, base or oxidizer.  
C. Hazardous Materials generated during decomposition: Carbon Monoxide, Carbon Dioxide, Other hazardous carbon compounds  
D. The probability of hazardous materials generation: No Data

## 11. Information about toxicity

1) WATER  
A. Acute Oral Toxicity Test No Data  
B. Acute Dermal Toxicity No Data  
C. Acute Inhalation Toxicity No Data  
D. Sub-Acute Toxicity No Data  
E. Chronic Toxicity No Data  
F. Mutagenicity Influence No Data  
G. Developmental Toxicity Study (Reproduction Toxicity) No Data  
H. Carcinogenesis Influence  
IARC No Data  
OSHA No Data  
ACGIH No Data  
USNTP No Data  
USEPA No Data  
I. Other Remarks No Data

2) BLACK IRON OXIDE  
A. Acute Oral Toxicity Test No Data  
B. Acute Dermal Toxicity No Data  
C. Acute Inhalation Toxicity No Data  
D. Sub-Acute Toxicity No Data

- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

3) S1 (Operation Secret)

- A. Acute Oral Toxicity Test No Data
- B. Acute Dermal Toxicity No Data
- C. Acute Inhalation Toxicity No Data
- D. Sub-Acute Toxicity No Data
- E. Chronic Toxicity No Data
- F. Mutagenicity Influence No Data
- G. Developmental Toxicity Study (Reproduction Toxicity) No Data
- H. Carcinogenesis Influence
  - IARC No Data
  - OSHA No Data
  - ACGIH No Data
  - USNTP No Data
  - USEPA No Data
- I. Other Remarks No Data

## 12. Environmental Method

- A. Aqua & Ecotoxicology: It can affect water organisms if leaked without filter in lake or river. It easily attaches to the exterior or skin of natural organisms, and may cause detrimental effect.
- B. Soil Mobility: No Data
- C. Residual & Resolvability: No Data
- D. Possibility of internal accumulation in the body of animals and plants: No Data

## 13. Disposal Guidelines

- A. The current regulation situation under Wastes Control Act: Wastes Control Act No.2, and its implementing ordinances No.3 asterisked no.1 designated waste / Wastes Control Act No.12 and its implementing ordinances No.6
- B. Disposal Method: Under Wastes Control Act No.12, and its implementing ordinances No.6, the waste from paint or container should be disposed under the consignment contract with industrial waste handling parties. The wasted paint should be absorbed to diatomite if combusted, and handled in high-temperature pyrolysis in small doses in open incinerator.
- C. Guidelines when disposal: Do not operate unauthorized disposal. Conform to Wastes Control Act No.24 about requirements for disposal, government regulations and corresponding local government regulations.

## 14. Information for delivery and transfer

- A. The classification and regulations on ship transport and storage rules under Ships Safety Act: Not regulated

B. Guidelines on delivery: Transfer in ultimate-sealed circumstances and prevent the materials from leakage to drainage, pipe, river or streams.

C. Other foreign classification and regulations for delivery and transfer

UN Level: No Data

USDOT: No Data

RID/ADR: No Data

IMO: No Data

IATA/ICAO: No Data

## **15. Legal Regulations**

A. Other department regulations regarding Chemicals Control Act

Chemicals Control Act: Not Applicable

Fire Services Act: Not Applicable

B. Other foreign classification and regulations

OSHA: No Regulation

TSCA: No Data

CERCLA: No Data

SARA (US Superfund Amendments and Reauthorization Act) : No Data

EU (European Union): No Data

## **16. Other Remarks**

A. The References

1) The regulations on documentation and placement of Material Safety Data Sheet (Ministry of Labor Official No. 97-27, Oct.1997)

2) Material Safety Data Sheet Practical Methodology (Occupational Safety Authority, Nov.1996)

3) Material Safety Data Sheet Practical Methodology for compounds (Occupational Safety Authority, Nov.1996)

4) MSDS for raw materials obtained from each company