MATERIAL SAFETY DATA SHEET(MSDS)

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

·CHEMICAL PRODUCT NAME : CFC-633K

·NAME OF MANUFACTURER : CHEONGWOO CFC CO., LTD.

·ADDRESS : #14-1, Eogokgongdan3-gil, Yangsan-city, Gyeongnam. Korea

·TEL No. : 82-55-382-7576

·FAX No. : 82-55-382-7584

·EMERGENCY TEL No. : 82-55-338-7576   FAX No. : 82-55-338-7856

2. HAZARD IDENTIFICATION

·Hazard Classification

Flammable Liquid (Cat. 3)

Acute Toxic Substance (Cat. 4)

Skin Corrosive or Irritant Substance (Cat. 2)

Serious eye damage or irritant (Cat. 2)

Respiratory Sensitization (Cat. 1)

Skin sensitizer (Cat. 1)

·Caution mark in Korea

Symbol: 

Signal Word: Warning

Hazard Risk Statement: H226 Flammable liquid or vapor

H315 Slightly irritating to the skin

H319 Mildly to severely irritating to the eyes.

·Precautionary Statements :

Prevention

P210 Keep away from ignition sources such as heat, sparks and open flames.

P233 Keep container tightly closed.

P240 Ground and bond containers and storage containers.

P241 Use explosion-proof electrical, ventilation, lighting, and equipment.

P242 Use non-sparking tools.

P243 Take measures to prevent static electricity.

P260 Do not breathe particles, fumes, gases, mists, vapors or sprays.

P261 Avoid breathing particles, fumes, gases, mists, vapours or sprays.

P264 Wash thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves, protective clothing, eye protection, and face protection.

Response

P301+P310 If swallowed, seek medical attention immediately.

P302+P352 IF ON SKIN : Wash with plenty of water and soap.

P303+P361+P353 If on skin (or hair): Take off or remove all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. If possible, remove contact lenses. Keep washing.

P312 Get medical attention if you feel unwell.

P331 Do not induce vomiting.

P332+P313 If skin irritation occurs: Get medical advice/attention.

P337+P313 If eye irritation persists: Get medical attention/advice.

P362+P364 Take off contaminated clothing and wash before reuse.

P370+P378 In case of fire: Use fire extinguisher to extinguish.

Storage

P403+P233 Keep container tightly closed in a well-ventilated place.

P403+P235 Store in a well-ventilated place and keep at low temperature.

P405 Store in locked storage area.

Disposal

P501 Dispose of contents and container according to the contents specified in relevant laws and regulations.

· Harmful, dangerous and other hazardous that are not included in the classification criteria, hazard : No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS REGISTRY NUMBER	COMPOSITION(%)
High molecular block copolymer	61245-23-6	42-46
Butyl Acetate	123-86-4	23-27
Methoxypropyl Acetate	108-65-6	12-16
Xylene	1330-20-7	14-18

4. FIRST-AID MEASURES

·Eye contact : First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

·Skin contact : Wash with soap and water. Get medical attention if irritation develops or persists.

·Inhalation : Remove to fresh air. If not breathing, give artificial respiration.

If breathing difficult, give oxygen. Get immediate medical attention.

·Ingestion : If swallowed, do not induce vomiting. Give victim a glass of water.

Call a physician immediately. Never give anything by mouth

to an unconscious person.

·First aid and doctor's notice: Make sure medical personnel are aware of the substance and take

protective measures.

Symptoms caused by contact or inhalation may be delayed.

5. FIRE-FIGHTING MEASURES

·Extinguishing Media : Water spray, foam extinguishing agent, carbon dioxide, dry sand or soil

for asphyxiation.

(Inappropriate extinguishing agent: No data available)

·Specific hazards with regard to fire-fighting measures:

Flammable liquids and vapors

May cause fire and explosion due to vigorous polymerization reaction.

During burning, irritating and very toxic gases may be produced by pyrolysis or combustion.

Irritating to skin and eyes or causing burns by inhalation and contact

·Protective equipment and precautions to be worn when fighting fire:

Rescuer wear appropriate protective equipment

Extinguish from the area and keep a safe distance.

Move container from fire area if it is not dangerous

Please note that most are lighter than water.

6. ACCIDENTAL RELEASE MEASURES

·Personal precaution : Wear protective equipment

·Environmental precution: Collect the spilled product, transfer it to an appropriate container for disposal, and purify the air.

·Procedure for clean up of spills and leaks: Use of non-active and adsorbent materials such as sand silica gel.

7. HANDLING & STORAGE

·Handling : Put in a closed container, keep away from fire

·Storage: Store in a safe and cool place at room temperature.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

·Exposure standards for chemical substances, biological exposure standards, etc.

Domestic regulations

Butyl Acetate : TWA-150ppm, STEL-200ppm

Xylene : TWA-100ppm, STEL-150ppm

ACGIH regulations

Butyl Acetate : TWA 50 ppm, STEL 150 ppm

Xylene : STEL 150 ppm, TWA 100 ppm

Biological exposure limit : No data available

Other exposure standards : No data available

·Appropriate engineering controls: Install local exhaust ventilation system. If the material is at risk of explosive concentration, the ventilation system should be explosion-proof. Make sure it meets the applicable exposure standards.

·Personal protective equipment

○ Respiratory protection : Wear protective respiratory equipment.

○ Eye protection : Wear protective glasses. Install cleansing equipment and emergency washing equipment(shower type) near the workplace.

○ Hand protection : Wear gloves with appropriate chemical resistance.

○ Body protection : Wear work clothes to protect the body from contact.

9. PHYSICAL & CHEMICAL PROPERTIES

·Appearanse : yellow clear liquid

·pH : Not available

·Melting point: Not available

·Boiling point: Not available

·Flasch point : Approx 22℃

·Density: 1.00±0.02 (20℃)

·Vapour pressure: Not available

10. PHYSICAL HAZARD(STABILITY & REACTIVITY)

·Chemical stability and Possibility of hazardous decomposition products

Stable under normal use conditions

·Conditions to avoid : Isolation from ignition sources such as heat or flame

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Incompatible materials : No degradability when used directly.

·Hazardous substances produced during decomposition

Irritating, corrosive and toxic gases

During burning, irritating and very toxic gases may be produced by pyrolysis or combustion.

11. TOXICOLOGICAL INFORMATION

·Information on the likely routes of exposure : No data available

·Health Hazard Information

○ Acute toxicity

Oral : Butyl Acetate : LD50 3200 ㎖/kg Rat (OECD TG 423)

1-Methoxy-2-Propanol acetate : LD50 8532 ㎎/kg Rat

Xylene : LD50 3523 ㎎/kg Rat (EU Method B1)

Dermal : Butyl Acetate : LD50> 17600 mg/kg Rabbit (OECD TG 402)

1-Methoxy-2-Propanol acetate : LD50> 5000 ㎎/kg Rabbit

Xylene : LD50 1100 ㎎/kg (Converted acute toxicity estimate (EU CLP harmonized classification: Category 4))

Inhalation : Butyl Acetate : Vapor LC50 1802 ㎎/ℓ Rat

1-Methoxy -2-Propanol acetate : Vapor LC50> 4345 ppm 6 hr Rat

Xylene : Vapor LC50 5922 ppm 4 hr Rat

○ Skin corrosive or irritating substance

Butyl Acetate : Non-irritating

1-Methoxy -2-Propanol acetate : No irritant

Xylene : Skin irritation test using rabbits EU Method B.4 results 1st skin irritation index 3, moderate irritation

○ Serious eye damage or irritant substance

Butyl Acetate : Results of severe eye damage/irritation test in rabbits, does not cause eye irritation Corneal index: 0.33/4, iris index: 0.56/2, conjunctival index 1/3, conjunctival edema index: 0.33/4 OECD TG 405, GLP

1-Methoxy -2-Propanol acetate rabbit: mild irritation

Xylene : Eye and respiratory irritation effects on humans exposed to mixed xylene of 100 ppm of STEL based on short-term exposure . Conjunctival redness (blood vessels more diffuse above normal and scarlet, individual vessels not easily identified) was observed when o-xylene was injected into rabbits,. One hour after instillation, conjunctival chemopathy (over-normal swelling) and conjunctival discharge (over-normal volume) were observed in 5 rabbits . Ministry of Environment Regulations on Classification and Labeling of Chemical Substances: Category 2

○ Respiratory Sensitization: No data available

○ Skin sensitizing substances

Butyl Acetate : Buehler test results using guinea pigs Non-sensitizing OECD TG 406

1-Methoxy -2-Propanol acetate : guinea pig/maximization test (GLP): no sensitization

Xylene : Mouse local lymph node test OECD TG 429 Non-sensitizing

○ Carcinogenic substances

Occupational Safety and Health Act : No data available

Ministry of Employment and Labor Notification : No data available

IARC : Xylene : 3

OSHA : No data available

ACGIH : Xylene : A4

NTP : No data available

EU CLP : No data available

○ Germ cell mutagenic substance

Butyl Acetate : Bacterial reversion mutation test results using in vitro microorganisms, negative OECD Guideline 471 , in vivo mammalian red blood cell micronucleus test results, negative OECD Guideline 474

1-Methoxy-2-Propanol acetate : In vitro-Salmonella typhimurium / TA98, TA100, TA1535, TA1537 (reversion mutation test, GLP): Negative (negative), CHL Cells/chromosome abnormality test (GLP): Negative (negative), rat hepatocytes/ UDS test (GLP): Negative in the absence of metabolic activation system (negative)

Xylene : Reverse mutation test using in vitro bacteria OECD TG471 result negative, micronucleus test using mouse bone marrow cells in vivo, Oef 474, GLP result negative

○ Reproductive toxicity

Butyl Acetate : As a result of the second generation reproductive toxicity test in rats, weight, weight gain, and decrease in food intake were observed at 1500ppm~2000ppm (NOAELsystemic toxicity, adult rats=750 ppm (nominal)) (OECD TG 416, GLP) rat As a result of fetal developmental toxicity test, weight and liver weight reduction, pups size reduction, and rib deformity were observed, but maternal toxicity was judged to be higher than developmental toxicity (NOAELmaternal toxicity=2.5 mg/L air (nominal), NOAELteratogenicity=10). mg/L air (nominal)) (GLP, OECD Guideline 414)

1-Methoxy-2-Propanol acetate : Rat/oral (0, 100, 300, 1000 mg/kg/day for 44D (M) and 41-45D(F)) (GLP): No toxic effects on reproductive parameters . Rat/Inhalation (500, 2000, 4000ppm for 21D) (GLP): No teratogenic or other developmental toxic effects.

Xylene : 2nd generation rat reproductive toxicity (repeated inhalation exposure, EPA OPPTS 870.3800) test results, no toxic effects related to reproduction and development were observed up to the highest concentration tested (500 ppm). NOAEC (reproductive/development/parental toxicity)>=500 ppm As a result of developmental inhalation toxicity test using rats (OECD TG414), BMCL10 (development)=5761 mg/㎥ due to a decrease in newborn weight, BMCL10 (maternal toxicity) due to a decrease in maternal weight. =2675mg/㎥

○ Specific target organ toxicity (single exposure)

Butyl Acetate : Causes central nervous disorder, pulmonary edema, respiratory tract irritation in humans., Target organ: central nervous system, respiratory system

1-Methoxy-2-Propanol acetate : Rat (male, female)/oral (500, 1000, 2000, 4000, 6300, 100000 mg/kg): lethargy, piloerection, watery eyes Eyes), anorexia (loss of appetite), shallow breathing and salivation are observed.

Xylene : Dizziness has been reported in humans, remarkable arousal, tremors, and anesthetic effects have been reported in experimental animals. Slight irritation to eyes and upper respiratory tract and slight central nervous system effect when exposed to 100ppm442 mg/㎥ in humans

○ Specific target organ toxicity (repeated exposure)

Butyl Acetate : <Similar substance CAS No. 71-36-3> As a result of a 90-day repeated oral toxicity test for rodents in rats, central nervous system abnormalities such as ataxia and decreased activity were observed 2-3 minutes after exposure in the 600mg/kg concentration group.Recovered within 1 hour alcohol No other specific effects observed NOAEL=level:125 mg/kg bw/day nominal EPA OTS 798.2650, 90-day inhalation toxicity test in GLP rats, acute decrease in activity level at medium and highest concentrations , Short-term symptoms were observed, weight and food intake decreased, nasal upper respiratory tract irritation was observed NOAEC=500ppm GLP, EPA OTS 798.2450

1-Methoxy-2-Propanol acetate : rat / oral ((0, 100, 300, 1000 mg / kg / day for 44D M) and . 41-55D (F)) (GLP): toxic effects are not observed Not. Rat (male, female)/inhalation (300, 1000, 3000 ppm for 2W) (GLP): Slight olfactory epithelial damage, no other symptoms observed.

Xylene : In humans and animals, during chronic exposure, central nervous disorders (loss of appetite, vomiting, nightmares, forgetfulness, anxiety, dizziness after posture change, etc.) have been observed and reported. It has been reported that chronic exposure to the substance may cause hearing loss due to noise. National Institute of Environmental Sciences, Toxic Substance Classification Notification: Category 1

○ Aspiration hazard

Xylene: Kinematic viscosity: 0.86 mm2/s @ 20degC (expolated calculation)

○ Other hazardous substances: No data available

12. ECOLOGICAL INFORMATION

·Ecotoxicity

Fish : Butyl Acetate : LC50 18 ㎎/ℓ 96 hr Pimephales promelas

(running water type, OECD Guideline 203)

1-Methoxy-2-Propanol acetate: LC50 ≥ 100 ㎎/ℓ 96 hr Oryzias latipes

Xylene: LC50 2.6 ㎎/ℓ 96 hr (OECD Guideline 203)

Crustacean: Butyl Acetate : EC50 44 ㎎/ℓ 48 hr Daphnia magna

Xylene: LC50 3.6 ㎎/ℓ 24 hr (OECD TG202)

1-Methoxy-2-Propanol acetate: EC50 373 ㎎/ℓ 48 hr Daphnia magna

Algae: Butyl Acetate : EC50 335 ㎎/ℓ 72 hr Selenastrum capricornutum

1-Methoxy-2-Propanol acetate: EC50 ≥ 1000 ㎎/ℓ 72 hr Selenastrum capricornutum

Xylene: EC50 1.3 ㎎/ℓ 48 hr (OECD TG201, GLP)

·Persistence and degradability

Persistence: Butyl Acetate : log Kow 1.78

1-Methoxy-2-Propanol acetate: log Kow 0.43

Xylene: log Kow 3.15

Degradability: No data available

·Bioaccumulation

Concentration: Xylene : BCF 25.9 (Oncorhynchus mykiss)

Biodegradability: Butyl Acetate : 83% 28 day (OECD TG 301D)

1-Methoxy -2-Propanol acetate: > 60 (%) 28 day

Xylene: 90% 28 day (Easy degradability, OECD TG301F, GLP)

·Mobility in soil: Xylene: A4

·Other adverse effects:

Xylene: Fish chronic toxicity test NOEC56d>1.3mg/L ,

Daphnia chronic toxicity test US EPA 600/4-91-0 03 Result NOEC=1.17 mg/L

* According to the product composition, this product does not contain heavy metals or Halogen compounds.

13. DISPOSAL CONSIDERATION

·Disposal method : If specified in the Waste Management Act, dispose of the contents and container according to the regulations.

·Disposal precautions : Dispose of the contents container (according to the contents specified in the relevant laws and regulations).

14. TRANSPORT INFORMATION

·UN number: 1263

·UN proper shipping name : Paint related material

·Transport hazard class : 3

·Packing group (if applicable) : No data available

·Marine pollutant (applicable/not available) : No data available

·Special safety measures that the user needs or needs to know about the transport or means of transport

Emergency measures in case of fire: F-E

Emergency measures in case of spill: S-D

15. LEGAL REGULATION

·Regulations under the Occupational Safety and Health Act

1-Methoxy-2-propyl Acetate : Substance subject to process safety report (PSM)

Butyl Acetate : Substances subject to process safety report (PSM) submission, hazardous substances subject to management, Substances subject to work environment measurement (measurement cycle: 6 months), substances with exposure standards

Xylene: Substance subject to process safety report (PSM) submission, Hazardous substances subject to management, Substances subject to work environment measurement (Measurement cycle: 6 months), Substances subject to special health examination (diagnosis cycle: 12 months), Substances for setting exposure limits

·Regulation by Chemical Substance Management Act: Not available

·Regulations under the Dangerous Goods Safety Management Act: Class 4 - 2 Oil class

·Regulation by Waste Management Act: Designated waste.

·Regulations by other domestic and foreign laws

Domestic regulation

Other domestic regulations: Not available

Overseas regulation

US management information (OSHA regulation): Not available

US management information (CERCLA regulations)

Butyl Acetate : 2267.995kg 5000lb

Xylene: 45.3599kg 100lb

US management information (EPCRA 302 regulation): Not available

US management information (EPCRA 304 regulation): Not available

US management information (EPCRA 313 regulation) : Xylene: Applicable

US management information (Rotterdam Convention Substance): Not available

US management information (Stockholm Convention substance): Not available

US management information (Montreal Protocol): Not available

EU classification information (confirmed classification result)

1-Methoxy-2-propyl Acetate : R10Xi; R36

Butyl Acetate : Flam. Liq. 3, STOT SE 3

Xylene: Flam. Liq. 3, Acute Tox. 4*, Acute Tox. 4*, Skin Irrit. 2

EU classification information (danger phrases)

1-Methoxy-2-propyl Acetate : R10, R36

Butyl Acetate : H226 , H336

Xylene: H226 , H332 , H312 , H315

EU classification information (safety statements)

1-Methoxy-2-propyl Acetate : S2, S25

16. REFERENCE MATERIALS

·Material source : product handbook issued by manufacturing company

MSDS from korea occupational safety & health agency

·The framing date : 2011.02.15

·The final revision date : 1 / 2021.02.26