

MATERIAL SAFETY DATA SHEET(MSDS)

1. Product and company identification

- a) Product name : CW-ECC(N) (CW-1010N) AEROSOL
- b) Application of the substance
- | | |
|--------------------|-------------------------------|
| Recommended use | Electronic contact clean |
| Restriction on use | Do not use for other purposes |
- c) Details of the manufacturer / supplier
- Company : HUMANTECH CORPORATION
- Address :701 SAMSUNG IT VALLEY 197-5, GURO 3DONG, GURO-GU, SEOUL, KOREA
- Phone number : 82-2-2022-3584

2. Hazards identification

- a) Hazard-Risk Classification
- Gases under pressure : Dissolved gas
- Serious eye damage / eye irritation : Category 2
- b) Label elements including precautionary statements
- Symbol :



- Signal Word : Danger
- Hazard-Risk Statement :
- H280 Contain gas under pressure; may explode if heated
- H319 Cause serious eye irritation
- Precautionary Statement :
- 1) Prevention
- P264 Wash ... thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- 2) Response
- P305+P351+P338 IF IN EYES : Rinse cautiously with water for several minutes.
Remove contacts lenses, if present and easy to do. Continue rinsing.
- P337+P313 If eye irritation persists : Get medical advice/attention.
- 3) Storage
- P410+P403 Protect from sunlight. Store in a well-ventilated place.
- 4) Disposal
- P501 Dispose of contents/container to...
- c) Other Hazard-Risk which are not included in the classification criteria
- Not available

3. Composition/Information on ingredients

Chemical name	Other name	CAS number	Contents(%)
1,1,1,3,3-Pentafluorobutane	-	406-58-6	80~90
1,1,1,2,3,3,3-Hptafluoropropane	-	431-89-0	1~10
Carbon Dioxide	-	124-38-9	1~10
SECRET-1	-	SECRET-1	1~10

4. First aid measures

- a) Eye contact
 - Take the emergency medical attention.
 - Rinse opened eye for several minutes under running water.
- b) Skin contact
 - Take the emergency medical attention.
 - Wash skin with soap and water.
 - If on skin(or hair) : Take off immediately all contaminated clothing. Rinse skin with water/shower.
- c) Inhalation
 - Take the emergency medical attention.
 - Move the fresh air.
 - If breathing is difficult, give the oxygen.
 - If not breathing, give artificail respiration.
- d) Ingestion
 - Take the emergency medical attention.
- e) Indication of immediate medical attention and notes for physicain.
 - Not available

5. FIRE FRGHTING MEASURES

- a) Suitable(and un suitable) extinguishing media
 - CO2 or water spray, powder fire extinguisher
 - Dry sand or soil
- b) Specific hazards arising from the chemical(e.g. nature of any hazardous combustion products)
 - Container may explode when heated
 - Steam may cause dizziness or suffocation without awareness.
 - If inhaltion or contact, Skin and eye may be irritating
 - If inhaltion or ,Skin absortion, Toxicity accrue
- c) Specail protective equipment and precautions for fire-fighters
 - Rescurer wear suitable protective equipment.
 - If not dangerous, Containers move fire area.
 - Keep a safe distance outside area

6. Accidental release measures

- a) Personal precautions, protective equipment and emergency procedures
 - Do not touch or walk around the leakage.
 - If people do not need to enter or wear protective equipment, do not access
 - Wear protective equipment.
 - Keep unprotected persons away.
- b) Environmental precautions and protective procedures
 - May cause leakage of comtamniated water.
- c) Methods and materials for containment and cleaning up
 - Absorb the liquid and rinse contaminated area with water and detergent.
 - Absorb the leakage (with dry sand or soil) and put a chemical waste container
 - Make the ditch away from the leakage in case of large spill.

7. Handling and storage

- a) Precautions for safe handling
 - Do not breathe vapor.
 - Obtain specail instructions before use.
 - Do not pressure or cutting or welding, soldering, bonding, drilling, grinding,
 - Do not expose by heat exposure, flame, sparks, static electricity, etc.
 - Prevent skin contact for long time.
 - Wash hands thoroughly after handling.
 - Please note that material and conditions to avoid.
 - Use your only in a well ventilated area.

- b) Conditions for safe storage(including any incompatibilities)
 Keep away from heat, sparks, open flames, hot surfaces. – No smoking.
 Please note that material and conditions to avoid.
 Store in a well-ventilated place. Keep cool.

8. Exposure controls & personal protection

- a) Control parameters(e.g. occupational exposure limit values, biological limit values)
- ① 1,1,1,3,3-Pentafluorobutane
 KOREA TWA-1000ppm
 ACGIH Not available
 - ② 1,1,1,2,3,3,3-Heptafluoropropane
 KOREA TWA-1000ppm
 ACGIH Not available
 - ③ Carbon dioxide
 KOREA TWA – 5000ppm
 ACGIH TWA – 5000ppm
 - ④ Secret-1
 KOREA TWA – 75ppm, 350mg/m³
 ACGIH Not available
- b) Appropriate engineering controls
 Keep away from foodstuffs, beverages and feed.
 Wash hands before breaks and at the end of work.
- c) Personal protective equipment
- Respiratory protection
 In case of brief exposure or low pollution use respiratory filter device.
 In case of intensive or longer exposure use self-contained respiratory protective device.
 - Eye protection
 Wear safety goggles.
 - Hands protection
 Protective glove : The glove material has to be impermeable and resistant to the product/
 the substance/the preparation.
 - Body protection
 Unknown

9. Physical and chemical properties

a) Appearance(physical state, color etc)	Transparent liquid
b) Odour	Specific solvent Odor
c) Odour threshold	Specific solvent Odor
d) pH	Not available
e) Melting point/freezing point	Not available
f) Initial boiling point and boiling range	Not available
g) Flash point	Not available
h) Evaporation rate	Not available
i) Flammability(solid, gas)	Not available
j) Upper/lower flammability or explosive limits	Not available
k) Vapor pressure	Not available
l) Solubility	Not available
m) Vapor density	Not available
n) Relative density	1.27
o) Partiton coefficient	Not available
p) Auto-ignition temperature	Not available
q) Decomposition temperature	Not available
r) Viscosity	Not available

s) Molecular mass

Not available

10. Stability and reactivity

a) Chemical stability and possibility of hazardous reactions

This product is stable under normal conditions of temperature and pressure.

b) Condition to avoid (e.g. static discharge, shock or vibration, etc)

Keep away from heat, sparks, open flames, hot surfaces. – No smoking.

c) Incompatible materials

Not available

d) Hazardous decomposition products

Irritating gases, toxic gases

11. Toxicological information

a) Information on the likely routes of exposure

Unknown

b) Health hazards information

① 1,1,1,3,3-Pentafluorobutane

– Acute toxic

Oral

LD50 > 2000mg/kg Mouse

Dermal

Not available

Inhale

Not available

– Skin corrosive/irritant

Not available

– Serious eye damage/eye irritation

Not available

– Respiratory sensitization

Not available

– Carcinogenicity

Not available

– Germ cell Mutagenicity

Not available

– Reproductive toxicity

Not available

– Specific target organ toxicity (single exposure)

Not available

– Specific target organ toxicity (repeated exposure)

Not available

– Aspiration hazard

Not available

② 1,1,1,2,3,3,3-Heptafluoropropane

– Acute toxic

Oral

LC50 > 100000ppm/4h Mouse

Dermal

Not available

Inhale

Not available

– Skin corrosive/irritant

Not available

– Serious eye damage/eye irritation

Not available

– Respiratory sensitization

Not available

– Carcinogenicity

Not available

– Germ cell Mutagenicity

Not available

– Reproductive toxicity

Not available

– Specific target organ toxicity (single exposure)

Not available

– Specific target organ toxicity (repeated exposure)

Not available

– Aspiration hazard

Not available

③ Carbon dioxide

– Acute toxic

Oral

Not available

Dermal

Not available

Inhale

vapor LC50 3000~5000ppm Rat

– Skin corrosive/irritant

Not available

– Serious eye damage/eye irritation

Not available

– Respiratory sensitization

Not available

– Carcinogenicity

Not available

– Germ cell Mutagenicity

Not available

– Reproductive toxicity

Not available

- Specific target organ toxicity(single exposure)	Not available
- Specific target organ toxicity(repeated exposure)	Not available
- Aspiration hazard	Not available
④ Secret-1	
- Acute toxic	
Oral	Not available
Dermal	Not available
Inhale	Not available
- Skin corrosive/irritant	Not available
- Serious eye damage/eye irritation	Not available
- Respiratory sensitization	Not available
- Carcinogenicity	Not available
- Germ cell Mutagenicity	Not available
- Reproductive toxicity	Not available
- Specific target organ toxicity(single exposure)	Not available
- Specific target organ toxicity(repeated exposure)	Not available
- Aspiration hazard	Not available

12. Ecological information

a) Aquatic and terrestrial ecotoxicity	No further relevant information available.
b) Persistence and degradability	No further relevant information available.
c) Bioaccumulative potential	No further relevant information available.
d) Mobility in soil	No further relevant information available.
e) Other adverse effects	No further relevant information available.

13. Disposal consideration

- a) Disposal method
Disposal must be made according to official regulations.
- b) Disposal precaution(including the disposal method of contaminated container and packaging)
Not available

14. Transport information

a) UN number	Not available
b) UN proper shipping name	Not available
c) Transport hazard class	Not available
d) Packing group(if applicable)	Not available
e) Marine pollution(yes/no)	Not available
f) Special precaution which a user to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises	Not available

15. Regulatory information

a) Industrial safety and health act	Threshold limit values material
b) Toxic chemical control act	Not available
c) Dangerous material safety control act	Not available
d) Wastes management act	Not available
e) Other requirements in domestic and other countries	Not available

16. Other information

a) Information source and references	
b) Issuing date	2014년 03월 31일
c) Revision number and date	
Revision number	
Date	

d) others

The information contained in this Material Safety Data Sheet, as of the issue date, is believed to be true and correct. However, the accuracy or completeness of this information and any recommendations or suggestions are made without warranty or guarantee.

Since the conditions of use are beyond the control of our company, it is the responsibility of the user to determine the conditions of safe use of this preparation.