Material Safety Data Sheet

1.CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

a. Product Name	**COMFIX-Injection type of Chemical Anchor [I-36]**
b. Recommended use of the chemical and restrictions on use	
Recommended use	Injection type of Chemical Anchor
Restrictions on use	Please contact us when using moled product related with foodstuffs.
c. Chemical Description	
A	Main agent. Big part of container
B	Curing agent. Small part of container
d. Supplier	
Company	**Song Lim CO. LTD**
Address	**15, Geumhyeongyeongje-ro, Gasan-myeon, Pocheon-si, Gyunggi-Do, Republic of Korea**
Emergency Telephone Number	**+82-31-543-6100**

2. HAZARDS IDENTIFICATION

a. Classification of the substance

Flammable liquid: Category 3
Organic Peroxide: Type F
Acute Toxicity(Inhalation): Category 4
Skin corrosion /Skin irritation: Category 2
Severe Eye damage / Eye irritation: Category 2
Skin sensitization: Category 1
Germ cell mutagenicity: Category 2
Reproductive toxins: Section 1B
Specific target organ toxicity (exposure once) : Category 1
Specific target organ toxicity (repeated exposure) : Category 1
Chronic aquatic toxicity: Category 3

b. Label elements

Hazard Pictograms

Signal word: Danger

Hazard statement

H226 Flammable liquid and vapor.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H341 Suspected of causing genetic defects.
H350 May cause cancer.

Precautionary statements

Prevention

P201 Obtain special instructions before use
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking
P234 Keep only in original container.
P270 Do not eat, drink or smoke when using this product
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P281 Use personal protective equipment as required.

Response

P302+P352 IF ON SKIN: Wash with plenty of soap and water
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 IF IN EYES:Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 If inhaled: Call a POISON CENTER or doctor/physician if you feel unwell.
P314 Get medical advice/attention if you feel unwell.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P362 Take off contaminated clothing and wash before re-use.
P370+P378 In case of fire: Use extinguisher for extinction.

Storage	P403+P235 Store in a well-ventilated place and keep cool. P410 Protect from sunlight. P411+P235 Since highly reactive substance, store at temperature not exceeding 40℃. Keep cool.
Disposal	P501 Dispose of contents / container in accordance with local / national regulations.
c. NFPA Rating	Health: 1-2, Flammability: 0-4, Reactivity: 0-4

3. COMPOSITION / INFORMATION ON INGREDIENTS

	COMPONENTS	Chemical and common names	CAS Number	% by weight
A	Unsaturated polyester resin	-	-	25-35
	Silicon dioxide (Quartz Crystal)	QUARTZ (SiO2)	14808-60-7	40-50
	Styrene monomer	PHENYL ETHYLENE	100-42-5	5-9
	Sepiolite clay		63800-37-3	<2
	Quaternary ammoium salt		61789-72-8	<0.5
	Titanium dioxide		13463-67-7	<0.2
	Glycerin	GLYCEROL	56-81-5	less than 1
B	Dibenzoyl peroxide	PEROXIDE, DIBENZOYL	94-36-0	1-2
	Calcium carbonate	CARBONIC ACID, CALCIUM SALT	471-34-1	1-1.5
	Calcium sulfate, Anhydrous	SULFURIC ACID, CALCIUM SALT (1:1)	7778-18-9	1-1.5
	Silicone dioxide amorphous		7631-86-9	1-1.5
	Di (2-ethylhexyl) phthalate	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	<0.3
	Diisononyl phthalate		28553-12-0	1-4
	Glycerin	GLYCEROL	56-81-5	<1
	calcium carbonate		1317-65-3	<0.1

4.FIRST AID MEASURES

a. Eye contact	If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
b. Skin contact	If on skin(or hair), remove/take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation or rash occurs, get medical advice/attention. If on skin, prevent the spread of exposed skin. If burn occurs, flush area with cold water immediately. Do not remove any clothes on skin. Wash with plenty of soap and water.
c. Inhalation	In case of exposure to exceeding dust or fume, Remove victim to fresh air. Get medical attention if coughing and other symptom occurs.
d. Ingestion	Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with proper respiratory medical device.
e. Notes to Physician	If exposed, call a doctor/physician and get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

a. Suitable extinguishing agents	Alcohol-resistant foam, CO2, extinguishing powder or water spray. USe dried sand or soil.
b. Special hazards arising from the substance or mixture	Flammable liquid/vapor. Heating may cause fire or explosion. Shocking or high temperature may cause violent decomposition. Vapours may travel a considerable distance to source of ignition. Fire may produce irritating, corrosive and/or toxic gases. May form an explosive mixture at flash point or above. May ignite combustibles (wood, paper, oil, clothing, etc.) Heating may cause explosion of containers. Highly flammability: Moderate fire hazard when exposed to heat or flame. May be ignited by heat, sparks or flames. Some can be burned but not easy to ignite. Vapour may form an explosive mixture with air. These materials are particularly sensitive to temperature rises. Above a given Control Temperature they decompose violently and catch fire. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive/toxic fumes.
c. Special fire fighting procedures	Wear proper protective equipment. Spilled material may cause pollution. Vapour is heavier than air so it may spread along the ground or into low-lying areas

with poor airflow.
Do not scatter material with high pressure water streams. Dike far ahead of liquid spill for later disposal.
Move container from fire area if it can be done without risk.
Skin and eyes contact may cause burns.
Apply water from a protected location or from a safe distance.

6. ACCIDENTAL RELEASE MEASURES

a. Personal Precautions	Avoid breathing dust, fume, gas, mist, vapor and spray. Keep combustibles away from spilled material. Remove all sources of ignition.
b. Environmental precautions	Avoid release to the environment. Prevent from entering into waterways, sewers, basement and confined spaces.
c. Clean-up Methods	Absorb spillages in sand, earth or any suitable absorbent material. Collect in suitable and properly labeled containers. Small spills: Absorb with sand or other non-combustible material and collect spilled material in containers.

7. HANDLING AND STORAGE

a. Handling	Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Do not pressurize, cut, heat, weld, braze, solder, drill, grind, or expose containers to heat, flame, sparks, static electricity, or other sources of ignition. Empty product containers may contain product residue. Follow all MSDS/ label precautions. Use carefully by handling and storing precautions. Avoid repeated or prolonged skin contact. Watch out the high temperature. Watch out the heat. Working in the low, confined spaces may occur deficiency in oxygen. Measure oxygen concentration in air and ventilate the space while working. The temperature of the substance must be maintained at or below the Control Temperature at all times.
b. storage	Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep only in original container. Store in a well-ventilated place. Keep cool. Store locked up. Protect from sunlight. Since highly reactive substance, store at temperature not exceeding 40℃. Keep cool. Store away from food and beverage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

a. Exposure limits of Chemical Substances / Biological Exposure limits etc.

KOSHA

Dibenzoyl peroxide	TWA - 5 ㎎/㎥
Di (2-ethylhexyl) phthalate	TWA - 5 ㎎/㎥ STEL - 10 ㎎/㎥
Silicon dioxide (Quartz Crystal)	TWA - 0.05 ㎎/㎥ silicon dioxide (Quartz Crystal)(Respirable dust)
Styrene monomer	TWA - 20ppm 85 ㎎/㎥ STEL - 40ppm 170 ㎎/㎥
Calcium carbonate	TWA - 10 ㎎/㎥
Glycerin	TWA - 10 ㎎/㎥
Hydrophobic silicon dioxide, amorphous	TWA - 10 ㎎/㎥ Silicon - Amorphous
Others	No Data

ACGIH

Dibenzoyl peroxide	TWA 5 ㎎/㎥
Di (2-ethylhexyl) phthalate	TWA 5 ㎎/㎥
Silicon dioxide (Quartz Crystal)	TWA 0.025 ㎎/㎥
Styrene monomer	TWA 20 ppm
Styrene monomer	STEL 40 ppm
Dipropylene glycol	Not Applicable
Calcium sulfate, Anhydrous	TWA 10 ㎎/㎥
Glycerin	TWA 10 ㎎/㎥
Others	No Data

Biological Exposure limits

Dipropylene glycol	Not Applicable
Glycerin	Not Applicable
Calcium sulfate, Anhydrous	Not Applicable
Others	No Data

b. Engineering Controls: Need washing facilities and safety shower facilities if you store or use this material.

c. Personal Protection Equipment

Respiratory Protection	In case of high frequency of use and frequency of exposure, wear respiratory protections. Consider the characteristics of product before use. Keep oxygen concentration in air in the proper range using ventilation system.
Eye Protection	Wear eye protections. Prepare washing facilities or emergency washing facilities within short distance.
Skin Protection	Wear proper protective gloves / clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

	A	B
a. Appearance		
Form	Viscous liquid form	Viscous liquid form
Color	Light gray	Yellow (Ivory)
b. Odor	Unique odor	Odorless
c. Odor threshold	No Data	No Data
d. ph-value	7.8	Neutral
e. Melting point/ Freezing point	No Data	No Data
f. Initial boiling point / Boiling range	No Data	No Data
g. Flash point	31℃	No Data
h. Evaporation rate	No Data	No Data
i. Flammability (solid, gas)	Not Applicable	Not Applicable
j. Explosion limits: Upper/ Lower	1.1-6.1vol%	1.1-6.1vol%
k. Vapor pressure	4.5mmHg(20℃)	4.5mmHg(20℃)
l. Solubility	Insoluble. some soluble in acetone, acetic acid and butyl, etc.	Insoluble. some soluble in acetone, acetic acid and butyl, etc.
m. Vapour density	3.6(styrene monomer)	-
n. Relative density	1.40-1.50(25℃)	1.40~1.60(25℃)
o. Partition coefficient (n-octanol/water)	No Data	5.3
p. Auto ignition temperature	490℃	No Data
q. Decomposition temperature	No Data	No Data
r. Viscosity	60poise	No Data
s. Molecular weight	No Data	No Data

10. STABILITY AND REACTIVITY

a. Chemical stabilty	Stable under the recommended handling and storage condition
b. Conditions to avoid	Protect from sunlight and heat.
c. Materials to avoid	Peroxide-based
d. Hazardous decomposition products	Heating of this material to decomposition may cause the emission of irritating acrid fumes.

11. TOXICOLOGICAL INFORMATION

a. Information about the possible route of exposure	If inhaled, respiratory trac irritation can occur. Harmful if swallowed. Contact may cause irritation to the skin and eyes.
b. Information on toxicological effects	
Acute toxicity	
Oral	
Dibenzoyl peroxide	LD50 7710 ㎎/㎏ Rat
Di (2-ethylhexyl) phthalate	LD50 30000 ㎎/㎏ Rat
Styrene monomer	LD50 2650 ㎎/㎏ Rat
Dipropylene glycol	LD50 16000 ㎎/㎏ Rat
Calcium carbonate	LD50 6450 ㎎/㎏ Rat
Glycerin	LD50 27200 ㎎/㎏ Rat (rat/LD50/12600mg/kg(IUCLID))
Calcium sulfate, Anhydrous	LD50 3000 ㎎/㎏ Rat
Others	No Data
Dermal	
Di (2-ethylhexyl) phthalate	LD50 25000 ㎎/㎏ Rabbit
Styrene monomer	LD50 > 5010 ㎎/㎏ Rabbit
Dipropylene glycol	LD50 > 5000 ㎎/㎏ Rabbit
Glycerin	LD50 > 10000 ㎎/㎏ Rat
Others	No Data
Inhalation	
Dibenzoyl peroxide	LC50> 19 ㎎/ℓ Rat
Di (2-ethylhexyl) phthalate	Mist LC50> 10.62 ㎎/ℓ Rat
Styrene monomer	LC50 11.7 ㎎/ℓ 4 hr Rat
Others	No Data
Skin corrosion /Skin irritation	
Dibenzoyl peroxide	Minimal irritation or non irritation
Di (2-ethylhexyl) phthalate	Mild irritation(500mg, 24hr, rabbit)
Styrene monomer	Moderate irritation / Rabbit
Dipropylene glycol	Mild irritation / Rabbit
Calcium carbonate	Rabbit-Draize test / Moderate irritation, Cause human skin irritation
Glycerin	No irritation to skin
Hydrophobic silicon dioxide, amorphous	Cuase Skin irritation
Others	No Data
Serious Eye damage / Eye irritation	

Dibenzoyl peroxide	Reported irritation after 24, 48, 72hrs
Di (2-ethylhexyl) phthalate	Mild irritation (500mg, 24hr, rabbit)
Styrene monomer	Moderate eye irritation for human and rabbit
Dipropylene glycol	Mild irritation / Rabbit
Calcium carbonate	Rabbit / Draize test cause strong irritation, Miild irritation for human.
Glycerin	No eye irritation
Hydrophobic silicon dioxide, amorphous	Cause eye irritation
Others	No Data
Respiratory sensitization	All - No Data
Skin sensitization	
Dibenzoyl peroxide	Maximization test for human - positive
Di (2-ethylhexyl) phthalate	Skin sensitization test for Guinea pig - Negative
Dipropylene glycol	Body sensitization
Others	No Data
Carcinogenicity	
Occupational Safety and Health Act	All - No Data
Ministry of Employment & Labor	
Di (2-ethylhexyl) phthalate	2
Silicon dioxide (Quartz Crystal)	1A
Styrene monomer	2
Others	No Data
IARC	
Dibenzoyl peroxide	Group 3
Di (2-ethylhexyl) phthalate	Group 2B
Silicon dioxide (Quartz Crystal)	Group 1(Silica, crystalline (inhaled in the form of quartz or cristobalite from occupational sources))
Styrene monomer	Group 2B
Others	No Data
OSHA	All - No Data
ACGIH	
Dibenzoyl peroxide	A4
Di (2-ethylhexyl) phthalate	A3
Silicon dioxide (Quartz Crystal)	A2
Styrene monomer	A4
Others	No Data
NTP	
Di (2-ethylhexyl) phthalate	R
Silicon dioxide (Quartz Crystal)	K (Silica, Crystalline (Respirable Size))
Others	No Data
EU CLP	All - No Data
Germ cell mutagenicity	
Dibenzoyl peroxide	Dominant Lethal test on mice - negative Mouse erythrocyte micronucleus test - negative
Di (2-ethylhexyl) phthalate	No Data
Silicon dioxide (Quartz Crystal)	in vivo mutagenicity testing(bone marrow micronucleus test) - negative, test of chromosomal abnormalities - negative, micronucleus test - positive
Styrene monomer	test of chromosomal abnormalities - positive, micronucleus test - positive
Dipropylene glycol	in vitro - negative
Calcium carbonate	In vitro Salmonella typhimurium Ames test, (Regardless of the presence or absence of metabolic activation) - negative
Glycerin	Polychromatic erythrocytes of Mammal - negative
Others	No Data
Reproductive toxicity	
Dibenzoyl peroxide	There were impacts on male rats like reducing weight and degeneration of reproductive organs. But it is because of bulk repeated dose that causes organ disabilities on male's reproductive organ. There were no changes on the list of reproductive toxicity(mating rate or pregnancy rate in female rats). Also there were no reproductive Toxicants of mothers that leads high rate of birth on growth inhibitor and increasing weight of the offspring. However it is not significant.
Di (2-ethylhexyl) phthalate	Reported reproductive effects on next generation with capacity range that cauces no effects on mother animals
Styrene monomer	Decreases neonatal survival rates-Rats ,Decrease brain serotonin of fetal with little amount that occured no toxic effects on mother animals, Causes abnormal behavior like delay of reflex recovery and acoustic reflections
Others	No Data
Specific target organ toxicity (single exposure)	
Dibenzoyl peroxide	Nose and throat irritation in human
Silicon dioxide (Quartz Crystal)	Causes effects on the human respiratory system by short time
Styrene monomer	Nose and throat irritation in human, Cause effects on Central nervous system
Calcium carbonate	Inhalation causes irritation.
Others	No Data
Specific target organ toxicity (repeated exposure)	
Di (2-ethylhexyl) phthalate	Repeated exposure causes effects on liver, testis, kidney and heart tissues in Rats. Causes effects on dyslipidemia low cholesterol
Silicon dioxide (Quartz Crystal)	Cause effects on human respiratory system and kidney
Styrene monomer	Irritated on Eye, skin, nose and respiratory tract. Inhalation causes obstructive lung disease and

	chronic bronchitis etc. Act on the central nervous system causes dizziness, headache, tiredness, confusion and insomnia etc. causes effects on mental nerve function such as decreasing reacting time and verbal memory,visual senses and auditory causes effects on blood system(increasing number of lymphocytes, decreasing number of platelet) Causes effects on liver - Rising activities of AST, GGT and ALT .vacuolization of mucosal epithelial cells of organs and nasal, deprive of cells, enrichment, low peripheral nerve transfer rate on tail part, appears hepatocellular necrosis
Calcium carbonate	Cause the blood systemic disorder, gastrointestinal problems and hormone disorder by exposure.
Glycerin	rat(Inhalation):1-4mg/l Epiglottis epithelium
Calcium sulfate, Anhydrous	Chronic alveolar can find in neutrophils and alveolar wall.
Others	No Data
Aspiration hazard	
Styrene monomer	Hydrocarbon, kinematic viscosity 0.772 mm2/s (25 ℃) (Calculated)
Others	No Data

12. ECOLOGICAL INFORMATION

a. Toxicity	
Fish	
Di (2-ethylhexyl) phthalate	LC50 0.3 ㎎/ℓ 96 hr
Styrene monomer	LC50 4.02 ㎎/ℓ 96 hr (Fathead minnow)
Dipropylene glycol	LC50 > 5000 ㎎/ℓ 24 hr Carassius auratus
Calcium carbonate	LC50 > 56000 ㎎/ℓ 96 hr
Glycerin	LC50 5000 ㎎/ℓ 24 hr Carassius auratus
Calcium sulfate, Anhydrous	LC50 2980 ㎎/ℓ 96 hr Lepomis macrochirus
Others	No Data
Crustaceans	
Dibenzoyl peroxide	EC50 0.7 ㎎/ℓ 24 hr
Di (2-ethylhexyl) phthalate	EC50 0.133 ㎎/ℓ 48 hr Daphnia pulex
Styrene monomer	LC50 12.1 ㎎/ℓ 96 hr
Dipropylene glycol	LC50 26920.150 ㎎/ℓ 48 hr
Glycerin	EC50 > 10000 ㎎/ℓ 24 hr Daphnia magna (Daphnia magna EC50(24HR) 10000mg/L(US EPA ECOTOX); Daphnia magna EC50(24HR) >10000 mg/L (EU IUCLID))
Calcium sulfate, Anhydrous	LC50 1910 ㎎/ℓ 48 hr Ceriodaphnia dubia
Others	No Data
Birds	
Styrene monomer	EC50 78 ㎎/ℓ 96 hr
Dipropylene glycol	EC50 14456.974 ㎎/ℓ 96 hr
Calcium carbonate	EC50 22000 ㎎/ℓ 96 hr
Glycerin	(LC50(96hr) 77712.039 mg/L)
Calcium sulfate, Anhydrous	EC50 3200 ㎎/ℓ 96 hr 기타 (Navicula seminulum(Diatom))
Others	No Data
b. Persistence and Degradability	
Persistence	
Dibenzoyl peroxide	log Kow 3.46
Di (2-ethylhexyl) phthalate	log Kow 5.03
Styrene monomer	log Kow 2.95
Dipropylene glycol	log Kow -0.04
Glycerin	(None)
Hydrophobic silicon dioxide, amorphous	log Kow -8.92
Calcium sulfate, Anhydrous	(None)
Others	No Data
Degradability	All - No Data
c. Bioacumulative potential	
Accumulative potential	
Di (2-ethylhexyl) phthalate	BCF 840
Dipropylene glycol	BCF 0.3 ~ 1.4 (Cyprinus carpio, period of exposure : 42일, Exposure concentration : 3 mg/L)
Calcium carbonate	BCF 3.162
Glycerin	(Not likely to bioaccumulate)
Hydrophobic silicon dioxide, amorphous	BCF 3.162
Others	No Data
Biodegradability	
Dibenzoyl peroxide	84 (%)
Di (2-ethylhexyl) phthalate	62 (%) 28 day
Styrene monomer	100 (%)
Dipropylene glycol	70 (%) 28 hr
Glycerin	63 (%) 14 day (rapidly biodegradable(OECD SIDS), Biodegradation rate for 30days 93% (OECD TG 301D) (IUCLID))
Others	No Data
d. Mobility in soil	All - No Data
e. Other adverse efects	
Glycerin	Toxic to aquatic organisms
Others	No Data

13. DISPOSAL CONSIDERATIONS

a. Waste treatment methods	Dispose contents / container in accordance with the Waste Management Act.
b. Disposal precaution	Disposal must be made according to official regulations.

14. TRANSPORT INFORMATION

a. UN number(UN No.)	3269
b. Proper shipping name	POLYESTER RESIN KIT
c. Transport hazard class(es)	3
d. Packing group	III
e. Marine pollutant	No Data
f. Special precautions for user	
Emergency response if on fire	F-E
Emergency response if spilled	S-D
EMS	F-E, S-D

15. REGULATORY INFORMATION

a. Korea Industrial Safety and Health Act	
Dibenzoyl peroxide	Standard substance with TLVs (Threshold Limit Values)
Di (2-ethylhexyl) phthalate	Standard substance with TLVs (Threshold Limit Values)
Silicon dioxide (Quartz Crystal)	Substance of Work Environment Measurement (Measurement period:6months), Hazardous Substances Related Workers (Periodic Health Examination:24months), Standard substance with TLVs (Threshold Limit Values)
Styrene monomer	Hazardous Substances Requiring Management, Substance of Work Environment Measurement (Measurement period:6months), Hazardous Substances Related Workers(Periodic Health Examination:12months), Standard substance with TLVs (Threshold Limit Values)
Calcium carbonate	Standard substance with TLVs (Threshold Limit Values)
Glycerin	Standard substance with TLVs (Threshold Limit Values)
Hydrophobic silicon dioxide, amorphous	Standard substance with TLVs (Threshold Limit Values)
Others	No Data
b. Korea Hazardous Materials Safety Control Act	
Dibenzoyl peroxide	Toxic Chemical
Di (2-ethylhexyl) phthalate	Toxic Chemical
Others	No Data
c. Korea Chemicals Control Act	
Dibenzoyl peroxide	Class 5. Organic peroxides 10㎏
Di (2-ethylhexyl) phthalate	Class 4. Grade 4 Petroleum chemicals 6000ℓ
Styrene monomer	Class 4. Grade 2 Petroleum chemicals (Non aqueous liquid) 1000ℓ
Calcium carbonate	Not Applicable(Non hazard substance)
Glycerin	Class 4. Grade 3 Petroleum chemicals (Soluble) 4000ℓ
Others	No Data
d. Wastes Control Act	
Di (2-ethylhexyl) phthalate	Designated waste
Dipropylene glycol	Designated waste
Glycerin	Designated waste
Calcium sulfate, Anhydrous	Designated waste
Others	No Data
e. Other Regulations	
Korea Regulations	
Persistent Organic Pollutants (POPs) Control Act	All - Not Applicable
Regulations of Other countries	
U.S Management Information(OSHA regulations)	
Dibenzoyl peroxide	3401.9925 kg 7500 lb
Others	Not Applicable
U.S Management Information(CERCLA regulations)	
Di (2-ethylhexyl) phthalate	45.3599 kg 100 lb
Styrene monomer	453.599 kg 1000 lb
Others	Not Applicable
U.S Management Information(EPCRA 302 regulations)	All - Not Applicable
U.S Management Information(EPCRA 304 regulations)	All - Not Applicable
U.S Management Information(EPCRA 313 regulations)	
Dibenzoyl peroxide	Applicable
Di (2-ethylhexyl) phthalate	Applicable
Styrene monomer	Applicable
Others	Not Applicable
U.S Management Information(Rotterdam Convention)	All - Not Applicable
U.S Management Information(Stockholm Convention)	All - Not Applicable
U.S Management Information(Montreal Protocol)	All - Not Applicable
EU Classified Information(Classification)	
Dibenzoyl peroxide	E; R3 O; R7 Xi; R36 R43
Di (2-ethylhexyl) phthalate	Repr. Cat. 2; R60-61
Styrene monomer	R10Xn; R20Xi; R36/38
Others	Not Applicable
EU Classified Information(Risk phrase)	
Dibenzoyl peroxide	R3, R7, R36, R43

Di (2-ethylhexyl) phthalate	R60, R61
Styrene monomer	R10, R20, R36/38
Others	Not Applicable

EU Classified Information(Safety phrase)

Dibenzoyl peroxide	S2, S3/7, S14, S36/37/39
Di (2-ethylhexyl) phthalate	S53, S45
Styrene monomer	S2, S23
Others	Not Applicable

16. OTHER INFORMATION

a. REFERENCES

Dibenzoyl peroxide : ICSC(Form) | HSDB(Color) | HSDB(b. Odor) | UNI. AKRON(c. Odor Threshold) | ICSC(e. Melting point/ Freezing point) | UNI. AKRON(k. Vapor pressure) | HSDB(l. Solubility) | UNI. AKRON(m. Vapour density) | HSDB(n. Relative density) | HSDB(o. Partition coefficient (n-octanol/water)) | ICSC(p. Auto ignition temperature) | HSDB(s. Molecular weight) | HSDB(Persistence) | Corporate Solution From Thomson Micromedex(http://csi.micromedex.com) | ECB-ESIS(European chemical Substances Information System)(http://ecb.jrc.it/esis) | ECOTOX Database, EPA(http://cfpub.epa.gov/ecotox) | IUCLID Chemical Data Sheet, EC-ECB | International Chemical Safety Cards(ICSC)(http://www.nihs.go.jp/ICSC) | TOXNET, U.S. National Library of Medicine(http://toxnet.nlm.nih.gov) | The Chemical Database, The Department of Chemistry at the University of Akron(http://ull.chemistry.uakron.edu/erd) | Manual of Industrial Poisoning, Shinkwang Publisher | Korea Dangerous Material Inventory Management System, National Emergency Management Agency(http://hazmat.nema.go.kr) | Chemicals Information System, National Institute of Environment Research(http://ncis.nier.go.kr)

Di (2-ethylhexyl) phthalate : ICSC(g. Flash point) | ICSC(l. Solubility) | Sigma Aldrich(s. Molecular weight) | EU RAR(Inhalation) | EU RAR(Specific target organ toxicity(repeated exposure)) | EU RAR(Crustaceans) | EU RAR(accumulative potential) | IUCLID(Biodegradability) | Corporate Solution From Thomson Micromedex(http://csi.micromedex.com) | ECB-ESIS(European chemical Substances Information System)(http://ecb.jrc.it/esis) | ECOTOX Database, EPA(http://cfpub.epa.gov/ecotox) | IUCLID Chemical Data Sheet, EC-ECB | International Chemical Safety Cards(ICSC)(http://www.nihs.go.jp/ICSC) | TOXNET, U.S. National Library of Medicine(http://toxnet.nlm.nih.gov) | The Chemical Database, The Department of Chemistry at the University of Akron(http://ull.chemistry.uakron.edu/erd) | Manual of Industrial Poisoning, Shinkwang Publisher |Korea Dangerous Material Inventory Management System, National Emergency Management Agency(http://hazmat.nema.go.kr) |Chemicals Information System, National Institute of Environment Research(http://ncis.nier.go.kr)

Silicon dioxide (Quartz Crystal) : Corporate Solution From Thomson Micromedex(http://csi.micromedex.com) | ECB-ESIS(European chemical Substances Information System)(http://ecb.jrc.it/esis) | ECOTOX Database, EPA(http://cfpub.epa.gov/ecotox) | IUCLID Chemical Data Sheet, EC-ECB | International Chemical Safety Cards(ICSC)(http://www.nihs.go.jp/ICSC) | TOXNET, U.S. National Library of Medicine(http://toxnet.nlm.nih.gov) | The Chemical Database, The Department of Chemistry at the University of Akron(http://ull.chemistry.uakron.edu/erd) | anual of Industrial Poisoning, Shinkwang Publisher | Korea Dangerous Material Inventory Management System, National Emergency Management Agency(http://hazmat.nema.go.kr) | Chemicals Information System, National Institute of Environment Research(http://ncis.nier.go.kr)

Styrene monomer : Sigma Aldrich(p. Auto ignition temperature) | 5(Oral) | 6(Inhalation) | (12)(Fish) | (13)(Biodegradability) | (1) Merck (13th, 2001) | (2) ICSC (1999) | (3) HSDB (2005) | (4) SRC (2005) | (5) NLM | (6) CERI·NITE Risk Assessments No.52 (2004) | (7) IARC (2005) | (8) ACGIH (2006) | (9) ACGIH (7th; 2001) | (10) EHC 26 (1983) | (11) CERI Hazard Data sheet 96-46 (1998) | (12) CERI·NITE Risk Assessments (2004) | (13) Safety Inspections Data of Existing chemical substances | (14) PHYSPROP Database (2005)

Dipropylene glycol : SIDS(Oral) | SIDS(Dermal) | SIDS,IUCLID(Skin corrosion /Skin irritation) | IUCLID(Serious Eye damage / Eye irritation) | SIDS(Skin sensitization) | SIDS,IUCLID(Germ cell mutagenicity) | APHA,IUCLID(Fish) | ECOSAR(Crustaceans) | ECOSAR(Birds) | OECD TG305C,IUCLID(Persistence) | IUCLID(Biodegradability)

Calcium carbonate : Corporate Solution From Thomson Micromedex(http://csi.micromedex.com)(Form) | Corporate Solution From Thomson Micromedex(http://csi.micromedex.com)(Color) | Corporate Solution From Thomson Micromedex(http://csi.micromedex.com)(라. pH) | International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(e. Melting point/ Freezing point) | International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(n. Relative density) | Corporate Solution From Thomson Micromedex(http://csi.micromedex.com)(s. Molecular weight) | International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(Oral) | International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(Skin corrosion /Skin irritation) | International Uniform ChemicaL Information Database(IUCLID)(Serious Eye damage / Eye irritation) | National Library of Medicine/Chemical Carcinogenesis Research Information System(NLM/CCRIS)(http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CCRIS)(Germ cell mutagenicity) | ECOTOX(Fish) | Ecological Structure Activity Relationships(ECOSAR)(Birds) | Quantitative Structure Activity Relation(QSAR)(Persistence) | Quantitative Structure Activity Relation(QSAR)(d. Mobility in soil) | The Chemical Database, The Department of Chemistry at the University of Akron(http://ull.chemistry.uakron.edu/erd)

Glycerin : IUCLID(Oral) | SIDS(Oral) | SIDS(Skin corrosion /Skin irritation) | SIDS(Serious Eye damage / Eye irritation) | NLM(Germ cell mutagenicity) | IUCLID(Specific target organ toxicity(repeated exposure)) | OECD SIDS(Fish) | EU IUCLID(Crustaceans) | OECD SIDS(Crustaceans) | US EPA ECOTOX(Crustaceans) | ECOSAR(Birds) | OECD SIDS(Accumulative potential) | IUCLDE(Biodegradability) | OECD SIDS(Biodegradability) | OECD TG 301C(Biodegradability) | OEDC TG 301D(Biodegradability)

Hydrophobic silicon dioxide, amorphous : Ecological Structure Activity Relationships(ECOSAR)(o. Partition coefficient (n-octanol/water)) | Ecological Structure Activity Relationships(ECOSAR)(Persistence) | Quantitative Structure Activity Relation(QSAR)(Accumulative potential)

Calcium sulfate, Anhydrous: ICSC(i. Flammability (solid, gas)) | ICSC(p. Auto ignition temperature) | IUCLID(Oral) | IUCLID(Specific target organ toxicity(repeated exposure)) | Fathead minnow(Fish) | ECOTOX(Crustaceans) | ECOTOX(Birds)

b. Isued Date	01 / Nov / 2004
c. Revision No. / Revision Date	Thirteenth, 15 / Feb. / 2023
d. Other Information	This MSDS is written by using and correcting the data provided by the Korea Occupational Safety and Health Agency.