MATERIAL SAFETY DATA SHEET

Lacquer Spray (Semi-Gloss (BLACK))

FILE NO.:
MSDS DATE: 11 / 12 / 2019

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Paint Spray Semi-Gloss Black 285g (10oz)**

DISTRIBUTOR: **Toolway Industries Ltd.**
ADDRESS: **280 Hunter's Valley Road, Woodbridge, ON, Canada L4H 3V9.**
Phone: (905) 326-5450 Fax: (905) 326-5451.

EMERGENCY PHONE: 1 (800) 535 5053
CHEMTREC PHONE:

PRODUCT USE: **For coloring metal, cement, furniture etc.**
PREPARED BY:

SECTION 1 NOTES:

SECTION 2: HAZARDS IDENTIFICATION

A. GHS Classification
- Explosives : Class1.1
- Flammable gases : Category1
- Gases under pressure : Liquefied gas
- Flammable liquids : Category2
-Self-heating substances and mixtures: Category 1
- Acute toxicity (oral) : Category3
- Acute toxicity (inhalation: vapor) : Category4
- Skin corrosion/irritation : Category2
- Serious eye damage/irritation : Category2
- Skin sensitization : Category1
- Carcinogenicity : Category2
- Reproductive toxicity : Category2
- Specific target organ toxicity(Single exposure) : Category2
- Specific target organ toxicity (single exposure): Category 3 (Anesthetic)
- Specific target organ toxicity(Single exposure) : Category3(Narcotic effects)
-Specific target organ system toxicity(repeated exposure) : Category2
-Aspiration hazard: Category 1

B. GHS label elements

○ Hazard symbols

○ Signal words

- Danger

○ Hazard statements

-H201 Explosive: Danger of explosion
-H220 extremely flammable gas
-H225 Highly flammable liquid and vapor
-H251 Self-heating: May cause fire
-H280 high pressure gas included: may explode if heated
-H301 Toxic if swallowed
-H304 May be fatal if swallowed and enters airways
-H315 Causes skin irritation.
-H317 May cause an allergic skin reaction.
-H319 Causes serious eye irritation.
-H332 Harmful if inhaled

-H335 May cause respiratory irritation
-H336 May cause drowsiness or dizziness
-H351 Suspected of causing cancer
-H361 Suspected of damaging fertility or the unborn child
-H371 May cause damage to organs (see Section 11 (MSDS)).
-H373 May cause damage to organs through prolonged or repeated exposure (see Section 11 (MSDS)).
Precautionary statements

1) 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.
-P230 Keep wet with appropriate material specified by the manufacturer / supplier.
-P233 Keep container tightly closed.
-P235 + P410 Keep cool and away from direct sunlight.
-P240 Container and receiving equipment to be bonded or grounded.
-P241 Use explosion-proof electrical / ventilating / lighting / equipment.
-P242 Use only non-sparking tools.
-P243 Take precautionary measures against static discharge.
-P250 Avoid grinding, impact and friction.
-P260 Do not breathe (gas, mist, vapor, spray).
-P261 Avoid breathing (gas, mist, vapor, spray).
-P264 Wash thoroughly after handling.
-P270 Do not eat, drink or smoke when using this product.
-P271 Use only outdoors or in a well-ventilated area.
-P272 Do not take contaminated clothing out of the workplace.
-P280 Wear protective gloves / protective clothing / eye protection / face protection.

2) Response
-P301 + P310 If swallowed, seek medical advice immediately.
-P302 + P352 IF ON SKIN: Wash with plenty of water.
-P303 + P361 + P353 If on skin (or hair): Take off all contaminated clothing. Rinse skin with water / shower.
-P304 + P340 If inhaled, remove 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 possible. Keep washing.
-P308 + P311 If exposed or concerned: Get medical attention.
-P308 + P313 If exposed or concerned: Get medical advice / attention.
-P312 Get medical advice / attention if you feel unwell.
-P314 Get medical advice / attention if you feel unwell.
-P321 First Aid Measures (in case of contact with eyes, flush with plenty of running water, contact with skin, with plenty of running water, inhalation, move to fresh air and seek medical advice if ingested). Do it.
-P330 Wash out mouth.
-P331 Do not induce vomiting.
-P332 + P313 If skin irritation occurs: Get medical advice / attention.
-P333 + P313 If skin irritation or erythema appears, get medical advice / attention.
-P337 + P313 If eye irritation persists, get medical advice / attention.
-P362 + P364 Take off contaminated clothing and wash before reuse.
-P370 + P378 In the event of fire, use extinguishing media appropriately (see Section 5).
-P370 + P380 In case of fire, evacuate the area.
-P372 Risk of explosion in fire.
-P373 Do not extinguish fire when flame reaches explosives.
-P377 In case of leaking gas fire, do not extinguish fire unless it can be safely prevented.
-P381 Remove all ignition sources if they can be safely disposed of.

3) Storage
-P401 Store properly (in accordance with all local, regional, national and international regulations).
-P403 Store in a well-ventilated place.
-P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
-P403 + P235 Store in a well-ventilated place. Keep cool.
-Store in a storage area with P405 lock.
-P407 Maintain gaps between loads.
-P410 + P403 Store in a well-ventilated place away from direct sunlight.
-P413 It is a highly reactive substance, so if it is stored above the designated capacity, be careful not to exceed the specified temperature.
-P420 Store away from other materials.

4) Disposal
- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

○ **NFPA grade (0 ~ 4 level)**

- Health : 2, Flammability : 4, Reactivity : 0

SECTION 2 NOTES:

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Confidential ingredient		-/-	1~5
S-Alkyd resin		125542-65-6	5~8
2-Propanol		67-63-0	1~3
Acetone		67-64-1	1~3
Propane		74-98-6	5~8
Methyl acetate		79-20-9	12~14
Ethylbenzene		100-41-4	1~5
4-Methyl-2-pentanone		108-10-1	5~8
Toluene		108-88-3	5~8
2-Butoxyethanol		111-76-2	1 ~ 3
Oxybismethane		115-10-6	42 ~ 45
n-Butyl acetate		123-86-4	1 ~ 3
Dimethyl carbonate		616-38-6	1 ~ 3
Xylene		1330-20-7	1~3
Carbon black		1333-86-4	1~3
Silicon dioxide		7631-86-9	0.1~1
Nitrocellulose		9004-70-0	1~3
ROSIN,MALEATED, POLYMER WITH GLYCE		68038-41-5	1~3

SECTION 3 NOTES:

SECTION 4: FIRST AID MEASURES

A. Eye contact
- Do not rub your eyes.
-- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contact lenses if worn.
B. Skin contact
- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Accidental contact with liquefied gas or refrigerated liquefied gas may cause burn, severe mayhem and perfrigeration, so please take emergencymedical action.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- In case of accidental contact with liquefied gas or refrigerated liquefied gas, warm up the contact part with lukewarm water.
- Wash thoroughly after handling.
C. Inhalation contact
- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.
D. Ingestion contact
- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Flush skin with plenty of wter for at least 15 minutes while removing contaminated clothing and shoes.
- Get medical attention immediately.
E. Delayed and immediate effects and also chronic effects from short and long term exposure
- Not available
F. Notes to physician
- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

SECTION 4 NOTES:

SECTION 5: FIRE-FIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media
- Alcohol foam, carbon dioxide, powder, water
-Alcohol foam, carbon dioxide, powder fire extinguisher
-Water, carbon dioxide, powder, dry chemical
-Water, foam
-Powder fire extinguishing agent, carbon dioxide, water, alcohol type home
-Powder fire extinguishing agent, carbon dioxide, water, alcohol type home
-Powder fire extinguishing agent, carbon dioxide, water spray or regular foam
-Anti alcohol foam, carbon dioxide, powder fire extinguishing agent, water
-Particulate powder fire extinguishing agent, carbon dioxide, water, common foam
-Foam, carbon dioxide, trichemical, halide extinguishing agent
-Avoid direct fire extinguishing.
-Wear firefighting suit, firefighting rescue helmet, firefighting safety shoes, firefighting safety gloves, and air respirator for fighting fire.
B. Specific hazards arising from the chemical
-Highly flammable liquids and vapors
-Violent polymerization can cause fire and explosion
-Steam may be transferred to an ignition source and ignite
-Pyrolysis or combustion may produce irritating and very toxic gases during burning
-May form explosive mixtures at or above flash point
-Containers may explode when heated
-Highly flammable: easily ignited by heat, sparks or flame
-Leakage may cause fire / explosion
-Risk of vapor explosion indoors, outdoors, and sewers
-Vapors may form explosive mixtures with air
-Steam can move to an ignition source and flash back
-May be toxic by inhalation and skin absorption
-High pressure gas included; May explode if heated
C. Special protective actions for firefighters
- Move containers from fire area, if you can do without the risk.
- Cool containers with water until well after fire is out.
-Avoid inhalation of materials or combustion by-products.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- DO NOT fight fire when fire reaches explosives.
- Due to the extremely low flash point, irrigating fire extinguishing may be less effective when put out a fire.
- Explosion hazards : Keep people away and fight fire from a safe distance.
- Leaking gas fire: do not extinguish, unless leak can be stopped safely.
- Remove sources of ignition.
- Tanks, trailers, vehicle fire: FIRE recognize the possibility container.

SECTION 5 NOTES:

SECTION 6: ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures
- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Move container to safe area from the leak area.
- Remove all sources of ignition.
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away,isolate hazard area and deny entry.
B. Environmental precautions
- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.
C. Methods and materials for containment and cleaning up
- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.

- Dike for later disposal.
- Do not use plastic containers.

SECTION 6 NOTES:

SECTION 7: HANDLING AND STORAGE

A. Precautions for safe handling
- Wash thoroughly after handling.
- Comply with all applicable laws and regulations for handling
- Get the manual before use.
- Dealing only with a well-ventilated place.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Contaminated work clothing should not be allowed out of the workplace.
B. Conditions for safe storage, including any incompatibilities
- Store according to current laws and regulations
- Keep in the original container.
- Keep sealed when not in use.
- Prevent static electricity and keep away from combustible materials or heat sources.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.
- Do not eat, drink or smoke when using this product.
- Store in well ventilated area.

SECTION 7 NOTES:

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

○ ACGIH TLV
- [2-propanol]: TWA, 200 ppm (491 mg / m3), STEL, 400 ppm (984 mg / m3)
- [Acetone]: TWA, 500 ppm (1188 mg / m3) STEL, 750 ppm (1782 mg / m3)
- [Propane]: choking agent
- [Methyl Acetate]: TWA, 200 ppm (606 mg / m3), STEL, 250 ppm (757 mg / m3)
- [Ethylbenzene]: TWA, 20 ppm (87 mg / m3)
- [4-Methyl-2-pentanone]: TWA, 20 ppm (82 mg / m3) STEL 75 ppm (307 mg / m3)
- [Toluene]: TWA 20 ppm (75 mg / m3)
- [2-butoxyethanol]: TWA, 20 ppm (97 mg / m3)
- [n-butyl acetate]: TWA 50 ppm, STEL 150 ppm
- [Xylene]: TWA 100 ppm (434 mg / m3), STEL, 150 ppm (651 mg / m3)
- [Carbon Black]: TWA, 3 mg / m3, Inhalable particulate matter

○ Biological Exposure Criteria
- [2-propanol]: Acetone in urine: 40 mg / g (after the last week of work)
- [Acetone]: Acetone in urine: 50 mg / g (after final operation)
- [Ethylbenzene]: in urine (sum of Mandelic acid and Phenylglyoxylic acids): 0.15 g / g creatinine (after operation)
- [4-Methyl-2-pentanone]: Methyl isobutyl ketone in urine: 1 mg / L (after working)
- [Toluene]: Toluene in blood: 0.02 mg / L (before last week), urine Toluene: 0.03 mg / L (after work), urine (with hydrolysis) o-Cresol: 0.3 mg / g creatinine (work) after)
- [2-Butoxyethanol]: Butoxyacetic acid (BAA) (with hydrolysis) in urine: 200 mg / g creatinine (after operation)
- [Xylene]: Methylhippuric acids in urine: 1.5 g / g creatinine (after operation)
B. Engineering controls
- For workplaces where gases, vapors, mists, fumes or dusts are emitted, it is recommended that these concentrations in the air not exceed the hazardous levels of health.
C. Individual protection measures, such as personal protective equipment

○ respiratory protection
-If there is any direct exposure or exposure to the material, wear a gas mask certified by Korea Occupational Safety and Health Agency.
-Respiratory protection is classified from minimum concentration to maximum concentration.
-Consider warning properties before use.
-Gas mask (directly connected small size, for organic compound)

-Air filtration respirators (purifiers and organic type for organic compounds)
-In case of unknown concentration or other imminent danger to life or health: air mask (combined air line mask), air respirator (front type)

○ eye protection

-In case of direct exposure or exposure to the material, wear safety glasses for chemicals certified by Korea Occupational Safety and Health Agency.
-Install face wash and emergency washing equipment (shower type) near the workplace.

○ hand protection

-In case of direct exposure or exposure to the material, wear safety gloves for chemicals certified by Korea Occupational Safety and Health Agency.

○ body protection

-In case of direct exposure or exposure to the material, wear protective clothing for chemicals certified by Korea Occupational Safety and Health Agency.

○ Others

- Not available

SECTION 8 NOTES:

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	**Liquid**
- Color	**Black**
B. Odor	**Organic solvent odor**
C. Odor threshold	**Not available**
D. pH	**Not available**
E. Melting point/Freezing point	**Not available**
F. Initial Boiling Point/Boiling Ranges	**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. Vapour pressure	**Not available**
L. Solubility	**Not available**
M. Vapour density	**Not available**
N. Specific gravity(Relative density)	**0.94 ~ 1.01**
O. Partition coefficient of n-octanol/water	**Not available**
P. Autoignition temperature	**Not available**
Q. Decomposition temperature	**Not available**
R. Viscosity	**(KU, 25℃) 65 ~ 80**
S. Molecular weight	**Not available**

SECTION 9 NOTES:

Dimethyl ether

A. Exterior
Constellation :Gas
Color : Colorless
B. Odor : ether odor
C. Odor threshold : No data available
D. pH : (not applicable)
E. Melting point / freezing point : -141.5 ℃
F. Initial boiling point and boiling range : -23.6 ℃
G. Flash point : -80 ℃
H. Evaporation rate: No data available
I. Flammability (solid, gaseous) : no data

J. Upper / lower limit of flammable or explosive range : 26.7 / 3.4%
K. Vapor Pressure : (5.12 hPa at 20 ℃)
L. Solubility : 2.4 g / 100ml
M. Vapor Density : 1.6
N. Specific gravity : 0.61
O. n-octanol / water partition coefficient (Kow) : 0.1
P. Auto-ignition temperature : 350 ℃
Q. Decomposition temperature : No data available
R. Viscosity : No data available
S. Molecular Weight : 46.1

Propane

A. Exterior
Constellation: gas, liquefied gas
Color : odorless
B. Smell : peculiar smell
C. Odor threshold : No data available
D. pH : (not applicable)
E. Melting point / freezing point : -189.7 ℃
F. Initial boiling point and boiling range : -42 ℃
G. Flash point : -105 ℃
H. Evaporation rate : No data available
I. Flammability (solid, gaseous) :Flammable gas
J. Upper / lower limit of flammable or explosive range : 9.5 / 2.1%
K. Vapor Pressure : 840 kPa (at 25 ℃)
L. Solubility : (Water Solubility: 62.4 mg / l at 25 ° C Solvent Solubility: Solubility: Pure Alcohol, Ether, Chloroform, Benzene, Terebin)
M. Vapor Density : 1.55 ((Air = 1))
N. Specific Gravity : 0.5853 (at -45 C (Water = 1))
O. n-octanol / water partition coefficient (Kow) : 2.36
P. Auto-ignition temperature : 450 ℃
Q. Decomposition temperature : No data available
R. Viscosity : No data available
S. Molecular Weight : 44.11

SECTION 10: STABILITY AND REACTIVITY

A. Chemical Stability
- high-pressure gas; May explode when heated.
- May form explosive mixture.
B. Possibility of hazardous reactions
- Contact with other combustible material may cause fire.
- Cylinders exposed to fire may vent and release flammable gas.
- May explode if heated.
C. Conditions to avoid
- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.
D. Incompatible materials
- Not available
E. Hazardous decomposition products
- May emit flammable vapour if involved in fire.

SECTION 10 NOTES:

SECTION 11: TOXICOLOGICAL INFORMATION

○ Acute Toxicity
*** Oral Toxicity**
-Product (ATEmix): 2000mg / kg <ATEmix <= 5000mg / kg

Toluene: LD50 5580 mg / kg Rat (EU Method B.1) (ECHA)
[Xylene]: LD50 = 3550 mg / kg rat
[2-propanol]: LD50 = 4710 mg / kg Rat (HSDB) LD50 5840 mg / kg Rat (OECD TG 401, ECHA)
Acetone: LD 50 = 5280 mg / kg Rat (EHC (1990), SIDS (1997))
[Methyl Acetate]: LD50> 5000 mg / kg Rat (NITE)
[Ethylbenzene]: LD50 = 3500 mg / kg Rat (NITE)
[4-Methyl-2-pentanone]: LD50 2080 mg / kg Rat (NITE, ECHA)
[2-butoxyethanol]: LD50 = 1746 mg / kg Rat (SIDS (1997))
[n-butyl acetate]: LD50 12.2 mL / kg Rat (ECHA)
[Dimethyl carbonate]: LD50 = 13000 mg / kg Rat
-Carbon Black: LD50 = 15400 mg / kg Rat (NITE (2006))
[Silicone dioxide]: LD50 = 3160 mg / kg Rat (TOMES; HAZARDTEXT)
-Nitrocellulose: LD50 5000 mg / kg Rat
*** Percutaneous Toxicity**
Product (ATEmix): 200mg / kg <ATEmix <= 1000mg / kg
[Toluene]: LD50> 5000 mg / kg Rabbit (ECHA)
[Xylene]: LD50 = 1590mg / kg (mouse)
[2-propanol]: LD50 = 12870 mg / kg rabbit (HSDB), LD50 16400 mg / kg Rabbit (OECD TG402, ECHA)
Acetone: LD50 = 12870 mg / kg rabbit (EHC (1990), PATTY (1994), SIDS (1997))
[Methyl Acetate]: LD50> 5000 mg / kg Rat (NITE)
[Ethylbenzene]: LD50 = 15400 mg / kg Rabbit (NITE)
[4-Methyl-2-pentanone]: LD50> 16,000 mg / kg rabbit (NITE), LD0≥2000 mg / kg OECD TG402, GLP (ECHA)
[2-butoxyethanol]: LD50 = 99 mg / kg Rabbit (SIDS (1997))
[n-butyl acetate]: LD50> 16 mL / kg Rabbit (ECHA)
[Dimethyl carbonate]: LD50 = 5000 mg / kg Rabbit
[Carbon Black]: LD50> 3000 mg / kg rabbit (NITE)
[Silicone dioxide]: LD50> 2000 mg / kg Rabbit (IUCLID)
*** Inhalation Toxicity**
-Product (ATEmix): 10.0mg / L <ATEmix <= 20.0mg / L
Toluene: LC50> 20 mg / l Rat (OECD TG 403) (ECHA)
[Xylene]: LC50 = 10 ~ 20 mg / L / 4hr
[2-propanol]: LC50 = 72.6 mg / L 4 hr Rat (HSDB), LC50> 10000 ppm 6 hr Rat (OECE TG 403, GLP)
Acetone: LC50 = 76 mg / L / 4hr Rat (SIDS)
Propane: LC50 142500 ppm / 4hr Rat (570000 ppm / 15min)
[Methyl Acetate]: Steam LCLo = 32000 ppm 4 hr Rat (NITE)
[Ethylbenzene]: LC50 = 17.4 mg / L / 4 hr Rat (4000 ppm / 4hr) (EHC, ASTDR)
[4-Methyl-2-pentanone]: LC50 11.6 mg / L 4h Rat (OECD TG 403) (ECHA)
[2-butoxyethanol]: LC50 = 2.2 mg / L 4 hr Rat (SIDS (1997))
[Dimethyl ether]: gas LC50 163619 ppm / 4 hr Rat (308.5 mg / L / 4H) (IUCLID)
[n-butyl acetate]: LC50> 4.9 mg / l 4 hr Rat (ECHA)
[Dimethyl carbonate]: LC50 = 140 mg / l 4 hr Rat
Silicon dioxide: Dust LC50> 2.2 mg / l 1 hr Rat (IUCLID)

○ Corrosive or Irritant to Skin

-[Toluene]: Skin irritation test using rabbit showed erythema and edema irritation in all 7 animals and showed moderate irritation EU Method B4. (ECHA)
-[Xylene]: Causes severe irritation
-[2-propanol]: Skin irritation test using rabbit, mild irritation and non-irritant in humans (NITE)
-[Acetone]: Skin irritation test result using rabbit (SIDS, NITE)
Propane: Rabbit Irritation
-[Methyl Acetate]: non-irritant in humans and rabbits (NITE)
-[Ethylbenzene]: Moderately irritating as a result of skin irritation test using rabbit
-[4-Methyl-2-pentanone]: Skin corrosion / irritation test in rabbits, no irritation observed OECD TG 404
-[2-Butoxyethanol]: Skin irritation test result irritation (SIDS)
-[Dimethyl ether]: Vapors and liquids cause skin irritation (HSDB)
-[n-Butyl Acetate]: Skin corrosion / irritation test in rabbits shows no irritation (ECHA)
[Dimethyl carbonate]: non-rabbit
Silicon Dioxide: Rabbit Hard Stimulation (IUCLID)

○ Serious eye damage / irritation

-[Toluene]: Eye irritation test using rabbit showed weak irritation and no other effects (ECHA)
-[Xylene]: Causes severe irritation
-[2-propanol]: rabbit eye irritation test results of mild or moderate irritation (NITE)
-[Acetone]: Vapor irritates human eyes, but irritation does not persist when exposure stops. Corneal epidermal destruction recovers in 4-6 days. (SIDS, NITE) Severe eye damage / irritation test using rabbit, mild irritation. Impact based on the Draize scores fully recovered within 7 days Maximum mean total score MMTS = 19.1, corneal index = 25, iris index = 3.8, conjunctival index = 9.2 OECD TG 405
-[Propane]: Rabbit No Stimulation (IUCLID)
-[Methyl Acetate]: Eye irritation test resulted in severe irritation (corneal, iris irritation, conjunctival redness, edema, bleeding), but can recover within 7 days

(nite).
-[Ethylbenzene]: No irritation and no corneal damage to the conjunctiva as a result of eye irritation test in rabbit.
-[4-Methyl-2-pentanone]: Severe eye damage / irritation test using rabbit showed weak irritant corneal index 0.08, iris 0, hyperemia 0.8 OECD TG 405 (ECHA)
-[2-Butoxyethanol]: In rabbit, test results show strong irritation, corneal turbidity with irritation accompanying pain in humans, but the symptoms recover within a few days. (NITE)
-[Dimethyl ether]: Vapors and liquids cause eye irritation (HSDB)
-[n-Butyl Acetate]: Severe eye damage / irritation test in rabbits. No 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
[Dimethyl carbonate]: weak rabbit
-[Nittrocellulose]: Severe eye damage / irritation results show irritation

○ respiratory sensitization

-no data

○ skin sensitization

-[Toluene]: As a result of maximization test using guinea pig, skin sensitization was not detected. EU Method B.6, GLP (ECHA)
-[2-propanol]: skin sensitization test negative (SIDS) as a result of the guinea pig test
-[Acetone]: mouse test result negative, guinea pig test result negative (NITE)
-[Methyl Acetate]: negative in guinea pig test (NITE)
-[4-Methyl-2-pentanone]: Test result negative using guinea pig (NITE, ECHA)
-[2-Butoxyethanol]: negative guinea pig test result, negative patch test result in human (NITE (2006))
-[n-Butyl Acetate]: Buehler test results using guinea pig, irritable OECD TG 406
[Silicone dioxide]: no skin sensitization (SIDS)
-[Nittrocellulose]: Skin sensitization test shows skin sensitization

○ Carcinogenicity

*** Ministry of Environment Chemical Substances Control Act**
-no data
*** IARC**
-[2-propanol]: Group 3
-[Ethylbenzene]: Group 2B
-[4-methyl-2-pentanone]: Group 2B
-[Toluene]: Group 3
-[2-butoxyethanol]: Group 3
-[Xylene]: Group 3
-[Carbon Black]: Group 2B
-[Silicone dioxide]: Group 3
*** OSHA**
-no data
*** ACGIH**
-[2-propanol]: A4
-[Acetone]: A4
-[Ethylbenzene]: A3
-[4-methyl-2-pentanone]: A3
Toluene: A4
[2-butoxyethanol]: A3
-[Xylene]: A4
-Carbon Black: A3
*** NTP**
-no data
*** EU CLP**
-no data
Germ cell mutagenicity
-[Toluene]: Gene mutation test results using in vitro mammalian culture cells OECD TG 476, Microbial return mutation test results EU Method B.13 / 14, Negative and in vivo chromosomal aberration test results Voice (ECHA)
-[2-propanol]: Gene mutation test results using in vitro mammalian culture cells, negative result of OECD TG 476, GLP, metabolic activity system, return mutation test result using in vitro microorganisms, OECD TG 471, metabolite activity system Micronucleus test results using mammalian erythrocytes in vivo
-[Acetone]: Micronucleus test negative (SIDS, NITE) Reverse mutation test using microorganisms in vitro, negative OECD TG 471, chromosomal aberration test using in vitro mammalian culture cells regardless of metabolic activity system, metabolic activity Gene mutation test using negative OECD TG 473, in vitro cultured cells with or without system, negative OECD TG 476 in vivo hamster cancer / male in vivo, micronucleus test using mouse cancer / male with metabolic activity Results Negative, chromosomal modification analysis using Chinese hamster ovary cells negative, in vivo Chinese hamster micronucleus test results negative. Reverse mutation test using in vitro microorganisms negative OECD TG 471, micronucleus test using mammalian erythrocytes in vivo negative OECD TG 474
-[Methyl Acetate]: negative result of micronucleus test in rat (NITE)
-[Ethylbenzene]: Negative genotoxicity test using mouse lymphoma L5178Y cell, Negative result of chromosomal aberration test using Chinese hamster Ovary; CHO cell, Negative micronucleus test using OECD TG476, GLP, OECD TG 473 mouse bone marrow cells , Unscheduled DNA synthesis using mammalian hepatocytes; NUD test result negative, OECD TG474, OECD TG486, GLP

-[4-Methyl-2-pentanone]: Bacterial return mutation test results using in vitro microorganisms OECD TG 476, mammalian chromosomal abnormality test results OECD TG 473, negative in the absence of metabolic activity, micronucleus test results using mammalian erythrocytes in vivo Negative OECD TG 474, GLP (ECHA)
-[2-Butoxyethanol]: Micronucleus test using mouse and rat bone marrow cells Negative and epidemiological studies on humans showed no increase in micronucleus / sister chromatin exchange. (NITE (2006))
-[Dimethyl ether]: negative result of microbial reverse mutation test (IUCLID)
-[n-Butyl Acetate]: Bacterial return mutation test using microorganisms in vitro, negative OECD Guideline 471 in vivo mammalian erythrocyte micronucleus test, negative OECD Guideline 474
Reproductive toxicity
-[Toluene]: Reproductive toxicity test using rats resulted in NOAECP 600ppm2261mg / m3 (ECHA),
Reproductive toxicity of the Ministry of Employment and Labor, Category 2, Developmental toxicity and teratogenicity of fetuses (Toxicological information summary)
-[2-propanol]: First-generation reproductive toxicity test in rats shows OECD TG 415, GLP, preimplantation loss, average litter weight loss NOAELP = 853 mg / kg bw / day Result (OECD TG 414, GLP), maternal weight loss occurred. No teratogenicity (NOAEL = 400 mg / kg bw / day (actual dose received), NOAEL = 400 mg / kg bw / day (actual dose received))
-[Acetone]: Reproductive toxicity test in rat cancer / water showed decreased sperm vitality, abnormal spermatogenesis, increased tail epididymis and poor weight. NOAEL = 900 mg / kg bw / day, LOAEL = 1,700 mg / kg bw / day, developmental toxicity test in mice showed reduced fetal weight and increased incidence of late resorption. Higher concentrations were observed for NOAEC = 2,200 ppm and LOAEC = 6,600 ppm OECD Guideline 414.
-[Ethylbenzene]: Second-generation inhalation toxicity test in rats OECD TG416, GLP The reproductive or developmental adverse effects up to 500 ppm were not observed. NOEL on parental systemic toxicity was not observed due to weight loss and hepatic weight. Inhalation developmental toxicity test using NOEL = 100 ppm rat EOCD TG414, GLP resulted in no abnormalities up to 2000 ppm. Newborn weight loss at 1000 or 2000 ppm is weak. Maternal toxicity reduced body weight and feed consumption at 1000 and 2000 ppm. NOAEL teratogenicity = 2000ppm, NOAEL parent / development toxicity = 500ppm
-[4-Methyl-2-pentanone]: Developmental toxicity / teratogenicity test using rats showed increased kidney weight, decreased fetal weight, delayed ossification, but no evidence of abnormality. NOAEL = 1 000 ppmOECD TG 414 , Inhalation toxicity test using GLP (ECHA), pregnant rats and mice showed weight loss or ossification delay in fetuses at doses toxic to mother animals but no teratogenicity and no reproductive toxicity in humans (NITE))
-[2-Butoxyethanol]: Exposure to organogenesis during pregnancy has a negative effect on the occurrence of reduced implantation number, increased absorption fold in rats and rabbits. (NITE (2006))
[Dimethyl ether]: There are reports of effects on fetus and embryo in experimental animals (TOMES; RTECS)
-[n-Butyl Acetate]: 2nd generation reproductive toxicity test in rats showed decrease in body weight, weight gain and food intake from 1500ppm to 2000ppm NOAELsystemic toxicity, adult rats = 750 ppm nominal OECD TG 416, GLP rats Fetal developmental toxicity test results showed weight and liver weight loss, litter size and rib malformation, but maternal toxicity was greater than developmental toxicity. NOAELmaternal toxicity = 2.5 mg / L air nominal, NOAELteratogenicity = 10 mg / L air nominal GLP, OECD TG 414

○ Specific target organ toxicity (single exposure)

-[Toluene]: In humans, it acts on the central nervous system, causes fatigue, drowsiness, dizziness, irritation to the respiratory system, excitement, vomiting, central nervous system suppression, delirium and gait disorders. Causes eye, nose and throat irritation. Causes anesthesia in experimental animals. Target Organs: Central Nervous System (HSDB)
-[Xylene]: Causes anesthesia
-[2-propanol]: Decreased activity by inhalation exposure in rats. In acute intoxication in humans, irritation of the digestive tract, lowering of blood pressure, body temperature, etc., central nervous system symptoms, renal failure. (NITE) Acute inhalation toxicity studies using rats showed exhaustion, severe motor impairment, decreased excitability, slowed or shortness of breath, decreased neuromuscular elasticity, hypothermia, and reflex loss at OECD TG 403, GLP, 10,000 ppm. Transient concentration-related narcosis and sedative effects on the central nervous system Nervous system Target organs: Central nervous system (ECHA)
-[Acetone]: In humans, nose, airways, bronchial irritation, high exposures cause headaches, dizziness, leg exhaustion and fainting. (ACGIH, NITE) Target organs: Eyes, skin, respiratory system, central nervous system NIOSH Odor threshold = 10, 20-minute exposure Odor index w-28%, c-46% decrease, Irritation index: c-30% decrease Airway, nasal irritation, headache, drowsiness nasal irritation threshold 10000 ppm25000 mg / m3; NOAEC 5000ppm24000mg / m3
[Methyl Acetate]: Causes human airway and pharyngeal irritation, dizziness, headache, unstable gait and loss of vision in both eyes, optic nerve atrophy, blind spot enlargement in the left eye, narrowing of the right neck, anesthesia. (NITE)
-[Ethylbenzene]: Causes central nervous system effects and airway irritation in experimental animals. (NITE)
[4-Methyl-2-pentanone]: In humans, central nervous system symptoms are accompanied by anesthesia such as airway, mucosal irritation, headache, dizziness and vomiting. Anesthetic effects are seen in animal experiments. (NITE)
-[2-Butoxyethanol]: Irritation is observed in human throat. Neurotoxicity test results in decreased activity and reflex response in rats. Inhalation exposure test results in central nervous system inhibition in rats and rabbits. (NITE)
-[Dimethyl ether]: affects the central nervous system and lowers consciousness when exposed (NITE)
[n-butyl acetate]: Causes human central nervous system disorders, pulmonary edema, respiratory tract irritation. Target organs: Central nervous system, Respiratory system. (NITE, 2009)
-Nitrocellulose: classified as acutely toxic and not applicable to this category
Specific target organ toxicity (repeated exposure)
-[Toluene]: 90-day repeated oral toxicity test in rats EU method B.26 Result Inhalation carcinogenicity test in NOAEL 625 mg / kg bw / day rats with increase in absolute or relative liver weight OECD TG453, GLP result Nasal epithelium 90-day inhalation abdominal toxicity study with NOAEC 600 ppm2250mg / m3 rats as a local toxicity of EU method B.29, GLP Results Clinical symptoms, weight change, relative weight and hematologic changes in males and females Decreases, decreases Plasma chollinesterase acitivity and affects NOAEC 625 ppm2355 mg / m3 (ECHA) central nervous system, liver, hearing, kidneys and lungs (Toxic Substance Information Protocol)

-[Xylene]: Causes eye, nose irritation, chronic headache, chest pain, brain wave abnormality, shortness of breath, cyanosis, fever, and white blood cell reduction, and causes respiratory system and nervous system dysfunction.
-[2-propanol]: Four-month inhalation exposure of test rats has been reported to have effects on blood vessels, liver and spleen. Renal effects and anesthesia have been recognized. (NITE) 90-day subchronic inhalation toxicity test in rats and mice. Central nervous system toxicity, including OECD TG 413, GLP, ataxia, acute reflex defects, and hypoactivity. Weight gain, various changes in blood and serum clinical chemistry indices are observed, and absolute liver weight increases. (ECHA)
-[Acetone]: Significant increase of leukocytes (eosinophilic) and neutrophil phagocytosis were observed in 500 ppm 6 hours / day and 6 days exposed group (ACGIH (2001) 90 days subchronic oral toxicity in rats) Results show that male rats have mild toxicity in the testes, kidneys and hematopoietic system NOAEL = 10,000 ppm900 mg / kg bw / d, LOAEL = 20,000 ppm1,700 mg / kg bw / d OECD Guideline 408 rats at 90 days Chronic toxicity test, various hematological indicators, increased serum activity, relative liver and kidney weight increase observed 13 weeks inhalation repeated toxicity test using NOEL = 1% 900 mg / kg / day rat, highest concentration 4000ppm9500mg / No effects on nervous system function, work cognition, etc. up to m3 NOAEL = 9500mg / m3 = 1000mg / kg bw / day No effects due to repeated toxicity are observed and classified only at high doses above the classification criteria.
Propane: Nervous System Influence (TOMES)
-[Ethylbenzene]: NOAEL = 75 mg / kg bw / dayOECD TG408, GLP based on hematological changes, hepatic weight, and mesenchymal hepatocyte hypertrophy of 13 weeks after oral repeated toxicity test in rats. 13-week inhalation repeated toxicity test using ECHA mice showed liver and kidney weight gains above 750 ppm 3.55 mg / L, but no histopathological findings or adverse effects were observed NOAEC = 1000 ppm 4.74 mg / LOECD TG413, Inhalation repeated exposure at 4-13 weeks, 200-800ppm concentration to confirm the inhalation neurotoxicity of OECD TG424 in ECHA rats. During the 8-week recovery period, 200-800ppm OHC losses increased 4% and 100%, respectively. LOAEL = 200ppm
-[4-Methyl-2-pentanone]: NOAEL 250 mg / kg bw / day due to kidney height increase after 90 days oral repeated toxicity test
-[2-Butoxyethanol]: Inhalational exposure in animals has shown toxic effects on blood (red blood cells). (NITE (2006))
[Dimethyl ether]: Inhalation of rats revealed no significant differences in behavior, health status, food intake and food rate after 13 weeks of repeated exposure. (IUCLID)
-[n-butyl acetate]: <analogue CAS No. 71-36-3> Rodent 90-day repeated oral toxicity test in rats showed central nervous system abnormalities such as ataxia and decreased activity after 2 to 3 minutes of exposure in the 600 mg / kg concentration group. No other special effects observed NOAEL = level: 125 mg / kg bw / day nominal EPA OTS 798.2650, 90-day inhalation toxicity test in GLP rats, acute with decreased activity levels at medium and highest concentrations , Short-term symptoms observed, reduced body weight and food intake, upper respiratory tract irritation symptoms observed in nasal passages NOAEC = 500 ppm GLP, EPA OTS 798.2450
-Carbon black: Effect on lungs in the standard value range of Category 1 in human pneumoconiosis and rat inhalation tests (epidermal hyperplasia, growth, pneumonia, hyperplasia of lung cells) (NITE (2009))
[Silicone dioxide]: In humans, quartz and cristobalite have been reported as silicosis. It is reported that there is a possibility of fiber formation in quartz and cristobalite in experimental animals. It has been reported for quartz to have autoimmune diseases, chronic kidney disease, etc. (ACGIH 7th, 2006)
Aspiration hazard

-[Toluene]: hydrocarbon, kinematic viscosity of 20.5 mm2 / s or less at 40 ℃ (Toxicological Information Summary)

-[Xylene]: Swallowing liquid may cause chemical pneumonia
-[2-propanol]: Death due to cardiopulmonary arrest within 24 hours of intramuscular administration of test rats is recognized. (NITE)

-[Acetone]: kinematic viscosity 0.426 ㎜ / s (calculated value)

[Ethylbenzene]: hydrocarbons. If swallowed, liquid may cause chemical pneumonia. Kinematic Viscosity 0.64 ㎜ / s 25 ℃

○ Ministry of Employment and Labor Notice
*** Carcinogenic**
[Ethylbenzene]: Carcinogenicity 2
-[4-methyl-2-pentanone]: carcinogenicity 2
-[2-butoxyethanol]: carcinogenicity 2
-[Carbon Black]: Carcinogenicity 2
Germ cell mutagenicity
- no data
Reproductive toxicity
-[Toluene]: Reproductive toxicity 2

SECTION 11 NOTES:

SECTION 12: ECOLOGICAL INFORMATION

A. Ecotoxicity
Fish
Toluene: LC50 5.5 mg / l 96 hr Oncorhynchus kistutch (ECHA)
[2-propanol]: LC50> 100 mg / l 96 hr Oryzias latipes (NITE: MOE eco-toxicity tests of chemicals, 1997)
Acetone: LC50> 100 mg / l 96 hr Fathead minnows (NITE: EHC207, 1998)
[Propane]: LC50 100 mg / l 96 hr ((Species: Fish TLm)) (IUCLID)
[Methyl Acetate]: LC50 = 320 mg / L 96 hr
[Ethylbenzene]: LC50 5.1 mg / l 96 hr (ECHA)

[4-Methyl-2-pentanone]: ECHA LD50> 179 mg / L 96 hr Brachydanio rerio (OECD TG 203, GLP)
[2-Butoxyethanol]: LC50> 1116 mg / L 96 hr (NITE)
[n-butyl acetate]: LC50 18 mg / L 96 hr Pimephales promelas (OECD TG 203) (ECHA)
[Silicone dioxide]: LC50 5000 mg / l 96 hr (IUCLID)

○ crustaceans

-Toluene: EC50 3.78mg / L 48hr (ECHA)
[2-propanol]: ECHA LC50 5102 mg / l 24 hr Daphnia magna (OECD TG 202)
Acetone: LC50 8800 mg / l 48 hr Daphnia pulex (ECHA)
Propane: LC50 52.157 mg / l 48 hr (Estimate)
[Ethylbenzene]: LC50 2.4 mg / l to 1.8 mg / l 48 hr Mysidopsis bahia (EC50 48hr> 5.2 mg / L, EPA 1985, GLP)
[4-Methyl-2-pentanone]: ECHA EC50> 200 mg / L 48 hr Daphnia magna (OECD TG 202, GLP)
[2-Butoxyethanol]: LC50> 130 mg / L 96 hr
[n-butyl acetate]: EC50 44 mg / l 48 hr Daphnia magna (ECHA)
-Carbon Black: EC50> 5600 mg / l 24 hr (NITE)
[Silicone dioxide]: LC50 7600 mg / l 48 hr (IUCLID)

○ bird

-[2-propanol]: EC50 = 2.2 mg / L 96 hr
-[Propane]: LC50 32.252 mg / l 96 hr (Estimate)
-[Methyl Acetate]: EC50> 120 mg / L 72 hr Green algae (NITE: EU-RAR, 2003)
-[Ethylbenzene]: EC50 3.6 mg / L 96 hr (EPA 1985, GLP)
-[Silicone dioxide]: EC50 440 mg / l 72 hr (IUCLID)
-Nitrocellulose: EC 50 = 579 mg / l 96 hr (NITE)

B. Persistence and degradability
Persistence
Toluene: 2.73 log Kow (20 ° C) (ECHA)
Acetone: -0.24 log Kow (ECHA)
-[Propane]: log Kow 2.36
[Methyl Acetate]: log Kow 0.18 (ICSC)
[Ethylbenzene]: log Kow 3.6 (ECHA)
[4-Methyl-2-pentanone]: ECHA 1.9 log Kow (OECD TG 117)
-[2-Butoxyethanol]: log Kow = 0.83 (PHYSPROP Database)
[Dimethyl ether]: log Kow 0.1 (ICSC)
[n-butyl acetate]: 2.3 log Kow (25 ° C, OECD TG 117)
-[Silicon dioxide]: log Kow = 0.53
-Nitrocellulose: log Kow -4.56
degradable
Acetone: 1.85 g O2 / g (APHA Standard methods No.219 1971), 1.92 mg O2 / g (APHA Standard methods No.219 1971)

C. Bioaccumulative potential

○ Bioaccumulative potential

Toluene: BCF 90 (ECHA)
Propane: BCF 13 (HSDB)
[Ethylbenzene]: BCF 1
Silicon dioxide: BCF = 3.162

○ biodegradable

Toluene: 80% 20 day (Readily biodegradable) (ECHA)
Acetone: 62% 5 day (OECD TG 301B) (ECHA)
-[Propane]: 65.7 (%) 35 day
[Ethylbenzene]: 70-80% 28 day (ISO 14593 CO2, GLP)
[4-Methyl-2-pentanone]: ECHA 83% 28 day (OECD TG 301, GLP)
[2-Butoxyethanol]: Biodegradability = 96 (%) (NITE: existing chemical safety inspections data)
[Dimethyl ether]: 5 (%) 28 day (IUCLID)
[n-butyl acetate]: 83% 28 day (OECD TG 301D) (ECHA)

D. Mobility in soil
-[2-propanol]: log koc = 0.03
-[4-Methyl-2-pentanone]: ECHA 101.85 Koc (estimate)
[Dimethyl ether]: Koc 27

Ozone Layer Hazards
N/A

E. Other adverse effects
- [2-propanol]: Algae: 7d-other: Toxicity threshold Scenesmus quadricauda = 1 800 mg / L
Acetone: 28d NOEC Daphnia magna = 1,106-2,212 mg / L, 8 d TTNOEC Microcystis aeruginosa = 530 mg / L nominal ECHA NOEC Daphnia magna = 1660 mg / L, NOEC Entosiphon sulcatum = 28 mg / L, OECD SIDS, water insoluble

[Ethylbenzene]: NOEC Crustacean, 7d, reproduction = 0.96 mg / L, Algae Selenastrum capricornutum, NOEC 96h = 3.4 mg / L EPA 1985, GLP
[4-Methyl-2-pentanone]: Daphnia magna: NOEC21 d = 78 mg / L OECD TG 211

SECTION 12 NOTES:

SECTION 13: DISPOSAL CONSIDERATIONS

A. Disposal methods
- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, then can be reduction or stabilization by incineration orsimilar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.
B. Special precautions for disposal
- The user of this product must dispose by oneself or entrust it to a waste disposer, a person who recycles other's waste or establishes and operateswaste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations

RCRA HAZARD CLASS:

SECTION 13 NOTES:

SECTION 14: TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)
- 1950
B. Proper shipping name
- AEROSOLS, FLAMMABLE
C. Hazard Class
- 2.1
D. IMDG CODE/IATA DGR Packing group
- Not applicable
E. Marine pollutant
- Not applicable
F. Special precautions for user related to transport or transportation measures
- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-D
- EmS SPILLAGE SCHEDULE : S-U

SECTION 14 NOTES:

SECTION 15: REGULATORY INFORMATION

A. National and/or international regulatory information

○ Work environment measurement material

-Applicable (2-propanol containing more than 1%)
-Yes (acetone containing more than 1%)
-Applicable (methyl acetate containing at least 1%)
-Yes (ethylbenzene containing 1% or more)
-Applicable (4-methyl-2-pentanone containing 1% or more)
-Yes (toluene containing 1% or more)
-Applicable (2-butoxyethanol containing 1% or more)
-Applicable (n-butyl acetate containing at least 1%)
-Yes (xylene containing 1% or more)
-Yes (silicon dioxide containing more than 1%)

○ Exposure limit substance

-Applicable (2-propanol)
-Yes (acetone)
-Applicable (methyl acetate)
-Applicable (ethylbenzene)
-Applicable (4-methyl-2-pentanone)
-Yes (toluene)
-Applicable (2-butoxyethanol)

-Applicable (n-butyl acetate)
-Yes (xylene)
-Yes (Carbon Black)
-Applicable (silicon dioxide)

○ Hazardous Substances Subject to Control

-Yes (2-propanol isopropyl alcohol containing 1% or more)
-Yes (acetone acetone containing more than 1%)
-Applicable (methyl acetate methyl acetate with more than 1%)
-Yes (ethylbenzene ethylbenzene containing 1% or more)
-Applicable (4-methyl-2-pentanone methyl isobutyl ketone containing 1% or more)
-Yes (toluene toluene containing 1% or more)
-Applicable (2-butoxyethanol containing 1% or more 2-butoxyethanol)
-Applicable (n-butyl acetate n-butyl acetate containing more than 1%)
-Yes (xylene xylene containing 1% or more)

○ Substances subject to special health examination

-Applicable (2-propanol containing more than 1%)
-Yes (acetone containing more than 1%)
-Yes (ethylbenzene containing 1% or more)
-Applicable (4-methyl-2-pentanone containing 1% or more)
-Yes (toluene containing 1% or more)
-Applicable (2-butoxyethanol containing 1% or more)
-Yes (xylene containing 1% or more)
-Yes (silicon dioxide containing more than 1%)

○ Prohibited substances

- Not applicable

○ Substances subject to permission

- Not applicable

○ PSM target substance

-Flammable liquids (2-butoxyethanol)
-Flammable liquids (2-propanol)
-Flammable liquid (4-methyl-2-pentanone)
Nitrocellulose (nitrogen content 12.6% or more) (nitrocellulose)
-Flammable liquids (methyl acetate)
-Flammable liquids (acetone)
-Flammable liquids (ethylbenzene)
-Flammable liquids (xylene)
-Flammable liquids (dimethyl carbonate)
-Flammable liquids (toluene)
Flammable liquids (n-butyl acetate)
B. Regulation under the Chemicals Control Act

○ Toxic substance

-Not applicable (toluene containing more than 85%)
-Not applicable (xylene containing more than 85%)

○ Chemicals subject to emission investigation

-Applicable (2-propanol containing more than 1%)
-Yes (ethylbenzene containing 0.1% or more)
-Yes (toluene containing 1% or more)
-Yes (xylene containing 1% or more)

○ Preparation for accidents

-Not applicable (toluene containing more than 85%)

○ Restricted Substance

- Not applicable

○ Permitted Substance

- Not applicable

○ Banned Substance

- Not applicable
C. Dangerous Goods Safety Control Act
- Not dangerous goods
D. Waste Management Act
-This product corresponds to workplace waste other than designated waste according to the Waste Management Act Enforcement Decree [Attachment 1].
E. Other national and foreign laws

○ Persistent Organic Pollutant Control Act

- Not applicable

○ EU classification information

*** Classification result**
[2-propanol]: H225, H319, H336
[Acetone]: H225, H319, H336,
-[Propane]: H220
[Methyl Acetate]: H225, H319, H336,
[Ethylbenzene]: H225, H332
[4-methyl-2-pentanone]: H225, H332, H319, H335
[Toluene]: H225, H361d, H304, H373, H315, H336
[2-Butoxyethanol]: H332, H312, H302, H319, H315
[Dimethyl ether]: H220
[n-butyl acetate]: H226, H336,
[Dimethyl carbonate]: H225
[Xylene]: H226, H332, H312, H315

○ US management information

*** OSHA regulations (29CFR1910.119)**
-Nitrocellulose: 1133.9975 kg 2500 lb
*** CERCLA 103 Regulation (40CFR302.4)**
Acetone: 2267.995 kg 5000 lb
[Ethylbenzene]: 453.599 kg 1000 lb
[4-Methyl-2-pentanone]: 2267.995 kg 5000 lb
-Toluene: 453.599 kg 1000 lb
[n-butyl acetate]: 2267.995 kg 5000 lb
-[Xylene]: 45.3599 kg 100 lb
*** EPCRA 302 Regulation (40CFR355.30)**
- Not applicable
*** EPCRA 304 Regulations (40CFR355.40)**
- Not applicable
*** EPCRA 313 Regulations (40CFR372.65)**
-[2-propanol]: Applicable
-[Ethylbenzene]: Applicable
-[4-methyl-2-pentanone]: Applicable
-[Toluene]: Applicable
-[Xylene]: Applicable

○ Rotterdam Convention

- Not applicable

○ Stockholm Conventional Substances

- Not applicable

○ Montreal Protocol Substance

- Not applicable

SECTION 15 NOTES:

SECTION 16: OTHER INFORMATION

A. Reference
- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazardcommunication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty ofmerchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS