

Last revised date : 2022-08-26

Safety Data Sheet(SDS)

1. Identification of the substance/mixture and of the company/undertaking

- 1) Product identifier : MLLD HP3527CN 25KG BAG (PE)
- 2) Relevant identified uses of the substance or mixture and uses advised against
 - Relevant identified uses
 - 1.Feed materials, Intermediates
 - Uses advised against
- 3) Supplier information
 - Company name [Manufacture]
Company : LG Chem, Ltd.
Address : 535, Sandanjungang-ro, Yeosu-si, Jeollanam-do, Republic of Korea

Emergency number : +82 061-805-5827

2. HAZARD IDENTIFICATION

- 1) Hazard classification
Not applicable
- 2) Allocation label elements
Hazard pictograms

Signal word
- NONE

Hazard statements

No data available

Precautionary statements

Not applicable

3) Other hazards

○ Product NFPA Level

Health	Flamm ability	Reactivity
1	1	0

(※ 0 = Insufficient , 1 = Slightly , 2 = ordinary , 3 = Highness , 4 = Very high)

3. Composition/Information on ingredients

Components	Common name	CAS No.	PCT(wt%)
Ethylene-1-hexene copolymer	Ethylene-1-hexene copolymer	25213-02-9	99~100
trade secret substances1			<1
trade secret substances2			<1
trade secret substances3			<1

4. FIRST AID MEASURES

1) Following eye contact

- Get medical aid immediately.
- In case of contact with material, immediately flush eyes with running water for at least 15 minutes.

2) Following skin contact

- Get medical aid immediately.
- In case of contact with material, immediately flush skin with running water for at least 15 minutes.
- Launder contaminated clothing and shoes before re-use.
- Remove and isolate contaminated clothing and shoes.

3) Following inhalation

- Administer oxygen if breathing is difficult.
- Give artificial respiration if victim is not breathing.
- Move to fresh air.
- Seek immediate medial assistance.

4) Following ingestion

- Get medical aid immediately.
- If unconscious but breathing, never give anything by mouth.

5) Advice to physician

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

1) Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media
 - Small fire: Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, CO2 (Suitable extinguishing media).
- Unsuitable extinguishing media
 - High-pressure water (Unsuitable extinguishing media).

2) Special hazards arising from the substance or mixture

- Pyrolytic product
 - No data available
- Risk of fire and explosion
 - Some may burn but none ignite readily.
- Other
 - May cause toxic effects if inhaled.

3) Special protective equipment for firefighters

- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
- Dike fire-control water for later disposal; do not scatter the material.
- Contact may cause burns to skin and eyes.
- Runoff may cause pollution.
- Substance may be transported hot.

6. ACCIDENTAL RELEASE MEASURES

1) Health considerations and protective equipment

- Do not enter areas which have more than 23.5% oxygen in the atmosphere, without respirator or air supplied mask.
- Prevent dust cloud.
- Do not touch or walk through spilled material.
- Ventilate the contaminated area.
- Please note that materials and conditions to be avoided.
- Stop leak if you can do it without risk.

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

2) Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

3) For cleaning up

- Small Spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

7. HANDLING AND STORAGE

1) Precautions for safe handling

- Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)
- Caution: Dangerous fire hazard when exposed to heat, or flame, sparks.
- CAUTION: High temperature.
- Handling refer to engineering control/personal protection section.
- Wash ... thoroughly after handling.
- Please note that materials and conditions to be avoided.

2) Conditions for safe storage (including any incompatibilities)

- Store in a cool/low-temperature, well-ventilated {dry} place {away from heat and ignition sources}
- Store containers: AVOID the place where can be damage and contamination.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1) Chemical exposure limits, Biological exposure standard

Components	Occupational exposure limits	ACGIH	Biological standard
Ethylene-1-hexene copolymer	TWA : Not applicable STEL : Not applicable	TWA : Not applicable STEL : Not applicable	Not applicable
trade secret substances1	TWA : Not applicable STEL : Not applicable	TWA : Not applicable STEL : Not applicable	Not applicable
trade secret substances2	TWA : 5mg/m3 STEL : 10mg/m3	TWA : Not applicable STEL : Not applicable	Not applicable
trade secret substances3	TWA : Not applicable STEL : Not applicable	TWA : Not applicable STEL : Not applicable	Not applicable

2) Appropriate engineering controls

- Make sure you have the right exhaust and ventilation in the workplace.
- Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

3) Personal protection equipment

- Respiratory protection
 - Wear breathing protection, which needs a confirmation from the Korea Occupational Safety and Health Agency.
 - If high frequency of use or exposure, wear air respirator.

- Eye protection
 - Wear suitable protective goggles and face shields.
- Hand protection
 - Wear safety gloves for chemicals.
- Body protection
 - Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Solid(Pellet)
Physical state	Solid
Colour	Translucent white
Odour	Odorless
Odour threshold	No data available
pH	No data available
Melting point/freezing point	90~140°C
Initial boiling point and boiling range	No data available
Flash point	No data available
Evaporation rate	No data available
Flammability(solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapour pressure	No data available
Solubility(ies)	No data available
Vapour density	No data available
Relative density	0.910~0.938
n-octanol/water partition coefficient	No data available
Auto ignition temperature	330~410°C
Decomposition temperature	No data available
Viscosity	No data available
Molecular weight(mass)	100,000~500,000

10. STABILITY AND REACTIVITY

- 1) Stability and hazardous reactivity
 - May cause toxic effects if inhaled.
 - Some may burn but none ignite readily.
 - Stable under normal temperatures and pressures.
- 2) Conditions to avoid
 - Ignition source(heat, spark, flame, etc.).
- 3) Incompatible materials
 - Combustibles.
 - Irritating and/or toxic gas.
- 4) Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION

- 1) Exposure route information
 - Inhalation
 - Not applicable
 - Skin Contact
 - Not applicable
 - Eye Contact
 - Not applicable
 - Ingestion
 - Not applicable
- 2) Health hazard information
 - Acute toxicity
 - Acute toxicity(Oral) PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : LD50> 2000 mg / kg experimental species: Rat, Source: OECD TG423, 환경부 기존화학 물질안전성시험(2001-2004)
 - trade secret substances2 : LD50> 5000 mg / kg experimental species: Rat, (the route of administration: gavage, male / female male, OECD TG 401), Source: ECHA
 - trade secret substances3 : LD50> 6000 mg / kg experimental species: Rat, Source: OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)
 - Acute toxicity(Dermal) PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : LD50> 2000 mg / kg experimental species: Rat, Source: OECD SIDS, EU IUCLID
 - trade secret substances2 : LD50> 2000 mg / kg experimental species: Rat, (female / male, OECD TG 402, GLP), Source: ECHA

- trade secret substances3 : LD50> 2000 mg / kg experimental species: Rat (GLPdata), Source: OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)
- Acute toxicity(Inhalation:Gases) PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : No data available
 - trade secret substances2 : LC50> 5700 mg / m³ 4 hr experimental species: Rat, (female / male, OECD TG 403), Source: ECHA
 - trade secret substances3 : No data available
- Acute toxicity(Inhalation:Vapours) PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : No data available
 - trade secret substances2 : No data available
 - trade secret substances3 : No data available
- Acute toxicity(Inhalation:Dust/mist) PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : LC50> 1.81 mg / l 4 hr experiment Species: Rat, Source: ECHA 등록자료
 - trade secret substances2 : No data available
 - trade secret substances3 : No data available
- Skin corrosion/irritation PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : There is only a very slight irritation: Rabbit, recovered within 7 days, Source: OECD TG404, OECD SIDS
 - trade secret substances2 : Not irritant, Rabbit, Source: ECHA
 - trade secret substances3 : - Reported that rabbit skin irritation, Source: International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)
- Serious eye damage/eye irritation PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : Irritation: test stimulation index: 4/110, Source: EU IUCLID
 - trade secret substances2 : Not irritant, Rabbit, 72-hour fully reversible, EU Method B.5, Source: ECHA
 - trade secret substances3 : - High corrosion reaction to rabbit eye, Source: SIDS
- Respiratory sensitization PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : No data available
 - trade secret substances2 : No data available
 - trade secret substances3 : No data available
- Skin sensitization PRODUCT : Not classified

- Ethylene-1-hexene copolymer : No data available
- trade secret substances1 : Guinea Pig: 3 weeks 3 intradermal injection, using 20 animals, no emotional reaction, Source: OECD SIDS
- trade secret substances2 : Sensitization No, Guinea pig, GLP, female, guinea pig maximization test (GMPT): dose levels: 0.02, reaction: 0/10, OECD TG 406, Source: ECHA
- trade secret substances3 : - Reported that guinea pig skin sensitization, Source: International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)
- Carcinogenicity PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : No data available
 - trade secret substances2 : No data available
 - trade secret substances3 : No data available
- Germ cell mutagenicity PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : Reverse mutation test: negative, TA98, TA100, TA1535, TA1537, voice over chromosomes with or without metabolic activation system applied in a used WP2uvrA hyayeo 4.1-1000µg / plate density test: Metabolic activity in voice, 10-100µg / ml with or without speech-based application-Dominant lethal in vivo assay: voice, NMRI mouse: 1000-3000 mg / kg bw Somatic mutation assay: voice, chinese hamster: 500-2000 mg / kg bw, Source: OECD SIDS, EU IUCLID
 - trade secret substances2 : in vitro - reverse mutation test using bacteria: Negative (S. typhimurium TA1535, TA1537, TA98, TA100, irrespective of metabolic activation system), OECD TG 471, Source: ECHA
 - trade secret substances3 : - speech in a limited test for bacterial gene mutation induction. - clastogenicity in vivo bone marrow testing for (in both the hamster and in the micronucleus test medium analysis) also negative. - Voice from the dominant lethal test in mice. - The results also suggest that the substance is not any possibility of mutation., Source: OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)
- Reproductive toxicity PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : Rat: 2-generation reproductive toxicity study Reproductive toxicity: NOAEL 315mg / kg bw / day (up to a concentration probably has no effect), NOAEL for pup development: reduced newborn (96-111mg / kg bw / day's survival and growth at the highest concentration), Source: OECD SIDS
 - trade secret substances2 : May be regarded, under the test conditions, maturity, mating, pregnancy and early lactation showed in adults, and 30, 15 mg / kg / d, effects which, natjiman appear in the 7.5 mg / kg / d that is not substantially important. NOAEL = 7.5 mg / kg / d, equivalent or similar to Guideline: OECD TG 416, under the test conditions, of up to 88 mg / kg of zinc sulfate (about 35.2 mg or 19.9 mg Zn2 + / kg bw, for the anhydrous and monohydrate) of when administered adult hamsters and fetal no negative side effects., hamster, Source: ECHA
 - trade secret substances3 : 292.6 mg / kg bw / day in rats at concentrations experimental results for three of the second generation did not have any adverse effects on reproductive parameters. In 1030 mg / kg bw / day the concentration was decreased birth index of F0 generation. At high

concentrations, such as 1,030 mg / kg bw / day reduces the weight of the fetal F2 generation. NOAEL for reproduction evaluation is 292.6 mg / kg bw / day., Source: OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)

- Specific target organ toxicity single exposure PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : No data available
 - trade secret substances2 : Oral: toxic side effects without signs (rat / male / female / equivalent or similar guidelines: OECD TG 401) dermal: general discomfort some signs commonly found in dermal toxicity studies, the overall health status is also good throughout the entire study / over is not found (rat / male / female / OECD TG 402 / GLP) inhalation: nateu dirty hair appears on the head or side effects were observed (rat / male / female / equivalent or similar to Guideline :. OECD TG 403), Source: ECHA
 - trade secret substances3 : No data available
- Specific target organ toxicity repeated exposure PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : rat (dust / mist inhalation, 21 days 5 days, 6 hours of exposure to one day per week): NOAEL> 0.543mg / L (EU IUCLID), Rat: NOEL 30mg / kg bw / day 28 day 0, 5, 30 , gavage result of exposure to 100 and 300 mg 100, 300mg / kg bw / day group weight gain between the male 100, increases in Microsomal enzymes group 300 and the female 300mg / kg bw / day group, Source: OECD SIDS
 - trade secret substances2 : Orally (sub-chronic): NOAEL = 31.52 mg / kg-bw / day (. Approx 13.26 mg Zn2 + / kg-bw / day), Rat, OECD TG 408, GLP transdermal (short repeated): After a percutaneous exposure through the rat, on the basis of the decrease of collagen content, LOAEL for systemic toxicity natjiman show the lowest test dose of 75 mg / kg bw / day, these effects are reversible been a period of 14 days, Rat, OECD TG 410 suction (sub-chronic): under the experimental conditions, NOAEL was 1.5 mg / m³ to be evaluated, Rat, OECD TG 413, GLP, Source: ECHA
 - trade secret substances3 : - rats, 13 weeks, NOAEL> 147mg / kg- women only absolutely increasing the weight of the kidneys, increased kidney weight was equal to the importance of toxicology. It was not supported by the histopathological changes., Source: International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)
- Aspiration hazard PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : No data available
 - trade secret substances2 : No data available
 - trade secret substances3 : No data available

12. ECOLOGICAL INFORMATION

1) Aquatic toxicity

- Fish>PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available

- trade secret substances1 : LC50 100 mg / ℓ 96 hr *Lepomis macrochirus*, Source: NCIS 기존화학물질 안전성 시험
- trade secret substances2 : LC50 315 µg / ℓ 96 hr *Thymallus arcticus* , (ASTM, exponential expression, fresh water), Source: ECHA
- trade secret substances3 : LC50> 100 mg / ℓ 96 hr *Brachydanio rerio*, Source: ECHA 등록자료
- Crustacea>PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : EC50 100 mg / ℓ 24 hr *Daphnia magna*, Source: NCIS 기존화학물질 안전성시험
 - trade secret substances2 : LC50 1220 µg / ℓ 48 Hr *Daphnia Magna*, (US EPA / 600 / 4-85 / 013, Exponential, freshwater, GLP), Source: ECHA
 - trade secret substances3 : No data available
- Aquatic algae>PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : EC50> 30 mg / ℓ 72 hr *Scenedesmus subspicatus*, Source: Directivw 87/302/EEC, GLP . IUCLID
 - trade secret substances2 : EC10 350 µg / ℓ 48 hr *Chlorella sp.* , (Exponential manner, fresh water), Source: ECHA
 - trade secret substances3 : EC50> 75.2 mg / ℓ 72 hr *Desmodesmus subspicatus*, Source: ECHA 등록자료

2) Persistence and degradation

- n-octanol water partition coefficient>PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : (Not applicable)
 - trade secret substances1 : 13.41 log Kow ((estimated))
 - trade secret substances2 : No data available
 - trade secret substances3 : (> 6, calculated), Source: International Uniform ChemicalL Information Database(IUCLID)(<http://ecb.jrc.it/esis>)
- Degradation>PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : No data available
 - trade secret substances2 : No data available
 - trade secret substances3 : No data available
- Biodegradation>PRODUCT : Not classified
 - Ethylene-1-hexene copolymer : No data available
 - trade secret substances1 : 39 (%) ~ 21 (%) 28 day, Source: OECD TG 301 C . OECD SIDS
 - trade secret substances2 : 100 (%) 40 hr, Source: HSDB
 - trade secret substances3 : 6 (%) 28 day, Source: IUCLID

3) Bioaccumulative potential>PRODUCT : Not classified

- Ethylene-1-hexene copolymer : No data available
- trade secret substances1 : ≤12 (carp (*Cyprinus carpio*) 6 Day 12 than at 0.05mg / L), Source: CERI
- trade secret substances2 : 0.002 BCF,, Source: ECHA
- trade secret substances3 : 4.66, Source: IUCLID

4) Mobility in soil>PRODUCT : Not classified

- Ethylene-1-hexene copolymer : No data available

- trade secret substances1 : No data available
- trade secret substances2 : No data available
- trade secret substances3 : No data available

5) Other adverse effects>PRODUCT : Not classified

- Ethylene-1-hexene copolymer : No data available
- trade secret substances1 : No data available
- trade secret substances2 : No data available
- trade secret substances3 : No data available

13. DISPOSAL CONSIDERATIONS

1) Disposal methods

- Every commercial waste producer shall either treat wastes generated from his/her place of business by him/herself or commission the treatment of such wastes to a person who has license for a waste treatment business under Article 26(3), a person who recycles of such wastes under Article 44(2), a person who has installed and operates a waste disposal facility under Article 4 or 5, a person who has completed the registration of a business of discharging wastes into the sea under Article 18 of the Marine Environment Management Act.

2) Precautions (including disposal of contaminated container of package)

- Empty containers recycled under environmental laws.
- Do not allow spill material to enter sewers, storm water drains, soil, etc.
- Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)

14. TRANSPORT INFORMATION

1) UN No. : Not applicable

2) Proper shipping name : Not applicable

3) Class or division : Not applicable

4) Packing group : Not applicable

5) Marine pollutant : Not applicable

6) Special safety response for transportation or transportation measure :

Emergency measures in case of fire : Not applicable

Emergency measures in the effluent : Not applicable

- ADR

- Tunnel restriction code : Not applicable

- IMDG

- Marine pollutant : Not applicable

- Air transport(IATA)

- UN No. : Not applicable

- Proper shipping name : Not applicable
- Class or division : Not applicable
- Packing group : Not applicable

15. REGULATORY INFORMATION

- Global Inventory - USA. Toxic Substances Control Act (TSCA) Chemical Substances Inventory (12 April 2018)
 - Ethylene-1-hexene copolymer
 - trade secret substances1
 - trade secret substances2
 - trade secret substances3
- ETC regulation - EPCRA (SARA Title III) Section 302 Extremely Hazardous Substance (EHS) (40 CFR 355, Appendix A)

Not applicable

- ETC regulation - OSHA Hazard Communication Standard: On One of the Floor Lists of the OSHA HCS (29 CFR 1910.1200)

- trade secret substances2

- ETC regulation - EPCRA (SARA Title III) Section 313 Toxic Chemical Release Inventory (TRI) Reporting for RY 2013 (as amended Sep. 30, 2014)

Not applicable

- ETC regulation - CERCLA Hazardous Substances [other than radionuclides] (40 CFR 302.4) (as amended by 75 FR 78918, Dec. 17, 2010)

Not applicable

- ETC regulation - RCRA Appendix VII: Hazardous Wastes (40 CFR 261, App. VII, Basis for Listing Hazardous Waste)

Not applicable

- ETC regulation - CERCLA. Radionuclides and their Reportable Quantities (40 CFR 302.4, App. B)

Not applicable

- ETC regulation - RCRA D List of Characteristic Hazardous Wastes (40 CFR 261.21-24)

Not applicable

- ETC regulation - RCRA F List of Hazardous Wastes from Non-Specific Sources (40 CFR 261.31(a)) (as amended by 73 FR 31756, June 4, 2008)

Not applicable

- ETC regulation - RCRA K List of Hazardous Wastes from Specific Sources (40 CFR 261.32)

Not applicable

- ETC regulation - RCRA P List of Hazardous Wastes (40 CFR 261.33(e) and 40 CFR 302 [CERCLA])

Not applicable

- ETC regulation - RCRA U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA], as amended 75 FR 78918, Dec 17, 2010

Not applicable

- ETC regulation - DOT Hazardous Materials Table Listings (49 CFR 172.101, as amended through October 31, 2013)

Not applicable

- ETC regulation - EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Respo

Not applicable

16. OTHER INFORMATION

1) Reference

- CERI
- Directiw 87/302/EEC, GLP . IUCLID
- ECHA
- ECHA 등록자료
- EPA
- EU IUCLID
- HSDB
- IUCLID
- International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)
- NCIS 기존화학물질 안전성 시험
- NCIS 기존화학물질 안전성시험
- OECD SIDS
- OECD SIDS, EU IUCLID
- OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)
- OECD TG 301 C . OECD SIDS
- OECD TG404, OECD SIDS
- OECD TG423, 환경부 기존화학물질안전성시험(2001-2004)
- OSHA
- SIDS

2) Print date : 2022-08-26

3) Revision date

- Revised date count : 0
- Last revised date : 2022-08-26
- Last revised history :

4) Other