SAFETY DATA SHEET

Date Printed:
Version: 3
Revision date: January 5, 2024
Regulation: In accordance with Commission Regulation (EU) 2020/878

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name: LLDPE M1605EN, LLDPE M1707EN, LLDPE M1810HA, LLDPE M1810HC, LLDPE M1810HN, LLDPE M1835HN, LLDPE M2010EA, LLDPE M2010EN, LLDPE M2535HN, LLDPE M2703EN, LLDPE M2710HN, LLDPE M3505EN, LLDPE M3707AN, LLDPE V1408DC, LLDPE V1408DN
EC No.: -
REACH Registration No.: Refer to chapter 3
CAS No.: 25213-02-9

1.2 Relevant identified uses of the substance or mixture and uses advised against

1.2.1 Identified Uses
- Raw material for industrial resin

1.2.2 Recommended use
- Raw material for industrial resin

1.2.3 Restrictions on use
- Do not use for purposes other than those recommended.

1.3 Details of the supplier of the safety data sheet

1.3.1. Manufacturer
Company name: Hanwha Solutions Co, Ltd.
Address: Yeosu plant, Hanwha Solutions Co, Ltd., 117, Yeosusandan 3-ro, Yeosu-si, Jeollanam-do, Korea
Prepared by: PE Production 2 Team
Contact Telephone: +82-61-688-1804 (FAX: +82-61-688-1820)

1.3.2. Supplier & Distributor
Company name: Hanwha Solutions Co, Ltd.
Address: 21F, Hanwha Bldg., Janggyo-dong, Jung-gu, Seoul, Korea
Prepared by: PO Global Business Team
Contact Telephone: +82-2-729-5026 (FAX: +82-2-729-2563)
Email Address: hyeonho.yang@hanwha.com

1.4 Emergency telephone number

Emergency Telephone: +49-6196-5016 / +82-61-688-1804

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP)

Physical / Chemical Hazards: Not classified

Health Hazards: Not classified

Environmental Hazards: Not classified

2.2 Label elements

- **Hazard pictograms:** Not applicable
- **Signal word:** Not applicable

o Hazard statement: Not applicable
o Precautionary statements: Not applicable

2.3 Other hazards
- **Additional precautionary statements:** Not applicable
- **National Fire Protection Association (NFPA):**
  Health: 0
  Flammability: 0
  Reactivity: -

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances:

Component	CAS No.	EC No.	Conc. / %	Classification according to 1272/2008/EC	SCL/ M-factor/ ATE	Registration No.
Polyethylene	25213-02-9	607-647-3	≥99.5	Not classified	-	01-2119462827-27-0000

***Under EU REACH regulation, monomer in Polyethylene is registered.**

3.2 Mixtures: Not applicable

4. FIRST AID MEASURES

4.1 Description of first aid measures

4.1.1 General information:
Remove soiled or soaked clothing immediately, do not allow to dry.
Adhere to personal protective measures when giving first aid.
Clean body thoroughly (Bad, shower).

4.1.2 Following inhalation:
Specific medical treatment is urgent.
Move victim to fresh air.
Give artificial respiration if victim is not breathing.
Administer oxygen if breathing is difficult.

4.1.3 Following skin contact:
In case of contact with substance, immediately flush skin with running water at least 20 minutes.
Remove and isolate contaminated clothing and shoes.
Get immediate medical advice/attention.

4.1.4 Following eye contact:
In case of contact with substance, immediately flush eyes with running water at least 20 minutes.
Get immediate medical advice/attention.

4.1.5 Following ingestion:
Do not let him/her eat anything, if unconscious.
Get immediate medical advice/attention.

4.1.6 Self-protection of the first aider:
First aider: Pay attention to self-protection!

4.2 Most important symptoms and effects, both acute and delayed:
- Symptoms and effects: None known.

4.3 Indication of any immediate medical attention and special treatment needed:
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

- Suitable extinguishing media: Use dry fire extinguisher, alcohol foam, water spray, CO2, when fighting fires involving this material.
- Unsuitable extinguishing media: High Pressure Water Jet

5.2 Specific hazards arising from the substance or mixture

- May be ignited by heat, sparks or flames.
- Containers may explode when heated.
- Some of these materials may burn, but none ignite readily.
- Fire will produce irritating and/or toxic gases.
- If inhaled, may be harmful.

5.3 Advice for firefighters

- Move containers from fire area if you can do it without risk.
- Some may be transported hot.
- Runoff from fire control may cause pollution.
- Contact with substance may cause severe burns to skin and eyes.
- Dike fire-control water for later disposal; do not scatter the material.
- Fire involving Tanks; Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks; Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks; Always stay away from tanks engulfed in fire.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

- Stop leak if you can do it without risk.
- Do not touch or walk through spilled material.

6.1.2 For emergency responders

- Eliminate all ignition sources.
- Ventilate the area.
- Powder Spill; Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- Prevent dust cloud.
- For further information refer to section 8.2.

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

- Small Spill; Flush area with flooding quantities of water. And take up with sand or other non-combustible absorbent material and place into containers for later disposal.
- Large Spill; Dike far ahead of liquid spill for later disposal.
- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

6.4 Reference to other sections

- If appropriate, Section 8 and 13 shall be referred to.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

- Wash your hands thoroughly after handling.
- Please work with reference to engineering controls and personal protective equipment.
- Be careful to high temperature.

7.2 Conditions for safe storage, including any incompatibilities

- Store in a closed container.
- Store in cool and dry place.

- Please note that there are materials and conditions to avoid.

7.3 Specific end use(s)

- Recommendations shall relate to the identified use(s) referred to in subsection 1.2 and be detailed and operational.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure limits

- **o EU regulation:** Not available
- **o U.S regulation:**
  - NIOSH: Not available
  - OSHA: Not available
- **o ACGIH:** Not available
- **o Biological exposure index:** Not available
- **o Others:**
  - Slovak Republic: TWA=5mg/m^3 (total solid aerosol)
  - Latvia: TWA= 5mg/m^3 (dust, listed under Polymers dust)
  - China: TWA= 5mg/m^3 (total dust), STEL= 10mg/m^3 (total dust)
- **o DNELs, PNECs:** Not available

8.2 Exposure controls

Appropriate engineering controls:

- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Individual protection measures, such as personal protective equipment:

Respiratory protection:

- Wear European Standard type P1(EN 143) approved dust mask respiratory protective equipment when necessary.

Eye protection:

- Wear safety goggles as follow if eye irritation or other disorder occur.

; In case of gaseous state organic material: enclosed safety goggles
; In case of vapour state organic material: safety goggles or breathable safety goggles
; In case of particulate material: breathable safety goggles

Hand protection:

- Wear appropriate protective gloves (insulated gloves) by considering physical and chemical properties of chemicals.

Body protection:

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

Thermal hazards:

- If appropriate, Section 5.3 shall be referred to.

Environmental exposure controls: Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	
Physical state:	Solid
Color:	ivory white
Odor:	Not available
Odor threshold:	Not available
pH:	Not available

Melting point/freezing point:	100℃~115℃
Boiling point or initial boiling point and boiling range:	Not available
Flash point:	221℃
Evaporation rate:	Not available
Flammability (solid, gas):	Not available
Upper/lower flammability or explosive limits:	Not available
Vapour pressure:	Not applicable
Vapour density:	Not available
Density and/or relative density:	0.92~0.95g/cm³(25℃)
Solubility(ies):	Soluble in organic solvents above 93℃
Partition coefficient: n-octanol/water:	Log Kow=17.04
Auto-ignition temperature:	435℃
Decomposition temperature:	Not available
Viscosity:	Not available
Kinematic viscosity:	Not available
Explosive properties:	Not available
Oxidizing properties:	Not available
Molecular weight:	60,000-150,000g/moL
Specific gravity:	Not available
Particle characteristics (solid):	Not available
Particle Size (Polymer compound):	Not available
Self-accelerated decomposition temperature (Polymer compound):	Not available

9.2 Other information: Not available

10. STABILITY AND REACTIVITY

10.1 Reactivity
- Not available

10.2 Chemical stability
- Stable under normal conditions.

10.3 Possibility of hazardous reactions
- No dangerous reaction under conditions of normal use.

10.4 Conditions to avoid
- Keep away from heat/sparks/open flames/hot surfaces.

10.5 Incompatible materials
- Combustion materials, Irritating, Toxic gases, strong oxidizing agent

10.6 Hazardous decomposition products
- CO_2, Acrolein, Formaldehyde

11. TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008	
(a) Acute toxicity	Not available
Oral	Rat, LD_{50} >2,000 mg/kg bw
Dermal	Not available
Inhalation	Not available

(b) Skin Corrosion/ Irritation	Not classified
	In test on skin irritation with rabbits, mild skin irritations were observed. (Irritating index: 0.2)
(c) Serious Eye Damage/ Irritation	Not classified
	At the 24 hours observation, one and two treated eyes suffered from moderate and minimal conjunctival irritation, respectively. Polyethylene produced a maximum group mean score of 11.7 and was classified as a mild irritant to the rabbit eye. All treated eyes appeared normal at the 72 hour and 7 day observations.
(d) Respiratory sensitization	Not available
(e) Skin Sensitization	Not classified
	In skin sensitization test with guinea pigs, skin sensitizations were not observed.
(f) Carcinogenicity	Not classified
	IARC: Group 3 NTP, OSHA, EU CLP 1272/2008, US EPA: Not listed
(g) Germ cell mutagenicity	Not classified
	In vitro: Reverse mutation test (*S. typhimurium, Escherichia coli*) with/ without metabolic activation: Negative
(h) Reproductive toxicity	Not available
(i) Specific target organ toxicity (single exposure)	Not available
(j) Specific target organ toxicity (repeat exposure)	Not classified
	Sub-chronic or pre-chronic Exposure/ In a 90-day study, rats and dogs were fed an extract of low molecular weight PE film; the film had been extracted with isooctane to yield 568 mg extract/100 g of film. Rats fed at a level of 13,500 ppm film extract showed liver changes (fat droplets, cloudy swelling, and increased liver weight) that were considered reversible in all cases. Rats fed at levels of 2700 and 540 ppm and dogs fed 2700 ppm showed no adverse effects.
(k) Aspiration Hazard	Not available
11.2 Information on other hazards	
11.2.1 Endocrine disrupting properties	Not available
11.2.2 Other information	Not available

12. ECOLOGICAL INFORMATION

12.1 Toxicity	Not available
Acute toxicity	Not available
Chronic toxicity	Not available
12.2 Persistence and degradability	Persistence: High persistency (log Kow is more than 4 estimated.) Log Kow =17.04

	Degradability: Not available
12.3 Bioaccumulative potential	Bioaccumulation: Bioaccumulation is expected to be low according to the BCF <500. (BCF = 3.162) Biodegradation: Not available
12.4 Mobility in soil	Not available
12.5 Results of PBT and vPvB assessment	Not available
12.6 Endocrine disrupting properties	Not available
12.7 Other adverse effects	Not available
12.8 Additional information	Not available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
- Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

13.1.1 Product/Packaging disposal
- No waste key number as per the European Waste Types List can be assigned to this product, since such classification is based on the (as yet undetermined) use to which the product is put by the consumer.
- The waste key number must be determined as per the European Waste Types List (decision on EU Waste Types List 2000/532/EC) in cooperation with the disposal firm/producing firm/official authority.

13.1.2 Waste treatment-relevant information
- Waste must be disposed of in accordance with directive 2008/98/EC.

13.1.3 Sewage disposal-relevant information
- Release to the environment or sewage system is prohibited. Must be treated as hazardous waste.

13.1.4 Other disposal recommendations: Not available

14. TRANSPORT INFORMATION

14.1 UN No.: Not applicable

14.2 UN Proper shipping name: Not applicable

14.3 Transport Hazard class
ADR: Not applicable
IMDG: Not applicable
ICAO/IATA: Not applicable
RID: Not applicable

14.4 Packing group: Not applicable

14.5 Environmental hazards: Not applicable

14.6 Special precautions for user
in case of fire: Not applicable
in case of leakage: Not applicable

14.7 Maritime transport in bulk according to IMO instruments: Not applicable

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
EU Regulatory Information
EU classification
EU 1272/2008(CLP)
Classification: Not classified
Risk phrases: Not classified
Safety phrases: Not classified
EU SVHC list: Not regulated
EU Authorization list: Not regulated
EU Restriction list: Not regulated
Waste Framework Directive 2008/98/EC: Hazardous waste

Foreign Inventory Status
- Korea management information: Existing Chemical Substance (KE-28877)
- U.S.A management information: Section 8(b) Inventory (TSCA): Present
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (05721))
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((6)-1)
- Canada management information: Domestic Substances List (DSL): Present
- Australia management information: Australian Inventory of Chemical Substances (AICS): Present
- New Zealand management information: New Zealand Inventory of Chemicals (NZIoC):
May be used as a single component chemical under an appropriate group standard.
- Philippines management information: Philippine Inventory of Chemicals and Chemical Substances (PICCS): Present

15.2 Chemical safety assessment: For this substance a chemical safety assessment has been carried out.

16. OTHER INFORMATION

Product safety data sheet for prepared in accordance with Commission Regulation (EU) 2020/878

16.1 Indication of changes:
Preparation date: April 27, 2020
Version: 3
Revision date: January 5, 2024

16.2 Key literature reference and sources for data:
TSCA; http://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do
EU Regulation 1272/2008
TOMES-LOLI; http://csi.micromedex.com/fraMain.asp?Mnu=0
RightAnswer-LOLI; https://www.rightanswerknowledge.com/n0home.asp
UN Recommendations on the transport of dangerous goods Twenty-second revised edition
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; http://monographs.iarc.fr
ECHA CHEM; http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances
OECD SIDS; http://webnet.oecd.org/
HSDB; https://pubchem.ncbi.nlm.nih.gov/
EPA; http://www.epa.gov/iris
EPISUITE Program ver.4.1
NIOSH (The National Institute for Occupational Safety and Health)
ACGIH (American Conference of Governmental Industrial Hygienists)
National chemicals information systems (NCIS); http://ncis.nier.go.kr
Management Agency-Korea dangerous material inventory management system;
http://hazmat.mpss.kfi.or.kr/material.do

16.3 Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008(CLP):

Classification according to Regulation (EC) 1272/2008 (CLP)	Classification procedure
-	-

16.4 Abbreviations

EC_{50}: median effective concentration
LC_{50}: median lethal concentration
LD_{50}: median lethal dose
OEL: Occupational exposure limit
PBT: Persistent, bioaccumulative, toxic chemical
STEL: short-term exposure limit
TWA: time weighted average
vPvB: very persistent, very bioaccumulative chemical
EWC: the European Waste Code
SCL: Specific concentration limit
M-factor: Multiplication factor
ATE: Acute toxicity estimate

16.5 Other

- Product should be handled, stored, and used in accordance with the generally accepted industrial hygiene practices and in conformity with all the applicable legal regulations.
- The information provided herein is based on the knowledge possessed at this present time from the view point of safety requirements.
- It should, therefore, not be construed as guaranteeing specific properties.