

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

• 1.1 Product identifier**• Trade name:**Poly (ethylene 2,5-furandicarboxylate)**• Registration number:**

No available data.

• UFI number:

No available data.

• Other means of identification:

No available data.

• 1.2 Relevant identified uses of the substance or mixture and uses advised against on**• Application of the substance/ mixture:**

Industrial uses, film, bottle, fiber.

• Uses advised against:

No available data.

• Reason why uses advised against:

No available data.

• 1.3 Details of the supplier of the safety data sheet**• Manufacturer/Supplier:**

Zhongke Guosheng (Hangzhou) Technology, Co.,Ltd

Room 401, Floor 4, Building 9, No.19 Jugong Road, Xixing Street, Binjiang District, Hangzhou City, Zhejiang Province

Post code: 310000

Tel: +086-571-86777732

Email: wei.chen@guoshengtech.com

National contact: Wei Chen

• Only Representative/other EU contact point:

No information available.

• Further information obtainable from:

Zhongke Guosheng (Lishui) New Material Technology Co., Ltd

• 1.4 Emergency telephone number

Tel: +086-571-86777732 (24 Hours available data)

SECTION 2: Hazards identification

• 2.1 Classification of the substance or mixture**• 2.1.1 Classification according to regulation (EC) 1272/2008:**

Regulation (EC) No 1272/2008 [CLP]	Classification procedure
Acute Tox. 4 (oral), H302	Calculation method
Eye Irrit. 2, H319	Calculation method
STOT RE 2, H373	Calculation method

• 2.1.2 Additional information:

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

• 2.2 Label elements

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

• **Labeling according to Regulation (EC) No 1272/2008:**

The product is labelled according to CLP Regulation.

• **Hazard pictograms:**



GHS07 GHS08

• **Signal word:**

Warning

• **Hazard-determining components of labelling:**

Ethylene glycol

• **Hazard statements:**

H302 Harmful if swallowed

H319 Causes serious eye irritation

H373 May cause damage to organs (kidney) through prolonged or repeated exposure (oral)

• **Precautionary statement:**

P260 Do not breathe vapor/spray.

P264 Wash hands and face thoroughly after handling.

P280 Wear eye protection/face protection.

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell. Rinse mouth.

P314 Get medical advice/attention if you feel unwell.

P501 Dispose of contents/container in accordance with local/regional/national/international regulation.

• **Supplemental label elements:**

Not applicable

• **2.3 Other hazards**

None of the ingredients ($\geq 0.1\%$) meets the criteria for PBT/vPvB in accordance with Annex XIII.

None of the ingredients ($\geq 0.1\%$) is identified as having endocrine disrupting properties according to Regulation (EU) 2017/2100.

SECTION 3: Composition/information on ingredients

• **3.1 Substance**

Not applicable

• **3.2 Mixtures**

• **Description of the mixture:**

Poly (ethylene 2,5-furandicarboxylate)

Ingredients:						
Substance	CAS No.	Index No.	EC No.	w/w, %	CLP Classification	SCL/M-factor/ATE
Ethylene glycol	107-21-1	603-027-00-1	203-473-3	71.5	Acute Tox. 4, H302 STOT RE 2, H373	ATE (oral)=500mg/kg
Poly (ethylene 2,5-furandicarboxylate)	3238-40-2	-	221-800-8	28.4	Eye Irrit. 2, H319	-
Titanium tetrabutanolat	5593-70-4	-	227-006-8	<0.1	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Dam. 1, H318	-

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

STOT SE 3, H335

STOT SE 3, H336

Additional information:

For full text of H-statements, see SECTION 16.

SECTION 4: First aid measures**· 4.1 Description of first aid measures****General advice:**

Get medical advice/attention if you feel unwell.

After inhalation:

Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER/doctor if you feel unwell.

After skin contact:

Wash with plenty of soap and water.

If skin irritation occurs: Get medical advice/attention.

After eye contact:

Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do.

Continue rinsing.

If eye irritation occurs: Get medical advice/attention.

After swallowing:

Rinse mouth.

Call a POISON CENTRE/doctor if you feel unwell.

· 4.2 Most important symptoms and effects, both acute and delayed:

Acute and delayed effects are as indicated in sections 2 and 11.

· 4.3 Indication of any immediate medical attention and special treatment needed:

Treat according to symptom, there is not known specific medicine.

SECTION 5: Fire-fighting measures**· 5.1 Extinguishing media****· Suitable extinguishing agents:**Use CO₂, chemical powder, water spray or alcohol resistant foam to extinguish.**· Unsuitable extinguishing media:**

Water with full jet.

· 5.2 Special hazards arising from the substance or mixture:

May form toxic/ irritant vapor under fire.

· 5.3 Advice for firefighters**Protective equipment:**

Wear an approved positive pressure self-contained breathing apparatus (Comply with EN 133).

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

SECTION 6: Accidental release measures

• 6.1 Personal precautions, protective equipment and emergency procedures

• 6.1.1 For non-emergency personnel

Protective equipment:

Wear protective gloves/protective clothing/eye protection/face protection/respiration protection.

Emergency procedures:

Evacuate immediately.

Ensure adequate ventilation.

Avoid breathing vapor.

Avoid contact with eyes and skin.

• 6.1.2 For emergency responders

Personal protective equipment:

Wear protective gloves/protective clothing/eye protection/face protection/respiration protection.

• 6.2 Environmental precautions:

Prevent further leakage or spillage if safe to do so.

Prevent spillage from entering drains, sewer, basement or confined areas.

If the spillage contaminates rivers, lakes or drains inform respective authorities.

• 6.3 Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Ensure well ventilation.

Dispose contaminated material as waste according to section 13.

• 6.4 Reference to other sections:

See section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See section 13 for disposal information.

SECTION 7: Handling and storage

• 7.1 Precautions for safe handling:

Ensure adequate ventilation at workplace.

Use only in well ventilated areas.

Wear protective gloves/protective clothing/eye protection/face protection/respiration protection.

Do not breathe mist or vapor.

Avoid contact with eyes and skin.

• Information about fire and explosion protection:

Normal measures for preventive fire protection.

• 7.2 Conditions for safe storage, including any non-compatibility

• Requirements to be met by storerooms and receptacles:

Store in a cool and well-ventilated place.

• Information about storage in one common storage facility:

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

Keep away from foodstuffs and beverages.

• **Further information about storage conditions:**

Store locked up.

• **Storage class:**

10.

• **7.3 Specific end use(s):**

See section 1.2.

SECTION 8: Exposure controls/personal protection

• **8.1 Control parameters**

• **Ingredients with limit values that require monitoring at the workplace:**

Country	Limit value - Eight hours	Limit value - Short term
107-21-1 Ethylene glycol		
Austria	10ppm;26 mg/m ³	20ppm;52 mg/m ³
Denmark	10ppm;26 mg/m ³	20ppm;52 mg/m ³
European Union	20ppm;52 mg/m ³	40ppm;104 mg/m ³
France	20ppm;52 mg/m ³	40ppm;104 mg/m ³
Germany (AGS)	10ppm;26 mg/m ³ Inhalable aerosol and vapour	20ppm;52 mg/m ³ Inhalable aerosol and vapour; 15 minutes reference period
Germany (DFG)	10ppm;26 mg/m ³ Inhalable aerosol and vapour	20ppm;52 mg/m ³ Inhalable aerosol and vapour; 15 minutes reference period
Ireland	20ppm;52 mg/m ³	40ppm;104 mg/m ³ 15 minutes reference period
Italy	20ppm;52 mg/m ³	40ppm;104 mg/m ³
Poland	15 mg/m ³	50 mg/m ³
Sweden	10ppm;25 mg/m ³	20ppm;50 mg/m ³ 15 minutes average value
United Kingdom	20ppm;52 mg/m ³	40ppm;104 mg/m ³

• **DNELs:**

DNEL type		DNEL worker value	DNEL consumer value
107-21-1 Ethylene glycol			
Local effects	Long-term, inhalation exposure	35 mg/m³	7 mg/m³
Systemic effects	Long-term, dermal exposure	106 mg/kg bw/day	53 mg/kg bw/day

• **PNECs:**

PNEC type	Value
107-21-1 Ethylene glycol	
Freshwater	10 mg/L
Intermittent releases (freshwater)	10 mg/L
Marine water	1 mg/L
Intermittent releases (marine water)	10 mg/L
Sewage treatment plant (STP)	199.5 mg/L
Sediment (freshwater)	37 mg/kg sediment dw
Sediment (marine water)	3.7 mg/kg sediment dw

• **Additional information:**

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

The lists valid during the marking were used as basis.

• **8.2 Exposure controls**

• **Based on the composition shown in section 3, the following measures are suggested for occupational safety measure.**

• **Appropriate engineering controls:**

Handle in accordance with good industrial hygiene and safety practice.

Wash hands and face before breaks and at the end of work.

Take off contaminated clothing and wash it before reuse.

See section 7 for information about design of technical facilities.

• **Personal protective equipment**

• **Eye and face protection:**



Safety glasses

Protective goggles with side-shields.

• **Skin protection**

• **Hand protection:**



Protective gloves

Gloves made from butyl rubber Neoprene™ rubber, nitrile rubber (thickness > 0.11mm; breakthrough times up to 480 minutes).

• **Other skin protection:**



Face protection



Safety boots



Safety overalls

Face shield, gauntlets, boots, bodysuit are recommended.

• **Respiration protection:**



Respiratory equipment

Use positive pressure breathing mask if concentrations in air could exceed occupational exposure standard.

• **Thermal hazards:**

The gauntlets, boots, bodysuit and other personal protective equipment must be flame retardant and no heat-conducting.

• **Environmental exposure controls:**

Control measures must be made in accordance with Community environmental protection legislation.

SECTION 9: Physical and chemical properties

• **9.1 Information on basic physical and chemical properties**

• Physical state	Solid
• Color	White, pale yellow
• Odor & Odor threshold	Odorless
• Melting point/freezing point (or softening point/range)	212-222°C

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

• Boiling point or initial boiling point and boiling range	Not determined
• Flammability	Not flammable solid
• Lower and upper explosion limit	Not applicable
• Flash point	111°C (Ethylene glycol)
• Auto-ignition temperature	410°C (Ethylene glycol)
• Decomposition temperature	Not applicable
• pH	Not determined
• Kinematic viscosity (mm ² /s)	Not applicable
• Solubility	Not determined
• Partition coefficient n-octanol/water (log value)	Not applicable
• Vapor pressure	Not determined
• Density and/or relative density	1.38 g/cm ³ (20°C)
• Relative vapor density	Not determined
• Particle characteristics	Not determined
• 9.2 Other information	
• 9.2.1 Information with regard to physical hazard classes:	
• Explosives	Not applicable
• Flammable gases	Not applicable
• Aerosols	Not applicable
• Oxidising gases	Not applicable
• Gases under pressure	Not applicable
• Flammable liquids	Not applicable
• Flammable solids	Not applicable
• Self-reactive substances and mixtures	Not applicable
• Pyrophoric liquids	Not applicable
• Pyrophoric solids	Not applicable
• Self-heating substances and mixtures	Not applicable
• Substances and mixtures, which emit flammable gases in contact with water	Not applicable
• Oxidizing liquids	Not applicable
• Oxidizing solids	Not applicable
• Organic peroxides	Not applicable
• Corrosive to metals	Not applicable
• Desensitised explosives	Not applicable
• 9.2.2 Other safety characteristics	
• Mechanical sensitivity	Not applicable
• Self-accelerating polymerisation temperature	Not applicable
• Formation of explosible dust/air mixtures	Not applicable
• Acid/alkaline reserve	Not applicable
• Evaporation rate	Not applicable
• Miscibility	Not applicable
• Conductivity	Not applicable
• Corrosiveness	Not applicable

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

• Gas group	Not applicable
• Redox potential	Not applicable
• Radical formation potential	Not applicable
• Photocatalytic properties	Not applicable
• Other physical and chemical parameters	Not determined

SECTION 10: Stability and reactivity

• 10.1 Reactivity:

The product is non-reactive under normal conditions of use, storage and transport.

• 10.2 Chemical stability:

Under storage at normal ambient temperatures, the product is stable.

• 10.3 Possibility of hazardous reactions:

No known hazardous reaction.

• 10.4 Conditions to avoid:

High temperature.

• 10.5 Incompatible materials:

Strong oxidizing agent and acids.

• 10.6 Hazardous decomposition products:

Does not decompose when used for intended uses.

SECTION 11: Toxicological information

• 11.1 Information on toxicological effects

• Acute toxicity:

Harmful if swallowed.

ATE _{mix} (oral)	=	699.3 mg/kg
---------------------------	---	-------------

• LD50/LC50 values relevant for classification:

107-21-1 Ethylene glycol

Guinea pig	LD50-oral	6610mg/kg
Mouse	LD50-oral	5500mg/kg
Rabbit	LD50-skin	9530uL/kg
Rat	LD50-oral	4700mg/kg

Remark: All the above data are from literature.

• Skin corrosion/irritation:

Based on available data, the classification criteria are not met.

• Serious eyes damage/ irritation:

Causes serious eye irritation.

• Respiratory or skin sensitization:

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

Based on available data, the classification criteria are not met.

• Germ cell mutagenicity:

Based on available data, the classification criteria are not met.

• Carcinogenicity:

Based on available data, the classification criteria are not met.

• Reproductive toxicity:

Based on available data, the classification criteria are not met.

• STOT-single exposure:

Based on available data, the classification criteria are not met.

• STOT-repeated exposure:

May cause damage to organs through prolonged or repeated exposure.

• Aspiration hazard:

Based on available data, the classification criteria are not met.

• 11.2 Information on other hazards
• 11.2.1 Endocrine disrupting properties:

None of the ingredients ($\geq 0.1\%$) is considered to have endocrine-disrupting properties with respect to humans, as none of them meet the criteria set out in section A of Regulation (EU) No 2017/2100.

• 11.2.2 Other information:

No known other relevant information on adverse health effects.

SECTION 12: Ecological information

• 12.1 Toxicity:

LC50/EC50/NOEC values relevant for classification:	
107-21-1 Ethylene glycol	
Short-term toxicity to fish	LC50 (4 days) 72.86 g/L
Long-term toxicity to fish	NOEC (7 days) 15.38 - 32 g/L LC50 (28 days) 1.5 g/L
Short-term toxicity to aquatic invertebrates	EC50 (48 h) 100 mg/L
Long-term toxicity to aquatic invertebrates	NOEC (21 days) 7.5 - 15 g/L EC50 (21 days) 33.911 g/L LC50 (23 days) 1 g/L
Toxicity to aquatic algae and cyanobacteria	EC50 (4 days) 3.536 - 13 g/L NOEC (72 h) 100 mg/L

• 12.2 Persistence and degradability:

107-21-1	Ethylene glycol	Readily biodegradable water
----------	-----------------	-----------------------------

• 12.3 Bio-accumulative potential:

107-21-1	Ethylene glycol	Log Pow = -1.36
----------	-----------------	-----------------

• 12.4 Mobility in soil:

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

107-21-1	Ethylene glycol	Log K _{oc} = 0; Henrys law constant (H)= 0.013
----------	-----------------	---

• **12.5 Results of PBT and vPvB assessment:**
This mixture does not contain any substances ($\geq 0.1\%$) that are assessed to be a PBT or a vPvB.

• **12.6 Endocrine disrupting properties:**
None of the ingredients ($\geq 0.1\%$) is considered to have endocrine-disrupting properties with respect to non-target organisms, as none of them meet the criteria set out in section B of Regulation (EU) No 2017/2100.

• **12.7 Other adverse effects:**
No known other adverse effects.

• **12.8 Additional ecological information**

• **General notes:**
WGK1 (German Regulation) (self-assessment): Low hazard to waters.
Do not allow large quantities of the product to reach ground water, water course or sewage system.

SECTION 13: Disposal consideration

- **13.1 Waste treatment methods**
- **Recommendation:**
Must not be disposed together with household garbage.
- **13.2 Un-cleaned packaging**
- **Recommendation:**
Dispose of contents/container in according to the local/regional/national/ international regulation.

SECTION 14: Transport information

• ADR/ADN/RID (2023 Edition)	This product is not subject to ADR/ADN/RID.
• IATA-DGR (64th)	This product is not subject to IATA-DGR.
• IMO/IMDG (40-20)	This product is not subject to IMO/IMDG code.

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **MAK (German Maximum Workplace Concentration):**
None of the ingredients is listed.
- **Directive 2012/18/EU**
- **Named dangerous substances-ANNEX I:**
None of the ingredients is listed.
- **Seveso category:**
Not applicable
- **Qualifying quantity (tonnes) for the application of lower-tier requirements:**
Not applicable
- **Qualifying quantity (tonnes) for the application of upper-tier requirements:**
Not applicable

Safety Data Sheet

Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)**• National regulations.****• Water hazard class:**

WGK1 (German Regulation) (self-assessment): Low hazard to waters.

• Other regulations, limitations and prohibitive regulations**• SVHC Candidate list of REACH Regulation Annex XIV Authorization:**

None of the ingredients is listed.

• REACH Regulation Annex XVII Restriction:

None of the ingredients is listed.

• REACH Regulation Annex XIV Authorization List:

None of the ingredients is listed.

• 15.2 Chemical safety assessment:

A Chemical Safe Assessment has not been carried out.

SECTION 16: Other information

• 16.1 Indication of changes:

None.

16.2 Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).

IMDG: International Maritime Code for Dangerous Goods.

IATA: International Air Transport Association.

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

PBT: Persistent, Bio accumulative and Toxic

vPvB: very persistent and very bio accumulative

SVHC: Substance of Very High Concern

LD50: Lethal dose, 50 percent

LC50: Lethal concentration, 50 percent

EC50: Concentration of maximal effect, 50 percent

NOEC: No observed effect concentration

Flam. Liq. 3: Flammable liquids, hazard category 3

Acute Tox. 4: Acute toxicity, hazard category 4

Skin Irrit.2: Skin corrosion/irritation, hazard category 2

Eye Dam. 1: Eye damage/irritation, hazard category 1

Eye Irrit. 2: Eye damage/irritation, hazard category 2

STOT SE 3: Specific target organ toxicity after single exposure, hazard category 3

STOT RE 2: Specific target organ toxicity after repeated exposure, hazard category 2

• 16.3 Key literature references and sources for data:<https://echa.europa.eu/><https://chem.nlm.nih.gov/><https://www.osha.gov/>

Safety Data Sheet
Regulation (EC) No. 1907/2006 and 1272/2008

Printing Date: February 20, 2023

Version No.: 1.0

Revision: February 20, 2023

Trade Name: Poly (ethylene 2,5-furandicarboxylate)

<http://www.unece.org/>
<http://www.imo.org/>
<https://www.dguv.de/>
<https://epa.govt.nz/>
<http://www.ilo.org/>
<https://www.phmsa.dot.gov/>

• **16.4 Classification for mixtures and used evaluation method according to regulation (EC) 1207/2008 [CLP]:**

See section 2.1 (classification).

• **16.5 Relevant H- and EUH-phrases (number and full text):**

H226 Flammable liquid and vapour
H302 Harmful if swallowed
H315 Causes skin irritation
H318 Causes serious eye damage
H319 Causes serious eye irritation
H335 May cause respiratory irritation
H373 May cause damage to organs through prolonged or repeated exposure

• **16.6 Training advice:**

Workers must be trained in general and specific aspects of safe work procedures for this chemical. Workers need easy to understand guidelines and instructions for safe working with this chemical. Instructions, guidelines and legally required documents need to be available for workers in easy to understand language.

• **16.7 Further information:**

The contents and format of this SDS are in accordance with Regulation (EC) No 1907/2006, its amendment Regulation (EU) No 2020/878 and (EC) No 1272/2008.

DISCLAIMER OF LIABILITY:

The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

End of safety data sheet