SAFETY DATA SHEET

1. PRODUCT

1.1 Product identifiers

Name: Glycidol

CAS-No.: 556-52-5

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

Identified uses : Laboratory chemicals, Synthesis of substances

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 4), H227

Self-reactive substances and mixtures (Type C), H242

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 3), H331

Acute toxicity, Dermal (Category 4), H312

Skin irritation (Category 2), H315

Serious eye damage (Category 1), H318

Germ cell mutagenicity (Category 2), H341

Carcinogenicity (Category 1B), H350

Reproductive toxicity (Category 1B), H360

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram	
Signal word	Danger
Hazard statement(s)	H227 Combustible liquid. H242 Heating may cause a fire. H302 + H312 Harmful if swallowed or in contact with skin H315 Causes skin irritation. H318 Causes serious eye damage. H331 Toxic if inhaled. H335 May cause respiratory irritation. H341 Suspected of causing genetic defects. H350 May cause cancer. H360 May damage fertility or the unborn child.

Precautionary statement(s)	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. P220 Keep/Store away from clothing/ combustible materials. P234 Keep only in original container. P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. P302 + P352 + P312 IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell. P304 + P340 + P311 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor. P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. P308 + P313 IF exposed or concerned: Get medical advice/ attention. P332 + P313 If skin irritation occurs: Get medical advice/ attention. P362 Take off contaminated clothing and wash before reuse. P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish. P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P403 + P235 Store in a well-ventilated place. Keep cool. P405 Store locked up. P411 Store at temperatures not exceeding .? °C/ .? °F. P420 Store away from other materials. P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Rapidly absorbed through skin.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms:	2,3-Epoxy-1-propanol (±)-Glycidol (±)-Oxirane-2-methanol Glycerolglycide
Formula:	$C_3H_6O_2$
Molecular weight:	74.08 g/mol
CAS-No.:	556-52-5

Hazardous components

Component	Classification	Concentration
Glycidol		
	Flam. Liq. 4; Self-react. C; Acute Tox. 4; Acute Tox. 3; Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; Muta. 2; Carc. 1B; Repr. 1B; STOT SE 3; H227, H242, H302 + H312, H315, H318, H331, H335, H341, H350, H360	<= 100 %
2,2'-[Oxybis(methylene)]bisoxirane		
	Acute Tox. 4; Acute Tox. 2; Acute Tox. 3; Skin Corr. 1B; Eye Dam. 1; H302, H311, H314, H330	>= 1 -< 5 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

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4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.
If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.Continue rinsing eyes during transport to hospital.
If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.2 Indication of any immediate medical attention and special treatment needed

No data available

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5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

No data available

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

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6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

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7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.Keep away from heat and sources of ignition.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Store in original container. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature 2 - 8 °C

Moisture sensitive. Handle and store under inert gas.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Glycidol	556-52-5	TWA	2 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Upper Respiratory Tract irritation Eye irritation Skin irritation Confirmed animal carcinogen with unknown relevance to humans		
		TWA	2.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation Skin irritation Confirmed animal carcinogen with unknown relevance to humans		
		TWA	50 ppm 150 mg/m3	USA. Occupational Exposure Limits (OSHA) -Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	50.000000 ppm 150.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) -Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	25.000000 ppm 75.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		PEL	2 ppm 6.1 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
2,2'[Oxybis(methylene)] bisoxirane	2238-07-5	TWA	0.100000 ppm 0.500000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen See Appendix A		
		TWA 0.1 ppm 0.5 mg/m3 USA. OSHA -TABLE Z-1 Limits for Air Contaminants - 1910.1000		
		C 0.500000 ppm 2.800000 mg/m3 USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants		
		The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples.		
		C	0.5 ppm 2.8 mg/m3	USA. Occupational Exposure Limits (OSHA) -Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples.		
		TWA	0.010000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Eye irritation Skin irritation Male reproductive damage Not classifiable as a human carcinogen		
		TWA	0.01 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Eye irritation Skin irritation Male reproductive damage Not classifiable as a human carcinogen		

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection	Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin protection	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact Material: Chloroprene Minimum layer thickness: 0.6 mm Break through time: 480 min Material tested:Camapren® (KCL 722 / Aldrich Z677493, Size M) Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 30 min Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.
Body Protection	Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Control of environmental exposure	Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: liquid
Odour	No data available
Odour Threshold	No data available
pH	No data available
Melting point/freezing point	No data available
Initial boiling point and boiling range	61 - 62 °C (142 - 144 °F) at 20 hPa (15 mmHg) - lit.
Flash point	81 °C (178 °F) - closed cup
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
Vapour density	2.97
Relative density	1.117 g/mL at 25 °C (77 °F)
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	Type C
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

9.2 Other safety information

Relative vapour density: 2.97

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong acids, Strong bases, Heavy metals

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - No data available

In the event of fire: see section 5

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11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 420 mg/kg LC50 Inhalation - Rat - 8 h - Remarks: Lungs, Thorax, or Respiration:Emphysema. Lungs, Thorax, or Respiration:Other changes. LC50 Inhalation - Mouse - 4 h - Remarks: Lungs, Thorax, or Respiration:Emphysema. Lungs, Thorax, or Respiration:Other changes. LD50 Dermal - Rabbit - 1,980 mg/kg No data available
Skin corrosion/irritation
Skin - Rabbit Result: Skin irritation
Serious eye damage/eye irritation
Eyes - Rabbit Result: Severe eye irritation
Respiratory or skin sensitisation
No data available
Germ cell mutagenicity

In vitro tests showed mutagenic effects Mouse lymphocyte Mutation in mammalian somatic cells. Hamster ovary Cytogenetic analysis Hamster Lungs Mutation in mammalian somatic cells. Hamster Embryo Morphological transformation. Hamster Lungs Sister chromatid exchange Hamster ovary Sister chromatid exchange Human lymphocyte Sister chromatid exchange Human lymphocyte Cytogenetic analysis Rat Cytogenetic analysis Rat Cytogenetic analysis
Carcinogenicity
Carcinogenicity - Mouse - Oral Tumorigenic:Carcinogenic by RTECS criteria. Gastrointestinal:Tumors. Skin and Appendages: Other: Tumors. Carcinogenicity - Rat - Oral Tumorigenic:Carcinogenic by RTECS criteria. Gastrointestinal:Tumors. Skin and Appendages: Other: Tumors. Possible human carcinogen IARC: 2A - Group 2A: Probably carcinogenic to humans (Glycidol) NTP: Reasonably anticipated to be a human carcinogen (Glycidol) OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity
Presumed human reproductive toxicant No data available Reproductive toxicity - Rat - Oral Paternal Effects: Spermatogenesis (including genetic material, sperm morphology,motility, and count). Paternal Effects: Testes, epididymis, sperm duct. Reproductive toxicity - Rat - Oral Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females). Reproductive toxicity - Mouse - Oral Paternal Effects: Spermatogenesis (including genetic material, sperm morphology,motility, and count). No data available Developmental Toxicity - Mouse - Oral Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).
Specific target organ toxicity -single exposure
May cause respiratory irritation.
Specific target organ toxicity -repeated exposure
No data available
Aspiration hazard
No data available
Additional Information
RTECS: Not available Central nervous system depression, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Stomach - Irregularities - Based on Human Evidence Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

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13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Contaminated packaging
Dispose of as unused product.

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14. TRANSPORT INFORMATION

DOT (US)

UN number: 2810 Class: 6.1 Packing group: III

Proper shipping name: Toxic, liquids, organic, n.o.s. (Glycidol)

Reportable Quantity (RQ):

Poison Inhalation Hazard: No

IMDG

UN number: 2810 Class: 6.1 Packing group: III EMS-No: F-A, S-A

Proper shipping name: TOXIC LIQUID, ORGANIC, N.O.S. (Glycidol)

IATA

UN number: 2810 Class: 6.1 Packing group: III

Proper shipping name: Toxic liquid, organic, n.o.s. (Glycidol)

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15. REGULATORY INFORMATION

SARA 302 Components

The following components are subject to reporting levels established by SARA Title III, Section 302:

Component	CAS-No.	Revision Date
2,2'-[Oxybis(methylene)]bisoxirane	2238-07-5	1993-04-24

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

Component	CAS-No.	Revision Date
Glycidol	556-52-5	1993-04-24

SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Component	CAS-No.	Revision Date
Glycidol	556-52-5	1993-04-24
2,2'-[Oxybis(methylene)]bisoxirane	2238-07-5	1993-04-24

Pennsylvania Right To Know Components

Component	CAS-No.	Revision Date
Glycidol	556-52-5	1993-04-24
2,2'-[Oxybis(methylene)]bisoxirane	2238-07-5	1993-04-24

New Jersey Right To Know Components

Component	CAS-No.	Revision Date
Glycidol	556-52-5	1993-04-24
2,2'-[Oxybis(methylene)]bisoxirane	2238-07-5	1993-04-24

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.

Component	CAS-No.	Revision Date
Glycidol	556-52-5	2007-09-28

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox. Acute toxicity

Carc. Carcinogenicity

Eye Dam. Serious eye damage

Flam. Liq. Flammable liquids

H227 Combustible liquid.

H242 Heating may cause a fire.

H302 Harmful if swallowed.

H302 + H312 Harmful if swallowed or in contact with skin

H311 Toxic in contact with skin.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H330 Fatal if inhaled.

H331 Toxic if inhaled.

H335 May cause respiratory irritation.

H341 Suspected of causing genetic defects.

H350 May cause cancer.

H360 May damage fertility or the unborn child.

Muta. Germ cell mutagenicity

Repr. Reproductive toxicity

Self-react. Self-reactive substances and mixtures

Skin Corr. Skin corrosion

Skin Irrit. Skin irritation

STOT SE Specific target organ toxicity - single exposure

HMIS Rating

Health hazard: 3

Chronic Health Hazard: *

Flammability: 2

Physical Hazard 0

NFPA Rating

Health hazard: 4

Fire Hazard: 2

Reactivity Hazard: 0
