Safety Data Sheet

acc. to 29 CFR 1910.1200 App D

RE:CHEMISTRY SOLVE100

Version number: 3.0 Date of revision: 2024-07-01

SECTION 1: Identification

1.1 Product identifier

Trade name	**RE:CHEMISTRY SOLVE100**
Identification of the substance	**Ethyl 4-oxopentanoate**
CAS number	539-88-8

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

Relevant identified uses

Solvent
Coating and paint
Paint thinner
Paint remover
Washing and cleaning product
Cosmetics
Personal care product
Perfume
Fragrance
Industrial use
Professional use
Consumer use

1.3 Details of the supplier of the safety data sheet

GFBiochemicals SAS
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Avenue Louis Philibert
13100 Aix-en-Provence
France

Telephone: +33 413 418 845
e-mail: info@gfbiochemicals.com

e-mail (competent person) info@gfbiochemicals.com

1.4 Emergency telephone number

Poison center		
Country	**Name**	**Telephone**
United States	Poison Control National Capital Poison Center	1-800-222-1222

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Section	Hazard class	Category	Hazard class and category	Hazard state-ment
A.2	skin corrosion/irritation	2	Skin Irrit. 2	H315
A.3	serious eye damage/eye irritation	2	Eye Irrit. 2	H319

For full text of H-phrases: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

The product is combustible and can be ignited by potential ignition sources.

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

- signal word: Warning

- pictograms

GHS07

- hazard statements

H315	Causes skin irritation.
H319	Causes serious eye irritation.

- precautionary statements

P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321	Specific treatment (see on this label).
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.

2.3 Other hazards

Hazards not otherwise classified

May be harmful if swallowed (GHS category 5: acutely toxic - oral).

Toxic to aquatic life (GHS category 2: aquatic toxicity - acute).

Results of PBT and vPvB assessment

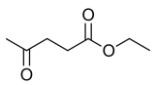
According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) in a concentration of ≥ 0.1%.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Ethyl 4-oxopentanoate
Identifiers	
CAS No	539-88-8
Purity	100%
Molecular formula	C7H12O3
Molar mass	144.17 $^{g}/_{mol}$
Structural formula	

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. In case of unconsciousness place person in the recovery position. Never give anything by mouth. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice.

Following inhalation

Provide fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician.

Following skin contact

Wash with plenty of soap and water. Call a POISON CENTER/doctor.

Following eye contact

Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER/doctor.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting. Call a POISON CENTER or doctor/ physician if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

For specialist advice physicians should contact the poison centre.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray; Alcohol resistant foam; Dry extinguishing powder; Carbon dioxide (CO2); Coordinate firefighting measures to the fire surroundings.

Unsuitable extinguishing media

Water jet.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

During fire hazardous fumes/smoke could be produced. Carbon monoxide (CO). Carbon dioxide (CO2).

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety. Ventilate affected area.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases. Wear personal protective equipment/face protection.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains.

Advice on how to clean up a spill

Absorb with liquid-binding material (sand, diatomite, diatomaceous earth, acid binder, universal binder, sawdust).

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- flammability hazards

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight.

- incompatible substances or mixtures

Keep away from alkalis, oxidising substances, acids.

Control of the effects

Protect against external exposure, such as

High temperatures. UV-radiation/sunlight.

Consideration of other advice

Store in a well-ventilated place. Keep container tightly closed.

- ventilation requirements

Use local and general ventilation. Ground/bond container and receiving equipment.

- packaging compatibilities

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.

7.3 Specific end use(s)

Solvent. Coating and paint. Paint thinner. Paint remover. Washing and cleaning product. Cosmetics. Personal care product. Perfume. Fragrance.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

No information available.

Relevant DNELs/DMELs/PNECs and other threshold levels

Relevant PNECs and other threshold levels

Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0.002 $^{mg}/_{l}$	aquatic organisms	freshwater	short-term (single instance)
PNEC	0 $^{mg}/_{l}$	aquatic organisms	marine water	short-term (single instance)
PNEC	100 $^{mg}/_{l}$	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	0.008 $^{mg}/_{kg}$	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	0.001 $^{mg}/_{kg}$	aquatic organisms	marine sediment	short-term (single instance)
PNEC	0.848 $^{mg}/_{kg}$	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Appropriate engineering controls

General ventilation. Provide eyewash stations and safety showers at the workplace.

Individual protection measures (personal protective equipment)

Eye/face protection

Use safety goggle with side protection

Skin protection

Chemical protective clothing.

Hand protection

Wear suitable gloves. Check leak-tightness/impermeability prior to use. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The selection of the suitable gloves does not only depend on the material, but also on other quality characteristics and varies from manufacturer to manufacturer.

- type of material

IIR: isobutene-isoprene (butyl) rubber

- material thickness

Use gloves with a minimum material thickness: ≥ 0.38 mm.

- breakthrough time of the glove material

Use gloves with a minimum breakthrough time of the glove material: >480 minutes (permeation: level 6).

- other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Type : A (against organic gases and vapors with a boiling point of > 65 °C , color code: Brown). Type: ABEK-P2 (combined filters against gases, vapors and particles, color code: Brown/Grey/Yellow/Green/White). Observe the OSHA respirator regulations cited in 29 CFR 1910.134 and use NIOSH/MSHA approved respirators.

Environmental exposure controls

Take appropriate precautions to avoid uncontrolled release into the environment. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	liquid
Color	colorless to pale yellow
Particle	not relevant (liquid)
Odor	characteristic

Other safety parameters

pH (value)	not determined
Melting point/freezing point	< −60 °C
Initial boiling point and boiling range	205.8 °C
Flash point	94 °C
Evaporation rate	not determined
Flammability (solid, gas)	not relevant, (fluid)
Explosive limits	LEL: UEL: not determined
Vapor pressure	0.0117 kPa at 20 °C
Density	1.012 $^{g}/_{ml}$ at 20 °C
Vapor density	this information is not available
Relative density	information on this property is not available

Solubility

- water solubility	170.7 $^{g}/_{l}$ at 20 °C

- n-octanol/water (log KOW)	0.324 at 20 °C
Auto-ignition temperature	460 °C at 1002.4 mbar
Decomposition temperature	no data available

Viscosity

- kinematic viscosity	2.119 $^{mm^2}/_{s}$ at 20 °C
- dynamic viscosity	2.146 mPa s at 20 °C
Explosive properties	none
Oxidizing properties	none

9.2 Other information

Surface tension	33.25 $^{dyn}/_{cm}$ at 20 °C
Temperature class (USA, acc. to NEC 500)	T1 (maximum permissible surface temperature on the equipment: 450°C)

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

10.5 Incompatible materials

Acids. Bases. Oxidizers.

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Shall not be classified as acutely toxic.

Acute toxicity			
Exposure route	**Endpoint**	**Value**	**Species**
oral	LD50	> 2,000 $^{mg}/_{kg}$	rat

Skin corrosion/irritation

Causes skin irritation. (OECD Guideline 439)

Serious eye damage/eye irritation

Causes serious eye irritation. (OECD Guidelines 437 & 492)

Respiratory or skin sensitization

Shall not be classified as a respiratory or skin sensitizer.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

SECTION 12: Ecological information

12.1 Toxicity

Toxic to aquatic life.

Aquatic toxicity (acute)

Endpoint	Value	Species	Exposure time
LC50	1.614 $^{mg}/_{l}$	fish	96 h
EC50	982 $^{mg}/_{l}$	aquatic invertebrates	24 h
ErC50	932.1 $^{mg}/_{l}$	algae	72 h

Aquatic toxicity (chronic)

Endpoint	Value	Species	Exposure time
EC50	1,000 $^{mg}/_{l}$	microorganisms	3 h

12.2 Persistence and degradability

Biodegradation

The substance is readily biodegradable.

Process of degradability

Process	Degradation rate	Time
oxygen depletion	72%	28 d

12.3 Bioaccumulative potential

n-octanol/water (log KOW)	0.324 at 20 °C

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Endocrine disrupting properties

Information on this property is not available.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste treatment-relevant information

Solvent reclamation/regeneration.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment.

Waste treatment of containers/packages

Only packagings which are approved (e.g. acc. to DOT) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

14.1	**UN number**	not assigned
14.2	**UN proper shipping name**	not relevant
14.3	**Transport hazard class(es)**	none
14.4	**Packing group**	not assigned
14.5	**Environmental hazards**	non-environmentally hazardous acc. to the dangerous goods regulations

14.6 Special precautions for user

There is no additional information.

14.7 Transport in bulk according to IMO instruments

No data available.

Additional information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) - additional information

Not subject to transport regulations.

International Maritime Dangerous Goods Code (IMDG) - additional information

Not subject to IMDG.

International Civil Aviation Organization (ICAO-IATA/DGR) - additional information

Not subject to ICAO-IATA.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Toxic Substance Control Act (TSCA) substance is listed (ACTIVE)

Superfund Amendment and Reauthorization Act (SARA TITLE III)

- The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

Not listed.

- Specific Toxic Chemical Listings (EPCRA Section 313)

Not listed.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

- List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

Not listed.

Clean Air Act

Not listed.

Right to Know Hazardous Substance List

- Cleaning Product Right to Know Act Substance List (CA-RTK)

Not listed.

- Toxic or Hazardous Substance List (MA-TURA)

Not listed.

- Hazardous Substances List (MN-ERTK)

Not listed.

- Hazardous Substance List (NJ-RTK)

Not listed.

- Hazardous Substance List (Chapter 323) (PA-RTK)

Not listed.

- Hazardous Substance List (RI-RTK)

Not listed.

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

Not listed.

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System. American Coatings Association.

Category	Rating	Description
Chronic	/	none
Health	2	temporary or minor injury may occur
Flammability	1	material that must be preheated before ignition can occur
Physical hazard	0	material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive
Personal protection	-	

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

Category	Degree of hazard	Description
Flammability	1	material that must be preheated before ignition can occur
Health	2	material that, under emergency conditions, can cause temporary incapacitation or residual injury
Instability	0	material that is normally stable, even under fire conditions
Special hazard		

15.2 Chemical Safety Assessment

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

SECTION 16: Other information, including date of preparation or last revision

Indication of changes (revised safety data sheet)

Version number 1.0: February 28, 2024.

Version number 1.1: March 7, 2024.

Version number 2.0: May 16, 2024.

Version number 3.0: July 1, 2024.

Section	Former entry (text/value)	Actual entry (text/value)
2.1	(v2.0) Classification according to 29 CFR 1910.1200: Skin Irrit. 2, Eye Irrit. 2, Flam. Liq. 4	(v3.0) Classification according to 29 CFR 1910.1200: Skin Irrit. 2, Eye Irrit. 2
2.2	(v2.0) hazard statements: H227, H315, H319	(v3.0) hazard statements: H315, H319
2.2	(v1.1) precautionary statements: P101 / 102 / 103 / 210 / 280 / 302+352 / 305+351+338 / 321 / 332+313 / 337+313 / 362 / 370+378 / 403+235 / 501	(v2.0) precautionary statements: P210 / 264 / 280 / 302+352 / 305+351+338 / 321 / 332+313 / 337+313 / 362+364 / 370+378 / 403+235 / 501
2.2	(v2.0) precautionary statements: P210 / 264 / 280 / 302+352 / 305+351+338 / 321 / 332+313 / 337+313 / 362+364 / 370+378 / 403+235 / 501	(v3.0) precautionary statements: P264 / 280 / 302+352 / 305+351+338 / 321 / 332+313 / 337+313 / 362+364
2.3	(v2.0) Other hazards: This material is combustible, but will not ignite readily.	(v3.0) Other hazards: -
3.1	(v1.0) Purity: >= 98.00%	(v1.1) Purity: 100%
5.2	(v2.0) Special hazards arising from the substance or mixture: In case of insufficient ventilation and/or in use, may form flammable / explosive vapor-air mixture. Solvent vapors are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures.	(v3.0) Special hazards arising from the substance or mixture: -
7.1	(v2.0) measures to prevent fire as well as aerosol and dust generation: Use local and general ventilation. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Ground / bond container and receiving equipment. Use explosion-proof electrical / ventilating / lighting / equipment. Use only non-sparking tools.	(v3.0) measures to prevent fire as well as aerosol and dust generation: Use local and general ventilation. Use only in well-ventilated areas.
7.1	(v2.0) specific notes/details	(v3.0) -
7.2	(v2.0) explosive atmospheres	(v3.0) -

Section	Former entry (text/value)	Actual entry (text/value)
7.2	(v2.0) flammability hazards: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight.	(v3.0) flammability hazards: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
9.1	(v2.0) Flash point: 90 °C	(v3.0) Flash point: 94 °C
10.1	(v2.0) Reactivity: It's a reactive substance. Risk of ignition. If heated: Risk of ignition.	(v3.0) Reactivity: This material is not reactive under normal ambient conditions.
10.4	(v2.0) Conditions to avoid: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Hints to prevent fire or explosion.	(v3.0) Conditions to avoid: There are no specific conditions known which have to be avoided.
15.1	(v2.0) NPCA-HMIS® III: Flammability 2 (material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur)	(v3.0) NPCA-HMIS® III: Flammability 1 (material that must be preheated before ignition can occur)
15.1	(v2.0) NFPA® 704: Flammability 2 (material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur)	(v3.0) NFPA® 704: Flammability 1 (material that must be preheated before ignition can occur)

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
49 CFR US DOT	49 CFR U.S. Department of Transportation
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
DOT	Department of Transportation (USA)
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
ED	Endocrine disruptor
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LEL	Lower explosion limit (LEL)
NPCA-HMIS® III	National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic

Abbr.	Descriptions of used abbreviations
PNEC	Predicted No-Effect Concentration
UEL	Upper explosion limit (UEL)
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H315	Causes skin irritation.
H319	Causes serious eye irritation.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.