Printing date 07/16/2021

Reviewed on 07/16/2021

1 Identification

- · Product name
- Trade name: (S)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Tol-GarphosTM
- Item number: 15-1658
- Details of the supplier of the safety data sheet
 Manufacturer/Supplier: Strem Chemicals, Inc.
 7 Mulliken Way
- NEWBURYPORT, MA 01950 USA info@strem.com
- Information department: Technical Department • Emergency telephone number:
- *EMERGENCY: CHEMTREC:* + 1 (800) 424-9300 During normal opening times: +1 (978) 499-1600

2 Hazard(s) identification

· Classification of the substance or mixture

GHS07

Skin Irrit. 2H315Causes skin irritation.Eye Irrit. 2AH319Causes serious eye irritation.STOT SE 3H335May cause respiratory irritation.

· Label elements

· GHS label elements

The substance is classified and labeled according to the Globally Harmonized System (GHS). • *Hazard pictograms*



· Signal word Warning

· Hazard-determining components of labeling: (S)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxybiphenyl, min. 97% (S)-Tol-GarphosTM · Hazard statements H315 Causes skin irritation. H319 Causes serious eye irritation. H335 May cause respiratory irritation. · Precautionary statements P222 Do not allow contact with air. P262 Do not get in eyes, on skin, or on clothing. P305+P351+P338 If in eves: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P403+P233 Store in a well-ventilated place. Keep container tightly closed. P422 Store contents under inert gas. (Contd. on page 2)

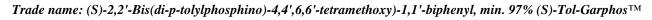
us

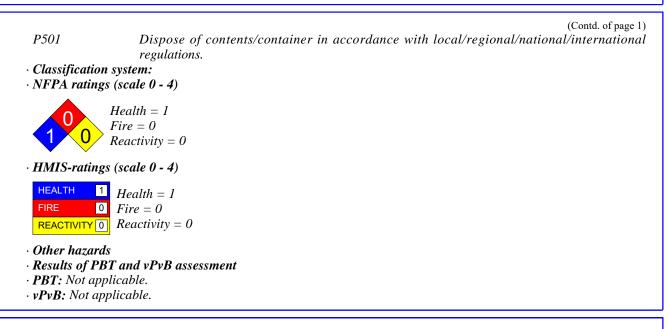
HEMICALS, INC

Safety Data Sheet according to OSHA HCS

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3 Composition/information on ingredients

- · Chemical characterization: Substances
- · CAS No. Description

(S)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'tetramethoxybiphenyl, min. 97% (S)-Tol-Garphos™

4 First-aid measures

- · Description of first aid measures
- · After inhalation: In case of unconsciousness place patient stably in side position for transportation.
- · After skin contact: Immediately wash with water and soap and rinse thoroughly.
- · After eye contact:
- Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- · After swallowing: If symptoms persist consult doctor.
- Information for doctor:
- Most important symptoms and effects, both acute and delayed No further relevant information available.
- · Indication of any immediate medical attention and special treatment needed
- No further relevant information available.

5 Fire-fighting measures

- · Extinguishing media
- Suitable extinguishing agents: Use fire fighting measures that suit the environment.
- Special hazards arising from the substance or mixture No further relevant information available.
- · Advice for firefighters
- · Protective equipment: No special measures required.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures Not required.

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(Contd. of page 2)

Trade name: (S)-2,2'-Bis(di-p-tolylphosphino)-4,4',6,6'-tetramethoxy)-1,1'-biphenyl, min. 97% (S)-Tol-GarphosTM

- Environmental precautions: Do not allow to enter sewers/ surface or ground water.
- *Methods and material for containment and cleaning up:* Dispose contaminated material as waste according to item 13.
- *Ensure adequate ventilation. 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.
- · Protective Action Criteria for Chemicals
- **PAC-1**:

Substance is not listed.

· PAC-2:

Substance is not listed.

· PAC-3:

Substance is not listed.

7 Handling and storage

- · Handling: Handle under inert gas.
- · Precautions for safe handling Open and handle receptacle with care.
- · Information about protection against explosions and fires: No special measures required.
- · Conditions for safe storage, including any incompatibilities
- Storage: Store contents under inert gas.
- · Requirements to be met by storerooms and receptacles: No special requirements.
- · Information about storage in one common storage facility: Not required.
- Further information about storage conditions: Keep receptacle tightly sealed.
- Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

- · Additional information about design of technical systems: No further data; see item 7.
- · Control parameters
- · Components with limit values that require monitoring at the workplace: Not required.
- · Additional information: The lists that were valid during the creation were used as basis.
- · Exposure controls
- · Personal protective equipment:
- · General protective and hygienic measures:
- Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eves and skin.
- Breathing equipment: A NIOSH approved respirator in accordance with 29 CFR 1910.134.
- · Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

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(Contd. of page 3)

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation \cdot **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· Eye protection:



Tightly sealed goggles

9 Physical and chemical properties

Appearance: Form:	Crystalline	
Color:	White	
Odor:	<i>Odorless</i>	
Odor threshold:	Not determined.	
pH-value:	Not applicable.	
Change in condition		
Melting point/Melting range:	Undetermined.	
Boiling point/Boiling range:	Undetermined.	
Flash point:	Not applicable.	
Flammability (solid, gaseous):	Not determined.	
Ignition temperature:		
Decomposition temperature:	Not determined.	
Auto igniting:	Not determined.	
Danger of explosion:	Product does not present an explosion hazard.	
Explosion limits:		
Lower:	Not determined.	
Upper:	Not determined.	
Vapor pressure:	Not applicable.	
Density:	Not determined.	
Relative density	Not determined.	
Vapor density	Not applicable.	
Evaporation rate	Not applicable.	
Solubility in / Miscibility with		
Water:	Insoluble.	

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		(Contd. of page
· Viscosity:		
Dynamic:	Not applicable.	
Kinematic:	Not applicable.	
· Solvent content:		
Organic solvents:	0.0~%	
VOC content:	0.0 g/l / 0.00 lb/gl	
Solids content:	100.0 %	
• Other information	No further relevant information available.	

10 Stability and reactivity

· Reactivity No further relevant information available.

· Chemical stability

- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- · Possibility of hazardous reactions No dangerous reactions known.

· Conditions to avoid No further relevant information available.

- Incompatible materials: No further relevant information available.
- · Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- · Information on toxicological effects
- · Acute toxicity:
- · Primary irritant effect:
- on the skin: Irritant to skin and mucous membranes.
- on the eye: Irritating effect.
- · Sensitization: No sensitizing effects known.
- \cdot Additional toxicological information:
- · Carcinogenic categories

· IARC (International Agency for Research on Cancer)

Substance is not listed.

· NTP (National Toxicology Program)

Substance is not listed.

· OSHA-Ca (Occupational Safety & Health Administration)

Substance is not listed.

12 Ecological information

- · Toxicity
- · Aquatic toxicity: No further relevant information available.
- · Persistence and degradability No further relevant information available.
- · Behavior in environmental systems:
- · Bioaccumulative potential No further relevant information available.
- · Mobility in soil No further relevant information available.
- · Additional ecological information:

· General notes:

Water hazard class 1 (Self-assessment): slightly hazardous for water

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(Contd. of page 5)

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. • **Results of PBT and vPvB assessment**

• **PBT:** Not applicable.

· vPvB: Not applicable.

· Other adverse effects No further relevant information available.

13 Disposal considerations

· Waste treatment methods

· Recommendation:

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· Uncleaned packagings:

· Recommendation: Disposal must be made according to official regulations.

UN-Number	
DOT, ADN, IMDG, IATA	not regulated
UN proper shipping name DOT, ADN, IMDG, IATA	not regulated
Transport hazard class(es)	
DOT, ADN, IMDG, IATA	
Class	not regulated
Packing group	
DOT, IMDG, IATA	not regulated
Environmental hazards:	
Marine pollutant:	No
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of	
MARPOL73/78 and the IBC Code	Not applicable.
UN ''Model Regulation'':	not regulated

15 Regulatory information

 \cdot Safety, health and environmental regulations/legislation specific for the substance or mixture \cdot Sara

• Section 355 (extremely hazardous substances):

Substance is not listed.

· Section 313 (Specific toxic chemical listings):

Substance is not listed.

· TSCA (Toxic Substances Control Act):

Substance is not listed.

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Duran a siti and ((Contd. of page
Proposition 6:	
	own to cause cancer:
Substance is n	of listed.
	own to cause reproductive toxicity for females:
Substance is n	ot listed.
Chemicals kn	own to cause reproductive toxicity for males:
Substance is n	ot listed.
Chemicals kn	own to cause developmental toxicity:
Substance is n	
Carcinogenic	categories
-	mental Protection Agency)
Substance is n	ot listed.
	ld Limit Value established by ACGIH)
Substance is n	
NIOSH-Ca (N	ational Institute for Occupational Safety and Health)
Substance is n GHS label ele	ot listed. nents is classified and labeled according to the Globally Harmonized System (GHS).
Substance is n GHS label ele The substance	ot listed. nents is classified and labeled according to the Globally Harmonized System (GHS).
Substance is n GHS label ele The substance Hazard pictog	ot listed. nents is classified and labeled according to the Globally Harmonized System (GHS). rams
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• Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.

• Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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(Contd. of page 7)

Other information	n
	based on our present knowledge. However, this shall not constitute a guarantee for a ures and shall not establish a legally valid contractual relationship.
Department issuing	SDS: Technical Department.
Contact: Technical	Director
Date of preparation	/ last revision 07/16/2021 / -
Abbreviations and a	
Carriage of Dangerous G	sur le transport des marchandises dangereuses par Route (European Agreement concerning the Internatio
0 0 0	itime Code for Dangerous Goods
DOT: US Department of	
IATA: International Air T	
	ence of Governmental Industrial Hygienists
	Service (division of the American Chemical Society)
NFPA: National Fire Pro	tection Association (USA)
HMIS: Hazardous Materi	als Identification System (USA)
VOC: Volatile Organic C	
PBT: Persistent, Bioaccus	
vPvB: very Persistent and	
NIOSH: National Institute	
OSHA: Occupational Safe	
TLV: Threshold Limit Val	
PEL: Permissible Exposu	
REL: Recommended Expe	
Skin Irrit. 2: Skin corrosie	0 2
	damage/eye irritation – Category 2A et organ toxicity (single exposure) – Category 3

