



# XCELTHERM® SST

## Safety Data Sheet

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Version: 8.1

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### SECTION 1: Identification

#### 1.1. Identification

Trade name XCELTHERM® SST

#### 1.2. Recommended use and restrictions on use

Use of the substance/mixture: High operating temperature of 675°F (357°C) at low pressure; liquid phase heat transfer fluid for demanding applications. Recommended for chemical refining, oil and glycol recovery units, chemical processing, gas processing, petrochemical plants and many other applications.

Use of the substance/mixture: Heat Transfer Fluids

Recommended use: Heat transfer fluids

#### 1.3. Supplier

##### Manufacturer

Radco Industries Inc.  
CAGE Code 6ZS16  
700 Kingsland Drive  
Batavia, Illinois 60510  
United States  
T (630) 232-7966  
[www.radcoind.com](http://www.radcoind.com)

#### 1.4. Emergency telephone number

Emergency number: For Chemical Emergency Call CHEMTREC 24hr/day 7days/week  
Within USA and Canada: 1-800-424-9300  
Outside USA and Canada: +1 703-741-5970  
(collect calls accepted)

### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture

##### GHS US classification

Specific target organ toxicity (repeated exposure) Category 2	H373	May cause damage to organs (liver, thyroid gland) through prolonged or repeated exposure (oral)
Aspiration hazard Category 1	H304	May be fatal if swallowed and enters airways
Full text of H statements : see section 16		

#### 2.2. GHS Label elements, including precautionary statements

##### GHS US labeling

Hazard pictograms (GHS US):



Signal word (GHS US):

Danger

Hazard statements (GHS US):

H304 - May be fatal if swallowed and enters airways

H373 - May cause damage to organs (liver, thyroid gland) through prolonged or repeated exposure (oral)

Precautionary statements (GHS US):

P260 - Do not breathe mist.  
P301+P310 - If swallowed: Immediately call a POISON CENTER, a doctor.  
P314 - Get medical advice/attention if you feel unwell.  
P331 - Do NOT induce vomiting.  
P405 - Store locked up.  
P501 - Dispose of contents/container to an approved waste disposal plant.

**2.3. Other hazards which do not result in classification**

No additional information available

**2.4. Unknown acute toxicity (GHS US)**

Not applicable

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**SECTION 3: Composition/Information on ingredients****3.1. Substances**

Not applicable

**3.2. Mixtures**

Name	Product identifier	%	GHS US classification
Diisopropyl-1,1'-biphenyl (Main constituent)	CAS-No.: 69009-90-1	93 – 97	Asp. Tox. 1, H304
Tris(1-methylethyl)-1,1'-biphenyl (Constituent)	CAS-No.: 29225-91-0	3 – 7	Not classified

Full text of hazard classes and H-statements : see section 16

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**SECTION 4: First-aid measures****4.1. Description of first aid measures**

First-aid measures general: Call a physician immediately.

First-aid measures after inhalation: Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact: Wash skin with plenty of water.

First-aid measures after eye contact: Rinse eyes with water as a precaution.

First-aid measures after ingestion: Do not induce vomiting. Call a physician immediately.

**4.2. Most important symptoms and effects (acute and delayed)**

Symptoms/effects: Not expected to present a significant hazard under anticipated conditions of normal use.

Symptoms/effects after inhalation: May cause respiratory irritation.

Symptoms/effects after skin contact: May cause moderate irritation.

Symptoms/effects after eye contact: Direct contact with the eyes is likely to be irritating.

Symptoms/effects after ingestion: Gastrointestinal complaints. Risk of lung edema.

**4.3. Immediate medical attention and special treatment, if necessary**

Treat symptomatically.

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**SECTION 5: Fire-fighting measures****5.1. Suitable (and unsuitable) extinguishing media**

Suitable extinguishing media: Water spray. Dry powder. Foam. Carbon dioxide.

**5.2. Specific hazards arising from the chemical**

Hazardous decomposition products in case of fire: Toxic fumes may be released.

**5.3. Special protective equipment and precautions for fire-fighters**

Protection during firefighting: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures****6.1.1. For non-emergency personnel**

Emergency procedures: Ventilate spillage area. Do not breathe dust/fume/gas/mist/vapors/spray.

**6.1.2. For emergency responders**

Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

**6.2. Environmental precautions**

Avoid release to the environment.

**6.3. Methods and material for containment and cleaning up**

For containment: Collect spillage.  
 Methods for cleaning up: Take up liquid spill into absorbent material.  
 Other information: Dispose of materials or solid residues at an authorized site.

**6.4. Reference to other sections**

For further information refer to section 13.

**SECTION 7: Handling and storage****7.1. Precautions for safe handling**

Precautions for safe handling: Ensure good ventilation of the work station. Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapors/spray.  
 Hygiene measures: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

**7.2. Conditions for safe storage, including any incompatibilities**

Storage conditions: Store locked up. Store in a well-ventilated place. Keep cool.

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters**

No additional information available

**8.2. Appropriate engineering controls**

Appropriate engineering controls: Ensure good ventilation of the work station.  
 Environmental exposure controls: Avoid release to the environment.

**8.3. Individual protection measures/Personal protective equipment**

<b>Hand protection:</b>
Protective gloves
<b>Eye protection:</b>
Safety glasses
<b>Skin and body protection:</b>
Wear suitable protective clothing

**Respiratory protection:**

In case of insufficient ventilation, wear suitable respiratory equipment

**Personal protective equipment symbol(s):****SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Physical state:	Liquid
Appearance:	Colorless liquid.
Color:	Colorless
Odor:	Aromatic odour
Odor threshold:	No data available
pH:	No data available
Melting point:	No data available
Freezing point:	No data available
Boiling point:	300 – 355 °C
Flash point:	No data available
Relative evaporation rate (butyl acetate=1):	No data available
Flammability (solid, gas):	Not applicable.
Vapor pressure:	< 12.9 mm Hg at 38°C (100°F)
Relative vapor density at 20 °C:	No data available
Relative density:	0.96 (Water = 1)
Density:	0.96 g/ml
Molecular mass:	239.6 – 241.3 g/mol
Solubility:	Water: 12.3 µg/l
Partition coefficient n-octanol/water (Log Pow):	6.7
Auto-ignition temperature:	> 415 °C
Decomposition temperature:	No data available
Viscosity, kinematic:	11 mm <sup>2</sup> /s at 40°C (104°F)
Viscosity, dynamic:	No data available
Explosion limits:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available

**9.2. Other information**

No additional information available

**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**

Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

No dangerous reactions known under normal conditions of use.

**10.4. Conditions to avoid**

None under recommended storage and handling conditions (see section 7).

**10.5. Incompatible materials**

No additional information available

**10.6. Hazardous decomposition products**

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

Acute toxicity (oral):	Not classified
Acute toxicity (dermal):	Not classified
Acute toxicity (inhalation):	Not classified
Skin corrosion/irritation:	Not classified
Carcinogenicity:	Not classified
Aspiration hazard:	May be fatal if swallowed and enters airways.
Viscosity, kinematic:	11 mm <sup>2</sup> /s at 40°C (104°F)
Symptoms/effects:	Not expected to present a significant hazard under anticipated conditions of normal use.
Symptoms/effects after inhalation:	May cause respiratory irritation.
Symptoms/effects after skin contact:	May cause moderate irritation.
Symptoms/effects after eye contact:	Direct contact with the eyes is likely to be irritating.
Symptoms/effects after ingestion:	Gastrointestinal complaints. Risk of lung edema.
STOT-single exposure:	Not classified
STOT-repeated exposure:	May cause damage to organs (liver, thyroid gland) through prolonged or repeated exposure (oral).
Reproductive toxicity:	Not classified

<b>XCELTHERM® SST</b>	
LD50 oral rat:	> 5000 mg/kg
LD50 dermal rabbit:	> 5000 mg/kg
LC50 Inhalation - Rat:	> 5.64 mg/l (4 hours OECD 403)
<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
LD50 oral rat:	> 5000 mg/kg (OECD 401)
LD50 dermal rabbit:	> 5000 mg/kg (OECD 402)
LC50 Inhalation - Rat:	> 5 mg/l (OECD 403 (Aerosol))
<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
, dermal, rabbit	not irritating (OECD 404)
Serious eye damage/irritation:	Not classified
<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
Eye irritation	

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Respiratory or skin sensitization: Not classified

<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
Skin sensitization, Guinea pig	negative (No skin sensitization)

Germ cell mutagenicity: Not classified

<b>XCELTHERM® SST</b>	
OECD 476, Guinea pig, Mouse lymphocytic cells	Negative

<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
Ames test	negative (OECD 471)
Genetic mutation	negative (OECD 476)
Chromosome Aberration	negative (OECD 473)

<b>XCELTHERM® SST</b>	
IARC group:	Not classified

<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
IARC group:	Not classified

<b>XCELTHERM® SST</b>	
NOAEL (animal/male, F0/P):	100 mg/kg per day [oral] Rat (OECD 414) Indications of maternal toxicity

<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
NOAEL (animal/male, F0/P):	150 mg/kg body weight per day, rat (oral) (OECD 407)
Additional data:	Teratogenic effects: negative (OECD 406)

<b>XCELTHERM® SST</b>	
Additional data:	Subacute Toxicity, NOAEL, oral, Rat: 15 mg/kg/d (20 d, OECD 407, No abnormal signs)

<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
Additional data:	Specific target organ toxicity - Repeated Exposure, liver, thyroid, oral, rat: < 35 mg/kg bw/day (28 d, OECD 407)

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general: Very toxic to aquatic life with long lasting effects.

<b>XCELTHERM® SST</b>	
LC50 - Fish [1]:	> 8.24 µg/l Rainbow Trout; 96 hour NOEC (ECC guideline C.1, OECD 203)
EC50 - Crustacea [1]:	> 4.52 µg/l 48 hours (Method ECC C.2 (2,3))
NOEC (acute):	0.0062 mg/l Daphnia magna, flow-through (OECD 202)

<b>Diisopropyl-1,1'-biphenyl (69009-90-1)</b>	
LC50 - Fish [1]:	> 8.2 µg/l (OECD 203, dynamic)
EC50 - Crustacea [1]:	> 4.8 µg/l (daphnia) (OECD 202, dynamic, 48 h)
NOEC (acute):	0.01 mg/l (algae) (OECD 201, 72 h)
NOEC (chronic):	0.0063 mg/l (OECD 202, part 2, 21 d)

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### 12.2. Persistence and degradability

Diisopropyl-1,1'-biphenyl (69009-90-1)	
Persistence and degradability:	Not readily biodegradable in the soil. Not readily biodegradable in water.

### 12.3. Bioaccumulative potential

XCELTHERM® SST	
Partition coefficient n-octanol/water (Log Kow):	6.7
Diisopropyl-1,1'-biphenyl (69009-90-1)	
Bioconcentration factor (BCF REACH):	> 500
Partition coefficient n-octanol/water (Log Kow):	6.7 (calculated)

### 12.4. Mobility in soil

Diisopropyl-1,1'-biphenyl (69009-90-1)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc):	> 5 (calculated)
Ecology - soil:	Absorbs into the soil. Low potential for mobility in soil.

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Regional legislation (waste):	Disposal must be done according to official regulations.
Waste treatment methods:	Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations:	Avoid release to the environment. Discharging into rivers and drains is forbidden. Disposal must be done according to official regulations. an approved waste disposal plant.

## SECTION 14: Transport information




In accordance with ADR / IMDG / IATA / ADN / RID

DOT	TDG	IMDG	IATA
<b>14.1. UN number</b>			
3082	Not applicable	3082	3082
<b>14.2. Proper Shipping Name</b>			
Environmentally hazardous substances, liquid, n.o.s. (Contains Diisopropyl biphenyl)	Not applicable	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains Diisopropyl biphenyl)	Environmentally hazardous substance, liquid, n.o.s. (Contains Diisopropyl biphenyl)
<b>Transport document description</b>			
UN3082 Environmentally hazardous substances, liquid, n.o.s. (Contains Diisopropyl biphenyl), 9, III	Not applicable	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains Diisopropyl biphenyl), 9, III	UN 3082 Environmentally hazardous substance, liquid, n.o.s. (Contains Diisopropyl biphenyl), 9, III
<b>14.3. Transport hazard class(es)</b>			
9	Not applicable	9	9

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DOT	TDG	IMDG	IATA
 Not applicable		 9	 9
<b>14.4. Packing group</b>			
III	Not applicable	III	III
<b>14.5. Environmental hazards</b>			
Dangerous for the environment: No	Not applicable	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No
No supplementary information available			

### 14.6. Special precautions for user

#### DOT

UN-No.(DOT):

UN3082

DOT Special Provisions (49 CFR 172.102):

8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies.

146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination.

173 - An appropriate generic entry may be used for this material.

335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging.

IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).

T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)

TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling =  $97 / 1 + a (tr - tf)$  Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.

TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx):

155

DOT Packaging Non Bulk (49 CFR 173.xxx):

203

DOT Packaging Bulk (49 CFR 173.xxx):

241

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27):

No limit

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75):

No limit

DOT Vessel Stowage Location:

A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

#### TDG

Emergency Response Guide (ERG) Number:

171

#### IMDG

Special provision (IMDG):

274, 335, 969

Limited quantities (IMDG):

5 L



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Excepted quantities (IMDG):	E1
Packing instructions (IMDG):	LP01, P001
Packing provisions (IMDG):	PP1
IBC packing instructions (IMDG):	IBC03
Tank instructions (IMDG):	T4
Tank special provisions (IMDG):	TP1, TP29
EmS-No. (Fire):	F-A - FIRE SCHEDULE Alfa - GENERAL FIRE SCHEDULE
EmS-No. (Spillage):	S-F - SPILLAGE SCHEDULE Foxtrot - WATER-SOLUBLE MARINE POLLUTANTS
Stowage category (IMDG):	A

### IATA

PCA Excepted quantities (IATA):	E1
PCA Limited quantities (IATA):	Y964
PCA limited quantity max net quantity (IATA)	30kgG
PCA packing instructions (IATA):	964
PCA max net quantity (IATA):	450L
CAO packing instructions (IATA):	964
CAO max net quantity (IATA):	450L
Special provision (IATA):	A97, A158, A197, A215
ERG code (IATA):	9L

### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
Tris(1-methylethyl)-1,1'-biphenyl	29225-91-0	Present	Active	
Diisopropyl-1,1'-biphenyl	69009-90-1	Present	Active	

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

### 15.2. International regulations

#### CANADA

##### Tris(1-methylethyl)-1,1'-biphenyl (29225-91-0)

Listed on the Canadian NDSL (Non-Domestic Substances List)

##### Diisopropyl-1,1'-biphenyl (69009-90-1)

Listed on the Canadian NDSL (Non-Domestic Substances List)

#### EU-Regulations

No additional information available

#### National regulations

No additional information available

### 15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

**SECTION 16: Other information**

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Full text of H-phrases	
H304	May be fatal if swallowed and enters airways
H373	May cause damage to organs through prolonged or repeated exposure

Abbreviations and acronyms	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any particular process or for any particular purpose. Such information stated is to the best of Radco's knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made to its accuracy, reliability, or completeness, purchasers, users and distributors are not relying on any promise, representation, or recommendation made by Radco, and Radco does not accept liability for any loss or damage that may occur from the use of this information. Final determination of suitability of any material is the sole responsibility of the user. All material should be used with caution to guard against unknown hazards. Although certain hazards are described herein, Radco does not guarantee that these are the only hazards that exist.