



## XCELTHERM® 600 HEAT TRANSFER FLUID

### SAFETY DATA SHEET

Issue Date: 17 March 1993

Revision Date: 8 March 2018

Revision Number: 4.0

## SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product Identifier

Product Name: XCELTHERM® 600 HEAT TRANSFER FLUID

FDA Compliance: FDA 21 CFR 172.878

NSF Registration Number: 128011

NSF Certification Date: August 17, 2011

Category Code: HT1 – Incidental Food Contact

ISO 9001:2008 Certification Number: C2018-00035

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

Thermal oil available for use up to 315°C (600°F). Food contact rated, NSF (HT1) FDA. Recommended for food processing, processing of natural gas, packaging, plastic extrusion, chemical processing, micro concentrated solar power and many other applications.

### 1.3 Details of the supplier of the safety data sheet

Headquarters and Manufacturing Facility  
Radco Industries, Inc.  
700 Kingsland Drive  
Batavia, IL 60510  
CAGE Code 6ZS16

Customer information number: 1-630-232-7966

### 1.4 Emergency Telephone Number

Advisory Office in case of poisoning: Chemtrec  
Chemtrec (North America): 1-800-424-9300

## SECTION 2. HAZARDS IDENTIFICATION

### Classification of the substance or mixture:

Aspiration hazard Category 1

Classification of mixture is in accordance with United Nations (UN) Globally Harmonized System of Classification and Labelling of Chemicals (GHS), sixth revised edition (2015), and United States Standard 29 CFR 1910 Occupational Safety and Health Standards.

See SECTION 16 for toxicity category definitions.

### 2.1 Label elements



Hazard pictograms: Health Hazard

Signal word: DANGER



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### Hazard statements

H304:	May be fatal if swallowed and enters airways.
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### Precaution statements

P101:	If medical advice is needed, have product container or label at hand.
P202:	Do not handle until all safety precautions have been read and understood.
P270:	Do not eat, drink or smoke when using this product.
P273:	Avoid release to the environment.
P280:	Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P331 + P315:	IF SWALLOWED: Do NOT induce vomiting. Rinse mouth. Get immediate medical advice/attention.
P303 + P353:	IF ON SKIN (or hair): Rinse skin with water/shower.
P304 + P340 + P342 + P315:	IF INHALED: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms, get immediate medical advice/attention.
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 or doctor.
P306 + P363:	IF ON CLOTHING: Wash contaminated clothing before reuse.
P404:	Store in a closed container.
P501:	Dispose of contents/container to in accordance with local/regional/national/international regulation.

## 2.2 Other hazards

### PBT and vPvB

This product is not PBT and vPvB.

NFPA Hazard ID	HMIS Hazard ID
Health: 1	Health: 1
Flammability: 1	Flammability: 1
Reactivity: 0	Reactivity: 0

## SECTION 3. Composition/information on ingredients

### 3.1 Substances

#### White mineral oil (petroleum)

Index number: Not available  
CAS number: 8042-47-5  
EC number: 232-455-8  
REACH number: 01-2119487078  
Synonyms: Liquid paraffin; Technical white oil; White mineral oil; White oil;

### 3.2 Mixtures

Component	CAS Number	EC Number	%Content	Classification of Labeling	M-Factor
White mineral oil (petroleum)	8042-47-5	232-455-8	100%	Asp. Tox. 1 – H304	0

M-Factor determinations are in accordance with UN GHS, sixth revised edition (2015).

See SECTION 16 for full text of the toxicity categories and H-statements listed in this section.



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### Indicative occupational exposure limit values

Component	Specific Concentration limits
White mineral oil (petroleum)	See SECTION 8 for specific concentration limits.

## SECTION 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

#### Eye contact

Upon accidental eye exposure, wash the eyes promptly with water for at least 20 minutes. If wearing contact lenses, remove them if safe to do so, and continue washing. Get medical attention immediately.

#### Ingestion

If swallowed, do not induce vomiting. Rinse mouth out with water. Get medical attention immediately.

#### Inhalation

If respiratory irritation, dizziness, or nausea occurs, move to fresh air and keep at rest in a comfortable position for breathing. If symptoms persist or unconsciousness occurs, seek immediate medical assistance.

#### Skin contact

Wash skin thoroughly with mild soap and plenty of water for at least 20 minutes. If irritation develops, seek medical advice.

#### Note to physicians

Treat symptomatically.

### 4.2 Most important symptoms and effects, both acute and delayed

#### Acute symptoms

##### Eye exposure symptoms

Direct eye exposure may lead to redness and lacrimation (crying tears).

##### Ingestion symptoms

Small amounts may cause nausea. Large amounts may lead to abdominal obstruction (cramps), constipation or diarrhea.

##### Inhalation symptoms

May cause irritation of the nose, throat, and lungs.

##### Skin exposure symptoms

Short-term exposure is not expected to cause irritation.

#### Delayed symptoms

##### Eye exposure symptoms

None expected, however seek medical attention if irritation persists.

##### Ingestion symptoms

None expected, however seek medical attention if abdominal obstruction, constipation or diarrhea persists.

##### Inhalation symptoms

None expected, however seek medical attention if respiratory irritation persists.

##### Skin exposure symptoms

Repeated exposure may lead to irritation. If rash develops, seek medical attention.

### 4.3 Indication of any immediate medical attention and special treatment needed

Suggestions for clinical testing and medical monitoring for delayed effects are not known. Use first aid when applicable, and seek guidance from a medical physician for specific treatment.

## SECTION 5. FIREFIGHTING MEASURES



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## **5.1 Extinguishing media**

Suitable extinguishing media includes alcohol-resistant foam, carbon dioxide, dry chemical or water fog.

## **5.2 Special hazards arising from the substance or mixture**

No data is available.

## **5.3 Advice for firefighters**

### **Fire-Fighting Equipment**

Firefighter should wear normal protective equipment (full bunker gear) and positive-pressure contained breathing apparatus. Water can be used to cool fire-exposed containers, to protect personnel and to disperse vapors and spills. Water runoff can cause environmental damage. Dike and collect water used to fight fires.

### **Special Fire-Fighting Procedures**

Use water spray to cool fire-exposed containers and structures. If a rail or tank truck is involved in a fire, isolate for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from the area and let the fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

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## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

### **6.1 Personal precautions, protective equipment and emergency procedures**

#### **For non-emergency personnel**

Wear personal protective equipment (PPE). Eliminate sources of ignition, if safe to do so. Avoid breathing vapors or mist. Evacuate to designated safe areas.

#### **For emergency responders**

If possible, move individual to safe area, and treat symptomatically.

### **6.2 Environmental precautions**

Contain spill, if safe to do so. Prevent from entering sewers or drains.

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

Use oil absorbent material to soak up product on the ground. Should this product enter sewers or drains, it should be pumped out into an open vessel. The recovered material should be discarded as hazardous waste.

### **6.4 Reference to other sections**

If appropriate, refer to SECTION 8 and SECTION 13 for additional information.

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## **SECTION 7. HANDLING AND STORAGE**

### **7.1 Precautions for safe handling**

Use personal protective equipment (PPE) when handling this product. Smoking, eating and drinking should be prohibited in the application area.

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

Do not store in open or unlabeled containers. Keep container tightly closed in a dry and well-ventilated place.

### **7.3 Specific end use(s)**

Used primarily as heat transfer fluid for systems that are designed for use of this product.

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## **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

### **8.1 Control parameters**

#### **Occupational exposure limits**



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Component	Form	Exposure Limits
White mineral oil (petroleum)	Mist, vapor, or fumes	AFS 2011:18 (Sweden, 12/2011).... TWA = 1 mg/m <sup>3</sup> , 8 hours AFS 2011:18 (Sweden, 12/2011).... STEL = 3 mg/m <sup>3</sup> , 15 minutes ACGIH TLV (United States, 3/2012) TWA = 5 mg/m <sup>3</sup> , 8 hours OSHA Z-1 (United States, 6/2010).. TWA = 5 mg/m <sup>3</sup> , TWA 8 hours

### Biological exposure limits

None established for any of the disclosed components.

## 8.2 Exposure controls

### Appropriate engineering controls

Practice general industrial hygiene. Do not eat, drink or smoke near product. Wash hands after handling. Remove clothing and wash separate from other laundry.

### Personal protective equipment (PPE)

#### Eye/face protection

Safety glasses, chemical safety goggles and/or face shields are recommended when handling this product.

#### Skin protection

For extended handling, wear oil resistant gloves such as neoprene. Nitrile gloves may be appropriate for short handling periods use. Contact a government approved or accredited manufacturer for specific recommendations.

#### Other protections

Wear protective clothing ensuring minimal skin exposure. Protective clothing should be chemically impervious to oils and other solvents.

#### Respiratory protection

Use with adequate ventilation. Avoid breathing vapor. If heated and ventilation is inadequate, use NIOSH certified respirator, which will protect against organic vapor.

#### Environmental exposure controls

Do not allow product to reach ground water, water course, or sewage systems. Stop leaks, if safe to do so. Contain spills with absorbent or adsorbent materials.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Appearance:	Water-white, clear liquid
Odor:	Faint, oily
Odor threshold:	Not determined
Auto-ignition temperature:	349°C (660°F)
Decomposition temperature:	0.2% at 316°C (600°F), under nitrogen blanket
Evaporation Rate:	Not available
Explosive properties:	Not available
Flammability (solid, gas):	Not available
Lower flammability limit:	Not available
Upper flammability limit:	Not available
Flash point Cleveland Open Cup (ASTM D92):	193°C (380°F), minimum
Flash point Pensky-Martens (ASTM D93):	178°C (352°F), minimum
Initial boiling point and boiling range:	301°C (574°F), minimum
Melting point/freezing point:	≤ 22°C (-9°F)
Oxidizing properties:	Non-oxidizing
Partition coefficient (n-octanol/water), Log P <sub>ow</sub> :	> 6



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pH:	Not applicable
Relative density (ASTM D1298) 15.6°C/15.6°C (60°F/60°F):	0.800 – 0.875
Solubility in water:	Water insoluble
Vapor density:	Not available
Vapor pressure:	0.08 mmHg at 25°C (77°F)
Viscosity (ASTM D445):	14.0 – 17.0 cSt at 40°C

### 9.2 Other information

No further information is available.

## SECTION 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

Non-reactive in its original state.

### 10.2 Chemical stability

Stable in its original state.

### 10.3 Possibility of hazardous reactions

Does not occur.

### 10.4 Conditions to avoid

Oxidizing materials

### 10.5 Incompatible materials

Keep away from strong oxidizing or reducing agents.

### 10.6 Hazardous decomposition products

Decomposition of this product under fire conditions may produce carbon oxides, phenols, and other decomposition products.

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

Acute toxicity	Method	Species	Results
White mineral oil (petroleum)	Dermal	Rabbit	LD <sub>50</sub> > 2000 mg/kg body-weight
	Inhalation	Rat	LC <sub>50</sub> = 1.78 mg/L
	Oral	Rat	LD <sub>50</sub> > 5000 mg/kg body-weight

Aspiration hazard	Test Method	Species	Result
White mineral oil (petroleum)	OECD 403	Rat	LC <sub>50</sub> = 1.78 mg/L

Carcinogenicity	Test Method	Species	Result
White mineral oil (petroleum)	OECD 451	Mouse	Non-carcinogenic

Eye damage / irritation	Test Method	Species	Results
White mineral oil (petroleum)	OECD 405	Rabbit	Not irritating

Germ cell mutagenicity	Test Method	Species	Result
White mineral oil (petroleum)	OECD 474	mouse	Not mutagenic

Reproductive toxicity	Test Method	Species	Result
White mineral oil (petroleum)	OECD 421	Rat	NOAEL ≥ 1000 mg/kg body-weight/day



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Respiratory sensitization	Test Method	Species	Result
White mineral oil (petroleum)	--	--	No data available

Skin sensitization	Test Method	Species	Result
White mineral oil (petroleum)	OECD 406	Guinea pig	Non-sensitizing

Skin corrosion/irritation	Test Method	Species	Result
White mineral oil (petroleum)	OECD 404	Rabbit	Not irritating

Specific target organ toxicity – repeated exposure (STOT-RE)	Result
White mineral oil (petroleum)	Not expected to be hazardous

Specific target organ toxicity – single exposure (STOT-SE)	Result
White mineral oil (petroleum)	Not expected to be hazardous

### 11.2 Other information

See SECTION 16 for toxicity references.

## SECTION 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

Aquatic Toxicity	Test Method	Species	Results
White mineral oil (petroleum)	OECD 203 Read across	<i>O. mykiss</i> <i>Daphnia sp.</i>	LL <sub>50</sub> > 1000 mg/L after 24 hours LC <sub>50</sub> > 10,000 mg/L after 96 hours

Terrestrial Toxicity	Result
White mineral oil (petroleum)	No data available

### 12.2 Persistence and degradability

Biodegradation	Test Method	Result
White mineral oil (petroleum)	OECD 301F	Inherently biodegradable: 31.13% biodegradation after 28 days

### 12.3 Bioaccumulative potential

Bioconcentration Factor (BCF)	Result
White mineral oil (petroleum)	No data available

Partition Coefficient n-octanol / water (Log K <sub>ow</sub> )	Results
White mineral oil (petroleum)	Log K <sub>ow</sub> > 6

### 12.4 Mobility in soil

Soil Mobility	Results
White mineral oil (petroleum)	No data available

### 12.5 Results of PBT and vPvB assessment

Chemical	Result
White mineral oil (petroleum)	This substance is not PBT and vPvB.

### 12.6 Other adverse effects

No further information is available



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## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

This unused material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets U.S. EPA (40 CFR Subpart C) criteria for being toxic, corrosive, ignitable, or reactive. This material could also become hazardous waste if it is mixed with or meets a listed hazardous waste. If it is a hazardous waste, regulations in 40 CFR 262-266, 268, 270, and 279 may apply.

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## SECTION 14. TRANSPORTATION INFORMATION

### United States Department of Transportation (DOT)

Not regulated

### Canada Transport - Transportation of Dangerous Goods (TDG)

Not regulated

### International Air Transport Association (IATA)

Not regulated

### International Carriage of Dangerous Goods by Inland Waterways (AND)

Not regulated

### International Carriage of Dangerous Goods by Rail (RID)

Not regulated

### International Carriage of Dangerous Goods by Road (ADR)

Not regulated

### International Civil Aviation Organization (ICAO)

Not regulated

### International Maritime Dangerous Goods Code (IMDG Code)

Not regulated

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## SECTION 15. REGULATORY INFORMATION

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### Australia Inventory (AICS)

All the ingredients are listed.

#### California Proposition 65

This product does not contain any chemicals known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

#### Canadian Domestic Substances List/Non-Domestic Substances List (DSL/NDSL)

All the ingredients are listed.

#### China Inventory of Existing Chemical Substances (IECSC)

All the ingredients are listed.

#### Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Reportable Quantity

This product is not reportable under 40 CFR Part 302.4.

#### International Agency for Research on Cancer (IARC)

None of the ingredients are listed.





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### Japan Existing and New Chemical Substances (ENCS)

All the ingredients are listed.

### Korean Existing and Evaluated Chemical Substances (KECL)

All the ingredients are listed.

### Philippines Inventory of Chemicals and Chemical Substances (PICCS)

All the ingredients are listed.

### SARA Title III Section 302 Extremely Hazardous Substances (40 CFR Part 355)

This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

### SARA Title III Section 313 (40 CFR Part 372)

This product is not regulated under Section 313 of SARA and 40 CFR Part 372.

### SARA Title III Sections 311/312 Hazardous Categorization (40 CFR Part 370)

Hazardous categories for this product are:

Acute = Yes      Chronic = No      Fire = No      Pressure = No      Reactive = No

### United States Toxic Substances Control Act (TSCA)

All the ingredients are listed.

## 15.2 Chemical safety assessment

A Chemical Safety Assessment has not been conducted.

## SECTION 16. OTHER INFORMATION

Safety Data Sheet Creation Date: 17 March 1993  
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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 PROCESS. 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, 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.

XCELTHERM® is a registered trademark of Radco Industries, Inc.

### Toxicological References

"White mineral oil (petroleum)." *Registration Dossier - ECHA*. European Chemicals Agency, [no date]. Web. 17 May 2017.

### Definitions

ACGIH	American Conference of Governmental Industrial Hygienists
AFS 2011:18	Swedish Work Environment Authority's provisions and general recommendations on occupational exposure limit values
Asp. Tox. 2	Aspiration hazard, category 2
Aspiration hazard, category 1	Hydrocarbons with kinematic viscosity $\leq 20.5$ mm <sup>2</sup> /s are classified by OSHA as an aspiration hazard.
CFR	United States Code of Federal Regulations
EC number	European Community number
FDA	United States Food and Drug Administration
FDA	United States Food and Drug Administration
FDA 21 CFR 172.878	United States Code of Federal Regulations Title 21 "Food and Drugs," Part 178 "Food Additives Permitted for Direct Addition to Food for Human Consumption," Section 878 "White Mineral Oil."



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H304	May be fatal if swallowed and enters airways.
LC <sub>50</sub>	Lethal concentration that causes 50% death in test population.
LD <sub>50</sub>	Lethal dose that causes 50% death in test population.
OECD	Organisation for Economic Co-operation and Development
OECD 403	OECD Guideline 403: Acute Inhalation Toxicity
OECD 404	OECD Guideline 404: Acute Dermal Irritation/Corrosion
OECD 404	OECD Guideline 404: Acute Dermal Irritation/Corrosion Test
OECD 405	OECD Guideline 405: Acute Eye Irritation/Corrosion Test
OECD 471	OECD Guideline 407: Bacterial Reverse Mutation Test
OECD 471	OECD Guideline 471: Bacterial Reverse Mutation Test
OECD 203	OECD Guideline 203: Fish, Acute Toxicity Test
OECD 406	OECD Guideline 406: Skin Sensitization Test
OECD 451	OECD Guideline 451: Carcinogenicity Studies
OSHA	United States Department of Labor Occupational Safety and Health Administration
PBT	Persistence Bioaccumulation and Toxicity
STEL	Short-term exposure limit
TLV	Threshold limit value
TWA	Time-weighted average
UN	United Nations
vPvB	Very persistent and very bioaccumulative