



XCELTHERM® XT-E HEAT TRANSFER FLUID

SAFETY DATA SHEET

Issue Date: 10 December 2014

Revision Date: 27 February 2018

Revision Number: 2.0

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

1.1 Product Identifier

Product Name: XCELTHERM® XT-E Heat Transfer Fluid

ISO 9001:2008 Certification Number: C2015-00068

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

Heating and cooling fluid between -55°C to 345°C (-70°F to 650°F). Liquid or vapor phase to 343°C (650°F).

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:

Aquatic toxicity, acute hazards	Category 1
Aquatic toxicity, chronic hazards	Category 1
Serious eye irritation	Category 2B
Skin irritation	Category 2

Classifications 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 Environmental Hazard

Signal word: Danger

Hazard statements

H315:	Causes skin irritation.
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H335:	May cause respiratory irritation.
H410:	Very toxic to aquatic life with long-lasting effects.

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 based on components.

NFPA Hazard ID

Health: 1
Flammability: 1
Reactivity: 0

HMIS Hazard ID

Health: 1
Flammability: 1
Reactivity: 0

SECTION 3. Composition/information on ingredients

3.1 Substances

Alkylated aromatic

Index number: Not available
CAS number: Trade secret
EC number: Trade secret
REACH number: Not available
Synonyms: --

Ethylated aromatics

Index number: Not available
CAS number: 68987-42-8
EC number: 273-494-0
REACH number: Not available
Synonyms: Benzene, ethylenated, residues

3.2 Mixtures



Description of mixture:

Binary mixture of synthetic aromatics

Component	CAS Number	EC Number	%Content	Classification of Labeling	M-Factor
Alkylated aromatic	Trade Secret	Trade Secret	> 75%	Skin Irrit. 2A – H319	--
Ethylated aromatics	68987-42-8	273-494-0	< 25%	Asp. Tox. 1 – H304 Skin Irrit. 2 – 315 Aquatic Acute 1 – 400 Aquatic Chronic 1 – 410	10

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.

Indicative occupational exposure limit values

No data available

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

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.

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.



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)

Recommended for PET production, Synthetic Fiber plants and many other applications that require a high temperature heat transfer fluid.

SECTION 8.

8.1 Control parameters

Occupational exposure limits

No data available

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 to straw yellow, clear liquid
Odor:	Mild aromatic



Odor threshold:	Not determined
Auto-ignition temperature:	428°C (803°F)
Decomposition temperature:	< 1% mass at 343°C (650°F)
Evaporation Rate:	Not determined
Explosive properties:	Not determined
Flammability (solid, gas):	Non-flammable
Lower flammability limit:	Not available
Upper flammability limit:	Not available
Flash point Cleveland Open Cup (ASTM D92):	135°C (275°F)
Flash point Pensky-Martens (ASTM D93):	107°C (225°F)
Normal boiling point:	124°C (255°F)
Melting point/freezing point:	-48°C (-54.4°F)
Oxidizing properties:	Not determined
Partition coefficient (n-octanol/water), Log P _{ow} :	4.55
pH:	Not applicable
Relative density (ASTM D1298) 15.6°C/15.6°C (60°F/60°F):	0.95 – 1.05
Solubility in water:	Insoluble
Vapor density (air = 1):	6.5
Vapor pressure:	0.002 mmHg at 25°C (77°F)
Viscosity (ASTM D445):	300 cSt at -47°F (-44°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



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Acute toxicity	Method	Species	Result
Alkylated aromatic	Dermal	Rat	LD ₅₀ > 2000 mg/kg body-weight
	Inhalation	Rat	LC ₅₀ = 3 mg/L
	Oral	Rat	LD ₅₀ > 2000 mg/kg body-weight
Ethylated aromatics	Dermal	Rat	LD ₅₀ > 2000 mg/kg body-weight
	Inhalation	Rat	LC ₅₀ > 20 mg/L
	Oral	Rat	LD ₅₀ > 5000 mg/kg body-weight

Aspiration hazard	Method	Species	Result
Alkylated aromatic	OECD 403	Rat	Not classified
Ethylated aromatics	OECD 403	Rat	Aspiration hazard, category 1

Carcinogenicity	Method	Species	Result
Alkylated aromatic	--	--	Not a known carcinogen by IARC, NTP or OSHA
Ethylated aromatics	--	--	Not a known carcinogen by IARC, NTP or OSHA

Eye damage / irritation	Test Method	Species	Results
Alkylated aromatic	<i>Read across</i>	Rabbit	Not irritating
Ethylated aromatics	OECD 405	Rabbit	Not irritating

Germ cell mutagenicity	Test Method	Species	Results
Alkylated aromatic	OECD 471	<i>S. typhimurium</i>	Not mutagenic
Ethylated aromatics	OECD 471	<i>S. typhimurium</i>	Not mutagenic

Reproductive toxicity	Test Method	Species	Results
Alkylated aromatic	<i>Read across</i>	Rat	Non-toxic to reproduction
Ethylated aromatics	OECD 422	Rat	Non-toxic to reproduction

Respiratory sensitization

No data available

Skin sensitization	Test Method	Species	Results
Alkylated aromatic	OECD 406	Guinea pig	Not sensitizing
Ethylated aromatics	EPA OTS 798.4100	Guinea pig	Not sensitizing

Skin corrosion/irritation	Test Method	Species	Results
Alkylated aromatic	OECD 404	Rabbit	Irritating
Ethylated aromatics	OECD 404	Rabbit	Irritating

Specific target organ toxicity – repeated exposure (STOT-RE)	Test Method	Route	Results
Alkylated aromatic	--		No data available
Ethylated aromatics	OECD 410	Dermal	LOAEL = 50 mg/kg bodyweight/day
	EU Method B.29	Inhalation	NOEC = 625 ppm
	OECD 408	Oral	NOAEL = 100 mg/kg bodyweight/day

Specific target organ toxicity – single exposure (STOT-SE)

No data available

11.2 Other information

See SECTION 16 for toxicity references.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity



Aquatic Toxicity	Test Method	Species	Results
Alkylated aromatic	Read across	<i>Daphnia sp.</i>	NOEC > 0.15 mg/L after 48 hours
Ethylated aromatics	OECD 201	<i>P. subcapitata</i>	ErL ₅₀ = 1.8 mg/L after 96 hours
	OECD 202	<i>Daphnia sp.</i>	EL ₅₀ = 13 mg/L after 48 hours
	OECD 203	<i>O. mykiss</i>	LL ₅₀ = 5.6 mg/L after 96 hours

Terrestrial Toxicity

No data available

12.2 Persistence and degradability

Biodegradation	Test Method	Results
Alkylated aromatic	--	Not readily biodegradable
Ethylated aromatics	OECD 301F	Not readily biodegradable: 7.3% biodegradation after 28 days

12.3 Bioaccumulative potential

Bioconcentration Factor (BCF)	Results
Alkylated aromatic	BCF = 580
Ethylated aromatics	BCF = 39 to 18,220

Partition Coefficient n-octanol / water (Log K _{ow})	Results
Alkylated aromatic	No data available
Ethylated aromatics	3 to 6.5 at 23°C

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Chemical	Results
Alkylated aromatic	This substance is not PBT / vPvB.
Ethylated aromatics	This substance is not PBT / vPvB.

12.6 Other adverse effects

No further information is available

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.

SECTION 14. TRANSPORTATION INFORMATION

United States Department of Transportation (DOT)

No regulated

Canada Transport - Transportation of Dangerous Goods (TDG)

UN Number: UN3082



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UN Proper shipping name: ENVIRONMENTALLY HAZARDOUS LIQUID, SOLID, N.O.S. (BENZENE, ETHYLENATED, RESIDUES MIXTURE)
Transport hazard class: 9
Packing group: III

International Carriage of Dangerous Goods by Inland Waterways (AND)

UN Number: UN3082
UN Proper shipping name: ENVIRONMENTALLY HAZARDOUS LIQUID, SOLID, N.O.S. (BENZENE, ETHYLENATED, RESIDUES MIXTURE)
Transport hazard class: 9
Packing group: III

International Carriage of Dangerous Goods by Rail (RID)

UN Number: UN3082
UN Proper shipping name: ENVIRONMENTALLY HAZARDOUS LIQUID, SOLID, N.O.S. (BENZENE, ETHYLENATED, RESIDUES MIXTURE)
Transport hazard class: 9
Packing group: III

International Carriage of Dangerous Goods by Road (ADR)

UN Number: UN3082
UN Proper shipping name: ENVIRONMENTALLY HAZARDOUS LIQUID, SOLID, N.O.S. (BENZENE, ETHYLENATED, RESIDUES MIXTURE)
Transport hazard class: 9
Packing group: III

International Civil Aviation Organization (ICAO)

Not regulated

International Maritime Dangerous Goods Code (IMDG Code)

UN Number: UN3082
UN Proper shipping name: ENVIRONMENTALLY HAZARDOUS LIQUID, SOLID, N.O.S. (BENZENE, ETHYLENATED, RESIDUES MIXTURE)
Transport hazard class: 9
Packing group: III
Packing: P001; LP01 (PP1)
IBCs: IBC03
Tanks: T4 (TP1, TP29)
MARPOL73/78 and IBC Code: P
Emergency schedules (EmS): F-A, S-F
Special provisions: 274; 335; 969

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.



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International Agency for Research on Cancer (IARC)

None of the ingredients are listed.

Japan Existing and New Chemical Substances (ENCS)

All the ingredients are listed.

Korean Existing and Evaluated Chemical Substances (KECL)

All the ingredients are listed.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List

This product contains 27.0% Alkylated aromatic, and it is cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List.

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 contains 27.0% Alkylated aromatic, and is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 that is listed in 40 CFR 372.

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

Hazardous categories for this product are:

Acute = Yes Chronic = Yes 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.

Safety Data Sheet Creation Date: 10 December 2014

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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

Read across: "1,1-Diphenylethane." *National Center for Biotechnology Information. PubChem Compound Database.* U.S. National Library of Medicine. Web. 22 May 2017.



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Definitions

EC number	European Community number
EU	European Union
IARC	International Agency for Research on Cancer
HMIS	Hazardous Materials Identification System
LC ₅₀	Lethal concentration that causes 50% death in test population.
NOAEL	No observed adverse effect level
NTP	National Toxicology Program, United States Department of Health and Human Services
LD ₅₀	Lethal dose that causes 50% death in test population.
NFPA	National Fire Protection Association
OECD	Organisation for Economic Co-operation and Development
OECD 404	OECD Guideline 404: Acute Dermal Irritation/Corrosion
OECD 471	OECD Guideline 471: Bacterial Reverse Mutation Test
OSHA	United States Department of Labor Occupational Safety and Health Administration
PBT	Persistence Bioaccumulation and Toxicity