XCELTHERM® FF Flush Fluid

Safety Data Sheet

Issue date: 5/1/2006 Revision date: 3/27/2026 Supersedes: 3/27/2026 Version: 8.0

according to 29 CFR § 1910.1200, Hazard Communication Standard (HCS 2024)

SECTION 1: Identification

1.1. Identification

Trade name XCELTHERM® FF Flush Fluid

1.2. Recommended use and restrictions on use

Use of the substance/mixture: Heating and cooling fluid between -55°C to 345°C (-70°F to 650°F). Liquid or vapor phase to 343°C (650°F).

Use of the substance/mixture: Heat Transfer Fluids

Recommended use: Heat Transfer Fluids

1.3. Supplier

Manufacturer
Radco Industries L.L.C.
CAGE Code 6ZS16
700 Kingsland Drive
Batavia, Illinois 60510
United States
T (630) 232-7966
www.radcoind.com

Manufacturer
Radco Industries L.L.C.
CAGE Code 1RVC4
39W930 Midan Drive
LaFox, Illinois 60147
United States
T (630) 232-7966
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

Acute toxicity (inhalation:dust,mist), Category 4	H332	Harmful if inhaled.
Skin corrosion/irritation, Category 2	H315	Causes skin irritation.
Skin sensitization, Category 1	H317	May cause an allergic skin reaction.
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 labelling

Hazard pictograms (GHS US):

Signal word (GHS US): Danger

Hazard statements (GHS US):
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H332 - Harmful if inhaled

Precautionary statements (GHS US):
P261 - Avoid breathing fume, mist, spray, vapours, gas.
P264 - Wash hands, forearms and face thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P280 - Wear protective gloves.
P301+P310 - If swallowed: Immediately call a POISON CENTER, a doctor.
P302+P352 - If on skin: Wash with plenty of soap and water.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
P312 - Call a doctor if you feel unwell.
P321 - Specific treatment (see supplemental first aid instruction on this label).
P331 - Do NOT induce vomiting.
P333+P313 - If skin irritation or rash occurs: Get medical attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P405 - Store locked up.
P501 - Dispose of contents and 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

SECTION 3: Composition/information on ingredients

3.1. Substances

Name XCELTHERM® FF Flush Fluid

Name	CAS-No.	%	GHS US classification
(phenylethyl)benzene	38888-98-1	90 – 100	Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Irrit. 2, H315 Skin Sens. 1, H317 Asp. Tox. 1, H304 Aquatic Chronic 1, H410
Benzene, ethylenated, residues	68987-42-8	0.1 – 10	Aquatic Chronic 2, H411
Benzene, ethylenated, by-products from	68608-82-2	0.1 – 1	Aquatic Chronic 1, H410

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

3.2. Mixtures

Not applicable

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. Call a poison center or a doctor if you feel unwell.
First-aid measures after skin contact:	Wash skin with plenty of water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.
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 after skin contact:	Irritation. May cause an allergic skin reaction.
Symptoms/effects after ingestion:	Risk of lung oedema.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

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/vapours/spray. Avoid contact with skin and eyes.

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

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:	Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Avoid contact with skin and eyes. Wear personal protective equipment.
Hygiene measures:	Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. 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

XCELTHERM® FF Flush Fluid
No additional information available

(phenylethyl)benzene (38888-98-1)
No additional information available

Benzene, ethylenated, residues (68987-42-8)
No additional information available

Benzene, ethylenated, by-products from (68608-82-2)
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

Hand protection:
Protective gloves

Eye protection:
Safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
[In case of inadequate ventilation] wear respiratory protection.

Personal protective equipment symbol(s):

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state:	Liquid
Appearance:	Liquid.
Colour:	Colourless to light yellow
Odour:	Aromatic odour
Odour threshold:	No data available
pH:	No data available
Melting point:	Not applicable
Freezing point:	≤ -70 °C (ASTM D97 Pour point)
Boiling point:	272 °C (10% Fraction)
Flash point:	132 °C (ASTM D92 Cleveland Open Cup Method)
Relative evaporation rate (butylacetate=1):	No data available
Flammability:	Not applicable.
Vapour pressure:	0.002 mm Hg at 25°C (77°F)
Relative vapour density at 20°C:	6.5 (Air = 1)
Relative density:	0.95 – 1.05 at 15.6°C (Water = 1)
Molecular mass:	182 g/mol
Solubility:	insoluble in water.
Partition coefficient n-octanol/water (Log Pow):	No data available
Auto-ignition temperature:	428 °C
Decomposition temperature:	No data available
Viscosity, kinematic:	2.6 mm^2/s at 40°C (104°F)
Viscosity, dynamic:	No data available

Explosive limits:	No data available
Explosive properties:	No data available
Oxidising 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):	Inhalation:dust,mist: Harmful if inhaled.
Skin corrosion/irritation:	Causes skin irritation.
Carcinogenicity:	Not classified
Aspiration hazard:	May be fatal if swallowed and enters airways.
Viscosity, kinematic:	2.6 mm²/s at 40°C (104°F)
Symptoms/effects after skin contact:	Irritation. May cause an allergic skin reaction.
Symptoms/effects after ingestion:	Risk of lung oedema.
STOT-single exposure:	Not classified
STOT-repeated exposure:	Not classified
Reproductive toxicity:	Not classified

XCELTHERM® FF Flush Fluid	
ATE US (dust,mist):	3.261 mg/l/4h

(phenylethyl)benzene (38888-98-1)	
LD50 oral rat:	2531 mg/kg bodyweight (OECD 401 method)
LD50 dermal rat:	> 2000 mg/kg bodyweight (OECD 402 method)
LC50 Inhalation - Rat:	1 – 5 mg/l/4h (OECD 403 method)
ATE US (oral):	2531 mg/kg bodyweight
ATE US (vapours):	3 mg/l/4h
ATE US (dust,mist):	3 mg/l/4h

Benzene, ethylenated, residues (68987-42-8)	
LD50 oral rat:	> 2000 mg/kg bodyweight Test method EU B.1 (tris)
LD50 dermal rat:	> 2000 mg/kg bodyweight (OECD 402 method)
LD50 dermal rabbit:	> 2000 mg/kg bodyweight (EPA OTS 798.1100)

Benzene, ethylenated, by-products from (68608-82-2)	
LD50 oral rat:	> 5000 mg/kg bodyweight (EPA OPP 81-1)

(phenylethyl)benzene (38888-98-1)	
Serious eye damage/irritation:	Not classified

Benzene, ethylenated, residues (68987-42-8)	
Serious eye damage/irritation:	Not classified

Benzene, ethylenated, by-products from (68608-82-2)	
Serious eye damage/irritation:	Not classified

(phenylethyl)benzene (38888-98-1)	
Respiratory or skin sensitisation:	May cause an allergic skin reaction.

Benzene, ethylenated, residues (68987-42-8)	
Respiratory or skin sensitisation:	May cause an allergic skin reaction.

Benzene, ethylenated, by-products from (68608-82-2)	
Respiratory or skin sensitisation:	May cause an allergic skin reaction.

(phenylethyl)benzene (38888-98-1)	
Germ cell mutagenicity:	Not classified

Benzene, ethylenated, residues (68987-42-8)	
Germ cell mutagenicity:	Not classified

Benzene, ethylenated, by-products from (68608-82-2)	
Germ cell mutagenicity:	Not classified

Benzene, ethylenated, by-products from (68608-82-2)	
NOAEL (animal/female, F0/P):	20 mg/kg bodyweight (OECD 422 method)

Benzene, ethylenated, residues (68987-42-8)	
NOAEC (inhalation, rat, vapour, 90 days):	2.355 mg/l Air Test method EU B.29

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

(phenylethyl)benzene (38888-98-1)	
LC50 - Fish [1]:	0.31 mg/l (OECD 203 method)
EC50 - Crustacea [1]:	1.2 mg/l Species: Daphnia magna (Water flea)(OECD 202 method)
EC50 - Crustacea [2]:	1.4 mg/l Species: Daphnia magna (Water flea)
ErC50 algae:	0.56 mg/l (OECD 201 method)

Benzene, ethylenated, residues (68987-42-8)	
EC50 - Crustacea [1]:	1.2 mg/l Species: Daphnia magna (Water flea)

Benzene, ethylenated, by-products from (68608-82-2)	
LC50 - Fish [1]:	1.65 mg/l Species: Pimephales promelas
EC50 - Crustacea [1]:	300 µg/l Species: Daphnia magna (Water flea)

12.2. Persistence and degradability

(phenylethyl)benzene (38888-98-1)	
Persistence and degradability:	Not readily biodegradable in water.

12.3. Bioaccumulative potential

(phenylethyl)benzene (38888-98-1)	
BCF - Fish [1]:	620 – 760 l/kg (OECD 305 method)
Partition coefficient n-octanol/water (Log Pow):	4.48 (OECD 117 method)
Bioaccumulative potential:	Potential for bioaccumulation (4 ≤ Log Kow ≤ 5).

12.4. Mobility in soil

(phenylethyl)benzene (38888-98-1)	
Surface tension:	69.92 mN/m (OECD 115 method)
Organic Carbon Normalized Adsorption Coefficient (Log Koc):	3.64 (OECD 211 method)

Ecology - soil:	Potential for mobility in soil is slight.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods: Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA / ICAO / ADN / RID / ADG

14.1. UN number

UN-No. (DOT):	Not applicable
UN-No.:	Not applicable
UN-No. (IMDG):	3082
UN-No. (IATA):	3082

14.2. UN proper shipping name

Proper Shipping Name (DOT):	Not applicable
Proper Shipping Name (TDG):	Not applicable
Proper Shipping Name (IMDG):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains (phenylethyl)benzene)
Proper Shipping Name (IATA):	Environmentally hazardous substance, liquid, n.o.s. (contains (phenylethyl)benzene)
Transport document description (IMDG):	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains (phenylethyl)benzene), 9, III
Transport document description (IATA):	UN 3082 Environmentally hazardous substance, liquid, n.o.s. (contains (phenylethyl)benzene), 9, III

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT): Not applicable

TDG

Transport hazard class(es) (TDG): Not applicable

IMDG

Transport hazard class(es) (IMDG): 9

Danger labels (IMDG): 9

IATA

Transport hazard class(es) (IATA): 9

Danger labels (IATA): 9

14.4. Packing group

Packing group (DOT):	Not applicable
Packing group (TDG):	Not applicable
Packing group (IMDG):	III
Packing group (IATA):	III

14.5. Environmental hazards

Other information: No supplementary information available.

14.6. Special precautions for user

DOT

No data available

TDG

No data available

IMDG

Special provisions (IMDG):	274, 335, 375, 969
Limited quantities (IMDG):	5 L
Excepted quantities (IMDG):	E1
Packing instructions (IMDG):	LP01, P001
Special 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 provisions (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

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

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

(phenylethyl)benzene (38888-98-1)

Listed on the Canadian DSL (Domestic Substances List)

Benzene, ethylenated, residues (68987-42-8)

Listed on the Canadian DSL (Domestic Substances List)

Benzene, ethylenated, by-products from (68608-82-2)

Listed on the Canadian DSL (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

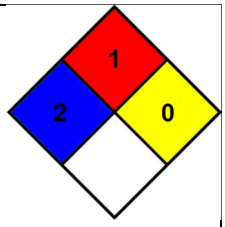
SECTION 16: Other information

according to 29 CFR § 1910.1200, Hazard Communication Standard (HCS 2024)
Revision date: 03/27/2026
Data sources: ECHA (European Chemicals Agency). Supplier's safety documents.

Full text of hazard classes and H-statements	
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H317	May cause an allergic skin reaction

Full text of hazard classes and H-statements	
H332	Harmful if inhaled
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects

NFPA health hazard	2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.
NFPA fire hazard	1 - Materials that must be preheated before ignition can occur.
NFPA reactivity	0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating	
Health	2 Moderate Hazard - Temporary or minor injury may occur
Flammability	1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)
Physical	0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

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