RADCOLUBE® FR170

Safety Data Sheet

MIL-PRF-46170E TYPE I HYDRAULIC FLUID, RUST INHIBITED, FIRE RESISTANT, SYNTHETIC HYDROCARBON

Issue date: 2/2/2010 Revision date: 1/19/2022 Supersedes: 1/18/2022 Version: 11.0

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

SECTION 1: Identification

1.1. Identification

Trade name	RADCOLUBE® FR170
Specification:	MIL-PRF-46170E Type I Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon
Qualification Number (Date):	HF-78 (17 May 2019) HF-79 (11 March 2021) HF-80 (16 March 2021) HF-82 (20 July 2021) HF-83 (20 July 2021)
NATO Code:	H-544
National Stock Number(s) (NSN):	9150-01-332-7819 (Pint) 9150-00-111-6256 (Quart) 9150-00-111-6254 (Gallon) 9150-00-111-6255 (5 Gallon Pail) 9150-01-158-0462 (55 Gallon Drum)

1.2. Recommended use and restrictions on use

Use of the substance/mixture:	This product is a synthetic hydrocarbon base hydraulic fluid for use in the -40°C to 200°C (-40°F to 392°F) temperature range in recoil mechanisms and ground vehicle and equipment hydraulic systems. This hydraulic fluid will not be used for aircraft systems, aircraft ground support equipment, or the preservation of aircraft components.

1.3. Supplier

Manufacturer	**Manufacturer**
Radco Industries Inc.	Radco Industries Inc.
CAGE Code 6ZS16	CAGE Code 1RVC4
700 Kingsland Drive	39W930 Midan Drive
Batavia, Illinois 60510	Elburn, Illinois 60147
United States	United States
T (630) 232-7966	T (630) 232-7966
www.radcoind.com	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

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
Precautionary statements (GHS US):	P273 - Avoid release to the environment. P301+P310 - If swallowed: Immediately call a doctor, a POISON CENTER. 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

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
Synthetic Hydrocarbon 3* (Base Stock)	CAS-No.: Trade Secret	0 – 55	Asp. Tox. 1, H304
Synthetic Hydrocarbon 2* (Base Stock)	CAS-No.: Trade Secret	0 – 55	Asp. Tox. 1, H304
Barium sulfonate (Additive)	CAS-No.: 25619-56-1	< 5	Aquatic Acute 1, H400 Aquatic Chronic 1, H410

*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

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

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 after ingestion: Risk of lung edema.

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.

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: Ensure good ventilation of the work station. Wear personal protective equipment.

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

Hand protection:
Protective gloves

Eye protection:
Safety glasses

Skin and body protection:
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:	Pale yellow or light brown oily liquid.
Color:	Light yellow to brown
Odor:	slight
Odor threshold:	No data available
pH:	No data available
Melting point:	Not applicable
Freezing point:	≤ -57 °C ASTM D97 Pour Point
Boiling point:	No data available
Flash point:	≥ 222 °C ASTM D92 Flash Point by Cleveland Open Cup
Relative evaporation rate (butyl acetate=1):	No data available
Flammability (solid, gas):	Not applicable.
Vapor pressure:	< 0.01 mm Hg at 20°C (68°F)
Relative vapor density at 20 °C:	No data available
Relative density:	0.849 – 0.854
Solubility:	No data available
Partition coefficient n-octanol/water (Log Pow):	No data available
Auto-ignition temperature:	≥ 378 °C
Decomposition temperature:	No data available
Viscosity, kinematic:	15.2 – 16.8 mm^2/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

Barium sulfonate (25619-56-1)	
LD50 dermal rabbit:	3000 mg/kg body weight Animal: rabbit
ATE US (dermal):	3000 mg/kg body weight

Synthetic Hydrocarbon 2	
LD50 dermal rat:	> 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat:	> 5.06 mg/l/4h Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity)

Synthetic Hydrocarbon 3	
LD50 dermal rat:	> 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)

Skin corrosion/irritation:	Not classified
Serious eye damage/irritation:	Not classified
Respiratory or skin sensitization:	Not classified
Germ cell mutagenicity:	Not classified
Carcinogenicity:	Not classified
Reproductive toxicity::	Not classified
STOT-single exposure:	Not classified
STOT-repeated exposure:	Not classified
Aspiration hazard:	May be fatal if swallowed and enters airways.
Viscosity, kinematic:	15.2 – 16.8 mm^2/s at 40°C (104°F)
Symptoms/effects after ingestion:	Risk of lung edema.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general:	The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Barium sulfonate (25619-56-1)	
LC50 - Fish [1]:	0.28 mg/l 96 hours
EC50 - Crustacea [1]:	78 mg/l Test organisms (species): Daphnia magna
NOEC chronic fish:	0.27 mg/l 48 hours

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Barium sulfonate (25619-56-1)	
Partition coefficient n-octanol/water (Log Kow):	6.7 at 20°C (68°F)

12.4. Mobility in soil

Barium sulfonate (25619-56-1)	
Mobility in soil:	5.24 QSAR

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

DOT	TDG	IMDG	IATA
14.1. UN number			
Not regulated for transport			
14.2. Proper Shipping Name			
Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)			
Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available			

14.6. Special precautions for user

DOT
No data available

TDG
No data available

IMDG
No data available

IATA
No data available

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
Barium sulfonate	25619-56-1	Present	Active	
Synthetic Hydrocarbon 2		Present	Active	
Synthetic Hydrocarbon 3		Present	Active	PMN;XU

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

Barium sulfonate (25619-56-1)
Listed on the Canadian DSL (Domestic Substances List)

Synthetic Hydrocarbon 2
Listed on the Canadian DSL (Domestic Substances List)

Synthetic Hydrocarbon 3
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Barium sulfonate (25619-56-1)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

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

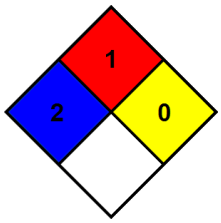
SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Revision date: 01/19/2022

Full text of H-phrases	
H304	May be fatal if swallowed and enters airways

Full text of H-phrases	
H400	Very toxic to aquatic life
H410	Very 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.