



RADCOLUBE® FR282

Safety Data Sheet

MIL-PRF-83282D(1) Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base

Issue date: 9/1/2010

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Version: 12.0

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

SECTION 1: Identification

1.1. Identification

Trade name	RADCOLUBE® FR282
Specification:	MIL-PRF-83282D(1) Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base
Qualification Number (Date):	NAWCADPAX Itr 4123 Ser 434200A/10.0040 (28 June 2010) (Recertification via DD form 1718 dated 14 March 2013)
NATO Code:	H-537
National Stock Number(s) (NSN):	9150-00-149-7431 (Quart) 9150-00-149-7432 (Gallon) 9150-01-009-7709 (10 Gallon Pail or Drum) 9150-00-180-6290 (55 Gallon Drum)

1.2. Recommended use and restrictions on use

Use of the substance/mixture:	A synthetic hydrocarbon-base hydraulic fluid for use in the temperature range of -40° to 205°C (-40°F and 401°F).
Use of the substance/mixture:	Hydraulic fluids and additives
Restrictions on use:	Hydraulic 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

Manufacturer

Radco Industries Inc.
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)
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SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Reproductive toxicity Category 2	H361	Suspected of damaging fertility
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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

H361 - Suspected of damaging fertility

Precautionary statements (GHS US):

P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

P280 - Wear eye protection, protective gloves, protective clothing.

P301+P310 - If swallowed: Immediately call a POISON CENTER, a doctor.

P308+P313 - If exposed or concerned: Get medical advice/attention.

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
Reaction products of 1-decene and 1-dodecene, hydrogenated	CAS-No.: 151006-60-9	0 – 75	Asp. Tox. 1, H304
1-Decene, tetramer, mixed with 1-decene trimer, hydrogenated	CAS-No.: 68649-12-7	0 – 75	Asp. Tox. 1, H304
Reaction products of 1-decene, 1-dodecene and 1-octene, hydrogenated	CAS-No.: 163149-28-8	0 – 75	Asp. Tox. 1, H304
Synthetic hydrocarbon*	CAS-No.: Trade Secret	5 – 25	Aquatic Chronic 3, H412
Trade Secret 1*	CAS-No.: Trade Secret	< 1	Repr. 2, H361 STOT RE 2, H373

*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.

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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 inhalation:	Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard.
Symptoms/effects after skin contact:	None under normal conditions.
Symptoms/effects after eye contact:	None under normal conditions.
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.
Unsuitable extinguishing media:	Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard:	No fire hazard.
Explosion hazard:	No direct explosion hazard.
Hazardous decomposition products in case of fire:	Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions:	Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.
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

General measures:	Stop leak if safe to do so. Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material-damage.
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6.1.1. For non-emergency personnel

Protective equipment:	Wear recommended personal protective equipment.
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".
Emergency procedures:	Evacuate unnecessary personnel. Stop leak if safe to do so.

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6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment: Absorb spilled material with sand or earth. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak, if possible without risk.

Methods for cleaning up: Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.

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

Additional hazards when processed: Not expected to present a significant hazard under anticipated conditions of normal use.

Precautions for safe handling: Ensure good ventilation of the work station. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. 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

Technical measures: Keep in a cool, well-ventilated place away from heat.

Storage conditions: Store locked up.

Packaging materials: Store always product in container of same material as original container.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

RADCOLUBE® FR282	
USA - OSHA - Occupational Exposure Limits	
Local name	Oil mist, mineral
OSHA PEL TWA	5 mg/m ³
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
Reaction products of 1-decene and 1-dodecene, hydrogenated (151006-60-9)	
No additional information available	
1-Decene, tetramer, mixed with 1-decene trimer, hydrogenated (68649-12-7)	
No additional information available	

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Reaction products of 1-decene, 1-dodecene and 1-octene, hydrogenated (163149-28-8)
No additional information available
Synthetic hydrocarbon
No additional information available
Trade Secret 1
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

Personal protective equipment:

Wear recommended 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.
Color:	red
Odor:	slight
Odor threshold:	No data available

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pH:	No data available
Melting point:	Not applicable
Freezing point:	≤ -69 °C Pour point
Boiling point:	No data available
Flash point:	221 °C Cleveland Open Cup Method
Relative evaporation rate (butyl acetate=1):	No data available
Flammability:	Not applicable.
Vapor pressure:	< 0.01 mm Hg at 20°C (68°F)
Relative vapor density at 20°C:	No data available
Relative density:	0.838 at 15.6°C (Water = 1)
Solubility:	Material insoluble in water.
Partition coefficient n-octanol/water (Log Pow):	No data available
Auto-ignition temperature:	370 °C
Decomposition temperature:	No data available
Viscosity, kinematic:	14 – 15 mm ² /s at 40°C (104°F)
Viscosity, dynamic:	No data available
Explosion limits:	Not determined Lower explosion limit: Not determined Upper explosion limit: Not determined
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).

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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:	14 – 15 mm ² /s at 40°C (104°F)
Symptoms/effects after inhalation:	Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard.
Symptoms/effects after skin contact:	None under normal conditions.
Symptoms/effects after eye contact:	None under normal conditions.
Symptoms/effects after ingestion:	Risk of lung edema.
STOT-single exposure:	Not classified
STOT-repeated exposure:	Not classified
Reproductive toxicity:	Suspected of damaging fertility.

Reaction products of 1-decene and 1-dodecene, hydrogenated (151006-60-9)

LD50 dermal rat:	> 2000 mg/kg body weight (OECD 402 method)
LC50 Inhalation - Rat:	> 5 mg/l (OECD 403 method)

1-Decene, tetramer, mixed with 1-decene trimer, hydrogenated (68649-12-7)

LD50 dermal rat:	> 2000 mg/kg body weight (OECD 402 method)
LC50 Inhalation - Rat:	> 5.06 mg/l/4h (OECD 403 method)

Reaction products of 1-decene, 1-dodecene and 1-octene, hydrogenated (163149-28-8)

LD50 dermal rat:	> 2000 mg/kg body weight (OECD 402 method)
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Synthetic hydrocarbon

LD50 oral rat:	> 15800 mg/kg body weight (OECD 401 method)
LD50 dermal rabbit:	> 7940 mg/kg body weight (OECD 402 method)
LC50 Inhalation - Rat:	> 5.7 mg/l/4h (OECD 403 method)

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LD50 oral rat:	> 5000 mg/kg body weight (OECD 401 method)
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LD50 dermal rat:	> 2000 mg/kg body weight (OECD 402 method)
Reaction products of 1-decene and 1-dodecene, hydrogenated (151006-60-9)	
Serious eye damage/irritation:	Not classified
1-Decene, tetramer, mixed with 1-decene trimer, hydrogenated (68649-12-7)	
Serious eye damage/irritation:	Not classified
Reaction products of 1-decene, 1-dodecene and 1-octene, hydrogenated (163149-28-8)	
Serious eye damage/irritation:	Not classified
Synthetic hydrocarbon	
Serious eye damage/irritation:	Not classified
Trade Secret 1	
Serious eye damage/irritation:	Not classified
Reaction products of 1-decene and 1-dodecene, hydrogenated (151006-60-9)	
Respiratory or skin sensitization:	Not classified
1-Decene, tetramer, mixed with 1-decene trimer, hydrogenated (68649-12-7)	
Respiratory or skin sensitization:	Not classified
Reaction products of 1-decene, 1-dodecene and 1-octene, hydrogenated (163149-28-8)	
Respiratory or skin sensitization:	Not classified
Synthetic hydrocarbon	
Respiratory or skin sensitization:	Not classified
Trade Secret 1	
Respiratory or skin sensitization:	Not classified
Reaction products of 1-decene and 1-dodecene, hydrogenated (151006-60-9)	
Germ cell mutagenicity:	Not classified
1-Decene, tetramer, mixed with 1-decene trimer, hydrogenated (68649-12-7)	
Germ cell mutagenicity:	Not classified
Reaction products of 1-decene, 1-dodecene and 1-octene, hydrogenated (163149-28-8)	
Germ cell mutagenicity:	Not classified
Synthetic hydrocarbon	
Germ cell mutagenicity:	Not classified

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Trade Secret 1

Germ cell mutagenicity:	Not classified
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Synthetic hydrocarbon

LOAEL (animal/male, F0/P):	2102 mg/kg body weight (OECD 415 method)
LOAEL (animal/female, F0/P):	2399 mg/kg body weight (OECD 415 method)
LOAEL (animal/male, F1):	2102 mg/kg body weight (OECD 415 method)
LOAEL (animal/female, F1):	2399 mg/kg body weight (OECD 415 method)
NOAEL (animal/male, F1):	178 mg/kg body weight (OECD 415 method)
NOAEL (animal/female, F1):	203 mg/kg body weight (OECD 415 method)

Trade Secret 1

NOAEL (animal/male, F0/P):	18 – 54 mg/kg body weight (OECD 443 method)
NOAEL (animal/female, F0/P):	18 – 54 mg/kg body weight (OECD 443 method)
NOAEL (animal/male, F1):	18 – 167 mg/kg body weight (OECD 443 method)
NOAEL (animal/female, F1):	18 – 167 mg/kg body weight (OECD 443 method)
Additional data:	Reproduction NOAEL, oral, rat: 225 mg/kg bw/day (28 days, (OECD 422 method)), Parental NOAEL, oral, rat: 25 mg/kg bw/day (28 days, (OECD 422 method))

Synthetic hydrocarbon

NOAEL (subchronic, oral, animal/male, 90 days):	200 mg/kg body weight (OECD 408 method)
NOAEL (subchronic, oral, animal/female, 90 days):	387 mg/kg body weight (OECD 408 method)

Trade Secret 1

NOAEL (oral, rat, 90 days):	25 mg/kg body weight (OECD 422 method)
STOT-repeated exposure:	May cause damage to organs (liver) through prolonged or repeated exposure (oral).

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.

Synthetic hydrocarbon

LC50 - Fish [1]:	> 45 mg/l (Species: Oryzias latipes)
EC50 - Crustacea [1]:	> 48 mg/l (Species: Daphnia magna)

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Trade Secret 1	
LC50 - Fish [1]:	100 mg/l Brachydanio rerio (zebra-fish)
EC50 - Crustacea [1]:	51 mg/l Daphnia magna (Water flea)

12.2. Persistence and degradability

Synthetic hydrocarbon	
Persistence and degradability:	Readily biodegradable in water.
Chemical oxygen demand (COD):	2.72 g O ₂ /g substance

12.3. Bioaccumulative potential

Synthetic hydrocarbon	
BCF - Fish [1]:	27 (28 day(s), Lepomis macrochirus, Flow-through system, Freshwater, Read-across)
Partition coefficient n-octanol/water (Log Pow):	8.12 Quantitative structure-activity relationship (QSAR)
Bioaccumulative potential:	The substance has low potential for bioaccumulation.

12.4. Mobility in soil

Synthetic hydrocarbon	
Organic Carbon Normalized Adsorption Coefficient (Log K _{oc}):	5.2853 Quantitative structure-activity relationship (QSAR)
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**

Regional waste regulation:	Disposal must be done according to official regulations.
Waste treatment methods:	Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations:	Disposal must be done according to official regulations.
Product/Packaging disposal recommendations:	Disposal must be done according to official regulations.
Additional information:	Do not re-use empty containers.

SECTION 14: Transport information

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

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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
Transport document description			
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**

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

Trade Secret 1	CAS-No.	< 1%
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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

Reaction products of 1-decene and 1-dodecene, hydrogenated (151006-60-9)

Listed on the Canadian DSL (Domestic Substances List)

1-Decene, tetramer, mixed with 1-decene trimer, hydrogenated (68649-12-7)

Listed on the Canadian DSL (Domestic Substances List)

Reaction products of 1-decene, 1-dodecene and 1-octene, hydrogenated (163149-28-8)

Listed on the Canadian DSL (Domestic Substances List)

Synthetic hydrocarbon

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

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Full text of hazard classes and H-statements

H304	May be fatal if swallowed and enters airways
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard 1 - Materials that must be preheated before ignition can occur.

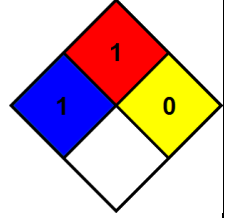
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NFPA reactivity 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health	1 Slight Hazard - Irritation or minor reversible injury possible
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.

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.