RADCOLUBE® SBR-1

Safety Data Sheet

MIL-PRF-46176B BRAKE FLUID, SILICONE, AUTOMOTIVE, ALL-WEATHER, OPERATIONAL AND PRESERVATIVE

Issue date: 1/17/2012 Revision date: 8/28/2023 Supersedes: 7/17/2021 Version: 10.0

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

SECTION 1: Identification

1.1. Identification

Trade name	RADCOLUBE® SBR-1
Specification:	MIL-PRF-46176B BRAKE FLUID, SILICONE, AUTOMOTIVE, ALL-WEATHER, OPERATIONAL AND PRESERVATIVE
Qualification Number (Date):	SBF-1034 (7 April 2021) SBF-1036 (11 June 2021) SBF-1037 (11 June 2021) SBF-1038 (11 June 2021)
Military Symbol:	BFS
NATO Code:	H-547
National Stock Number(s) (NSN):	9150-01-102-9455 1 Gallon 9150-01-123-3152 5 Gallon Pail 9150-01-072-8379 55 Gallon Drum

1.2. Recommended use and restrictions on use

Use of the substance/mixture:	Lubricant
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

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

Carcinogenicity Category 2	H351	Suspected of causing cancer (oral)

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): Warning

Hazard statements (GHS US): H351 - Suspected of causing cancer (oral)

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.
P308+P313 - If exposed or concerned: Get medical advice/attention.
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
Dioctyl sebacate*	CAS-No.: Trade Secret	< 10	Acute Tox. 4 (Inhalation:dust,mist), H332 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Tributyl phosphate*	CAS-No.: Trade Secret	< 5	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Irrit. 2, H315 Carc. 2, H351 Aquatic Chronic 3, H412

*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: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation: Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact: Wash immediately with lots of water. Do not apply (chemical) neutralizing agents without medical advice. Soap may be used. Take victim to a doctor if irritation persists. Wash skin with plenty of water.

First-aid measures after eye contact: Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply (chemical) neutralizing agents without medical advice. Rinse eyes with water as a precaution.

First-aid measures after ingestion: Rinse mouth out with water. Do not apply (chemical) neutralizing agents without medical advice. Call Poison Information Centre (www.big.be/antigif.html). Immediately consult a doctor/medical service. Ingestion of large quantities: immediately to hospital. Take the container/vomit to the doctor/hospital. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms: Harmful if swallowed. Causes skin irritation. Practically non-toxic in contact with skin (LD50 skin > 2000 mg/kg). Slightly harmful by inhalation. Slightly irritant to eyes. Caution! Substance is absorbed through the skin.

Symptoms/effects after inhalation: EXPOSURE TO HIGH CONCENTRATIONS: Dry/sore throat. Headache. Nausea. Vomiting. Central nervous system depression. Dizziness. Coordination disorders.

Symptoms/effects after skin contact: Tingling/irritation of the skin.

Symptoms/effects after eye contact: Slight irritation.

Symptoms/effects after ingestion: Nausea. Vomiting. Abdominal pain. Diarrhoea. Symptoms similar to those listed under inhalation.

Chronic symptoms: Skin rash/inflammation.

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: Quick-acting ABC powder extinguisher. Quick-acting BC powder extinguisher. Quick-acting class B foam extinguisher. Quick-acting CO2 extinguisher. Class B foam (not alcohol-resistant). Water spray. Dry powder. Foam. Carbon dioxide.

Unsuitable extinguishing media:	Water (quick-acting extinguisher, reel); risk of puddle expansion. Water; risk of puddle expansion.

5.2. Specific hazards arising from the chemical

Fire hazard:	DIRECT FIRE HAZARD: Combustible. INDIRECT FIRE HAZARD: Temperature above flashpoint: higher fire/explosion hazard. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard:	INDIRECT EXPLOSION HAZARD: Reactions with explosion hazards: see "Reactivity Hazard".
Hazardous decomposition products in case of fire:	On heating/burning: release of toxic and corrosive gases/vapours (phosphorus oxides, phosphine, carbon monoxide - carbon dioxide).

5.3. Special protective equipment and precautions for fire-fighters

Precautionary measures fire:	Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: seal off low-lying areas. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions:	Cool tanks/drums with water spray/remove them into safety. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water.
Protection during firefighting:	Heat/fire exposure: self-contained breathing apparatus (EN 136 + EN 137). 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

Protective equipment:	Gloves (EN 374). Face shield (EN 166). protective clothing (EN 14605 / EN 13034).
Emergency procedures:	Ventilate spillage area. Mark the danger area. No naked flames. Wash contaminated clothes. In case of hazardous reactions: keep upwind. In case of reactivity hazard: consider evacuation.

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. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

For containment:	Contain released product, collect/pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Hazardous reaction: measure explosive gas-air mixture. If reacting: dilute combustible/toxic gases/vapours. Take account of toxic/corrosive precipitation water.
Methods for cleaning up:	Take up liquid spill into absorbent material. Take up liquid spill into absorbent material, e.g.: sand/earth soda ash or kieselguhr. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with a soap solution. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling. 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

Precautions for safe handling: Ensure good ventilation of the work station. Keep away from naked flames/heat. In finely divided state: use spark-/explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Keep container tightly closed. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear personal protective equipment.

Hygiene measures: Observe strict hygiene. 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.

Maximum storage period: 36 months

Storage temperature: -55 – 25 °C

Heat-ignition: KEEP SUBSTANCE AWAY FROM: Heat sources.

Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) bases.

Storage area: Keep out of direct sunlight. Ventilation along the floor. Provide for a tub to collect spills. Meet the legal requirements.

Special rules on packaging: SPECIAL REQUIREMENTS: closing. dry. Clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials: glass. steel. stainless steel. iron.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

RADCOLUBE® SBR-1	
USA - ACGIH - Occupational Exposure Limits	
Local name	Tributyl phosphate
ACGIH OEL TWA	5 mg/m³ (Inhalable fraction and vapor)
Remark (ACGIH)	TLV® Basis: Bladder, eye, & URT irr. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEIc
Regulatory reference	ACGIH 2023
USA - OSHA - Occupational Exposure Limits	
Local name	Tributyl phosphate

OSHA PEL TWA [1]	5 mg/m³
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1

Dioctyl sebacate

No additional information available

Tributyl phosphate

USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	5 mg/m³ (Inhalable fraction and vapor)

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

Materials for protective clothing:

Good resistance: Polyethylene/ethylenevinylalcohol

Hand protection:

Gloves

Eye protection:

Face shield (EN 166). Safety glasses

Skin and body protection:

Protective clothing (EN 14605 or EN 13034)

Respiratory protection:

Full face mask with filter type A at concentration in air greater than exposure limit

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:	Violet

Odor:	Odourless
Odor threshold:	No data available
pH:	No data available
Melting point:	Not applicable
Freezing point:	≤ -63 (ASTM D97 Pour Point)
Boiling point:	> 350 °C
Flash point:	≥ 204 °C
Relative evaporation rate (butyl acetate=1):	No data available
Flammability:	Not applicable.
Vapor pressure:	No data available
Relative vapor density at 20°C:	9.2
Particle size:	Not applicable (liquid)
Relative density:	0.97 (25 °C)
Relative density of saturated gas/air mixture:	1
Density:	0.94 g/ml (ASTM D1298 Density at 15.6°C)
Solubility:	Poorly soluble in water. Soluble in ethanol. Soluble in ether.
Partition coefficient n-octanol/water (Log Pow):	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity, kinematic:	> 1300000 mm^2/s (ASTM D445 Kinematic Viscosity at 100°C)
Viscosity, dynamic:	3.39 mPa·s (25 °C)
Explosion limits:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available

9.2. Other information

VOC content:	0 %
Other properties:	Gas/vapour heavier than air at 20°C. Slightly volatile.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts violently with (strong) oxidizers: oxidation resulting in increased fire or explosion risk.

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

Reacts with (some) bases: release of toxic/corrosive/combustible gases/vapours (phosphoric acid, phosphorus oxides, butanol).
Reacts with hot water: release of toxic/corrosive/combustible gases/vapours (phosphoric acid, butanol).

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:	Suspected of causing cancer (oral).
Aspiration hazard:	Not classified
Viscosity, kinematic:	> 1300000 mm²/s (ASTM D445 Kinematic Viscosity at 100°C)
Potential Adverse human health effects and symptoms:	Harmful if swallowed. Causes skin irritation. Practically non-toxic in contact with skin (LD50 skin > 2000 mg/kg). Slightly harmful by inhalation. Slightly irritant to eyes. Caution! Substance is absorbed through the skin.
Symptoms/effects after inhalation:	EXPOSURE TO HIGH CONCENTRATIONS: Dry/sore throat. Headache. Nausea. Vomiting. Central nervous system depression. Dizziness. Coordination disorders.
Symptoms/effects after skin contact:	Tingling/irritation of the skin.
Symptoms/effects after eye contact:	Slight irritation.
Symptoms/effects after ingestion:	Nausea. Vomiting. Abdominal pain. Diarrhoea. Symptoms similar to those listed under inhalation.
Chronic symptoms:	Skin rash/inflammation.
STOT-single exposure:	Not classified
STOT-repeated exposure:	Not classified
Reproductive toxicity:	Not classified

Dioctyl sebacate	
LD50 oral rat:	9500 mg/kg Source: NLM, THOMSON
LD50 dermal rat:	18300 mg/kg
LC50 Inhalation - Rat:	> 3.2 mg/l
ATE US (oral):	9500 mg/kg body weight

ATE US (dermal):	18300 mg/kg body weight
ATE US (dust, mist):	1.5 mg/l/4h

Tributyl phosphate	
LD50 oral rat:	1552 mg/kg (Rat, Male / female, Experimental value, Oral)
LD50 dermal rabbit:	> 3100 mg/kg (24 h, Rabbit, Male / female, Experimental value, Dermal)
LC50 Inhalation - Rat:	> 4.242 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (aerosol))
ATE US (oral):	1552 mg/kg body weight
ATE US (dust, mist):	1.5 mg/l/4h

Dioctyl sebacate	
Serious eye damage/irritation:	Not classified

Tributyl phosphate	
Serious eye damage/irritation:	Not classified

Dioctyl sebacate	
Respiratory or skin sensitization:	Not classified

Tributyl phosphate	
Respiratory or skin sensitization:	Not classified

Dioctyl sebacate	
Germ cell mutagenicity:	Not classified

Tributyl phosphate	
Germ cell mutagenicity:	Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general: Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.

Ecology - air: Not included in the list of substances which may contribute to the greenhouse effect (IPCC). Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Photooxidation in the air. Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

Ecology - water: Toxic to crustacea. Toxic to fishes. Inhibition of activated sludge. Toxic to algae.

Dioctyl sebacate	
LC50 - Fish [1]:	0.22 mg/l Test organisms (species):

Tributyl phosphate	
LC50 - Fish [1]:	8.18 mg/l (Equivalent or similar to OECD 203, 96 h, Pimephales promelas, Flow-through system, Fresh water, Experimental value, Lethal)
EC50 - Crustacea [1]:	3.65 mg/l (48 h, Daphnia magna, Experimental value, Nominal concentration)
EC50 - Other aquatic organisms [1]:	4.6 mg/l Test organisms (species): Gammarus sp.
ErC50 algae:	2.8 mg/l (DIN 38412-9, 72 h, Desmodesmus subspicatus, Fresh water, Weight of evidence, Nominal concentration)
NOEC (chronic):	1.3 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

12.2. Persistence and degradability

RADCOLUBE® SBR-1	
Persistence and degradability:	Not readily biodegradable in water.

Dioctyl sebacate	
Persistence and degradability:	Readily biodegradable in water.

Tributyl phosphate	
Persistence and degradability:	Readily biodegradable in water.

12.3. Bioaccumulative potential

RADCOLUBE® SBR-1	
Bioaccumulative potential:	The substance has low potential for bioaccumulation.

Dioctyl sebacate	
Partition coefficient n-octanol/water (Log Pow):	10.08 Source: ChemIDplus
Bioaccumulative potential:	No bioaccumulation data available.

Tributyl phosphate	
BCF - Fish [1]:	5.5 – 20 (Equivalent or similar to OECD 305, 6 week(s), Cyprinus carpio, Semi-static system, Fresh water, Experimental value, Fresh weight)
Partition coefficient n-octanol/water (Log Pow):	4 (Experimental value, US EPA, 20 °C)
Bioaccumulative potential:	The substance has low potential for bioaccumulation.

12.4. Mobility in soil

Tributyl phosphate	
Surface tension:	25.1 mN/m (20 °C)
Organic Carbon Normalized Adsorption Coefficient (Log Koc):	3.241 – 3.371 (log Koc, SRC PCKOCWIN v2.0, Calculated value)

Ecology - soil:	Low potential for mobility in soil.

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.

Product/Packaging disposal recommendations: Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle by distillation. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery.

Additional information: Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

SECTION 14: Transport information

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

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (DOT): Not applicable
Proper Shipping Name (TDG): Not applicable
Proper Shipping Name (IMDG): Not applicable
Proper Shipping Name (IATA): Not applicable

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): Not applicable

IATA

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

14.4. Packing group

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

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

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
Dioctyl sebacate		Present	Active	
Tributyl phosphate		Present	Active	

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

Dioctyl sebacate
Listed on the Canadian DSL (Domestic Substances List)

Tributyl phosphate
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Tributyl phosphate
Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

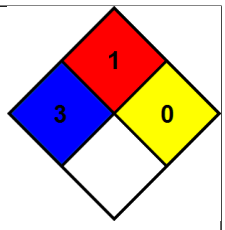
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Revision date: 08/28/2023

Full text of H-phrases	
H302	Harmful if swallowed
H315	Causes skin irritation
H332	Harmful if inhaled
H351	Suspected of causing cancer
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard	3 - Materials that, under emergency conditions, can cause serious or permanent 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.



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